January 2007 • US$28*

EUROwire

The International Magazine for the Wire & Cable Industries

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Hot stuff from Leoni

Our special report from wire China 2006

ISSN 1463-2438

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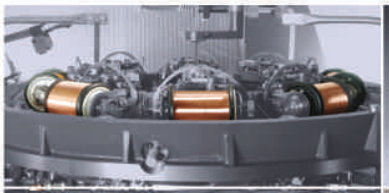

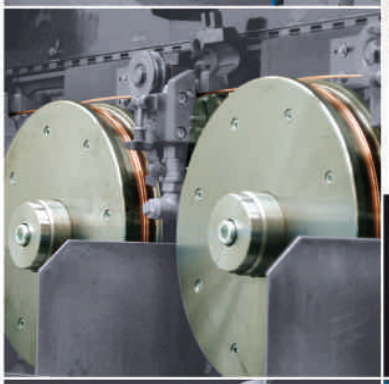

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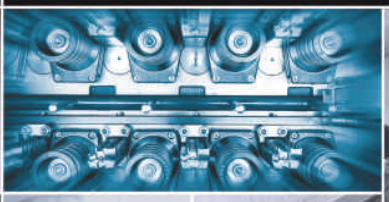

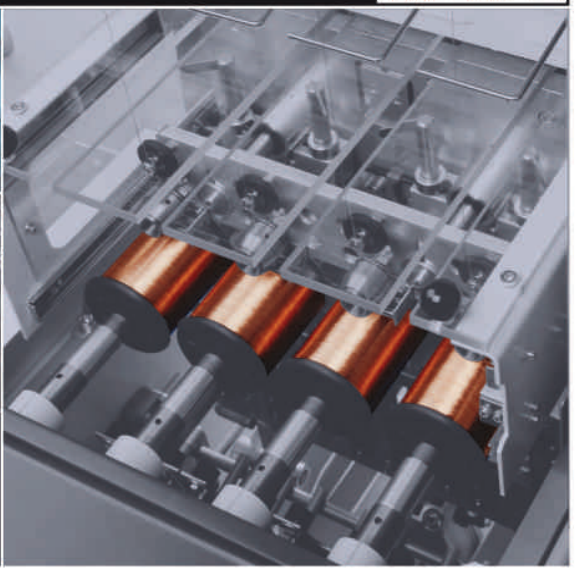

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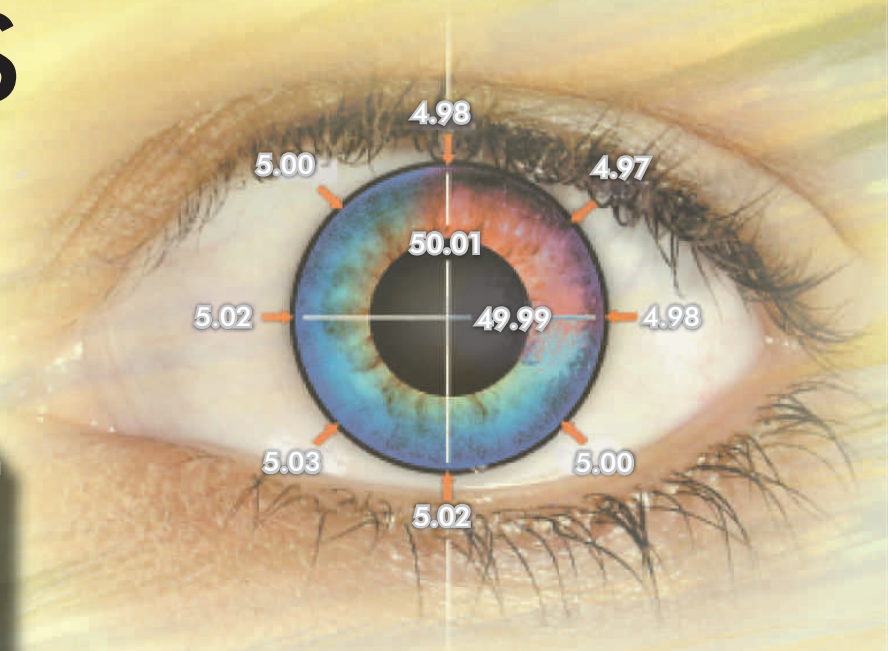
KEEP AN **EYE** ON YOUR COSTS



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Here's to a prosperous 2007

Firstly, I'd like to wish you all a happy and prosperous 2007.

I'm a little apprehensive having to write something about myself. However, I feel it is important to formally introduce myself to both readers and advertisers alike, and to take the time to explain some of the changes that you will hopefully notice as you read through this issue of EuroWire.

On the more personal side I'm married to Helen, am a fanatical supporter of Liverpool Football Club and have a passion for live music. I also play golf, albeit very badly. Please get in touch if you've worked out a formula to finish 10 under par every time you play!

I've spent 22 years as a journalist, working my way from 'tea boy' on a local weekly newspaper to being one of the sub-editors for the second largest circulation paid-for weekly newspaper in the UK.

I think it's fair to say that most journalists aspire to reach the editor's chair during their careers. I always wanted to do that before I reached the age of 40 and, in that respect, I have achieved my ambition with just six months to spare.

The one over-riding thing that has struck me since arriving at EuroWire is the enormous responsibility that comes with the position.

Not for ensuring that the deadlines are met and the magazine comes out on time, but the responsibility I now have to the readers and advertisers to ensure that we can be the very best source of information in the wire and cable industry.

We are here to provide a service to you, to gather and print news about the industry in which you work, whether that is the latest technological news, technical articles or the business in general.

Obviously we need your help to do this as efficiently and effectively as we can. We will try and make sure that the news is presented to you in an informative, detailed and attractive style.

There are a number of changes you may already notice within the magazine: The slight increase in the type size, the change in the design of some of the sections and the increase in the number of stories.

From the next issue there will also be a Letters Page, 'Word on the Wire'. This presents you with the ideal opportunity to air your opinion on any subject within the industry. I am sure that you will all make use of this new facility.

I'd like to finish by thanking everyone in the industry I have met or spoken to since arriving at EuroWire for their kind words of encouragement and offers of help.

David Bell
Editor

The International Magazine for the Wire and Cable Industries

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See page 112 for further details

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A body in motion stays in motion. And for Interwire 2007—the largest and longest running wire and cable marketplace in the Americas—a surge of activity surrounds its strategic move to the I-X Center, Cleveland, Ohio, USA, May 5-10, 2007 to access a new industry hub.

Everything at Interwire 2007 is designed to move you forward in your industry and accelerate your career. Exhibits. New business forums. New contacts. Tech talk. Hot topics. Everything revolves around the current best practices in the global wire and cable industry.

We've added a new format as well as the co-location of the International Fastener Exposition to keep things moving.

INTERWIRE TRADE EXPOSITION PRESENTS: *"WIRE IN MOTION"*

"If you can make just one trip to the U.S. in 2007, make plans now to visit during Interwire.

The contacts you make in less than a week's time will save you time all year long."

Ron Reed, General Manager, Horizon Wire & Cable USA

Interwire 2007 is the only place in the Americas to meet with the most influential industry professionals in the world who travel from more than 50 countries to participate.

Nothing stands still. Why should you?

Join the momentum that has thousands moving in the direction of Cleveland for Interwire 2007.

See program details and register online at **www.wirenet.org** or call The Wire Association International at: **(001) 203-453-2777** for details.

Interwire 2007. I-X Center Cleveland. ***Your move!***

I-X Center
Cleveland, Ohio, USA
May 5-10, 2007

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Fasteners and spring production

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EUROwire

The International Magazine for the Wire & Cable Industries

In the March 2007 Issue:

- Interwire 2007 Show Issue
- Fasteners & Spring Production
- Latest Industry & Technology News

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- Essential Global Industry News in English, German, Russian, Italian, French & Spanish languages
- The latest technology & innovations in wire & cable production and processing
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- Educational and in-depth technical articles by authoritative industry scientists & engineers
- Extensive wire & cable event coverage throughout the year
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Thousands flock to wire China

They came in their thousands . . . and were not disappointed!

A total of 32,000 trade visitors – 3,500 of them from more than 80 countries – descended on Shanghai's New International Expo Centre for the second wire & Tube China from 25-28th September 2006.

With an exhibition area of 40,000m² – 14,000 more than in 2004 – the stage was truly set for the 923 well-known enterprises both from China and around the globe to show off their technology.

Organisers were The Shanghai Electric Cable Research Institute, Messe Düsseldorf China Ltd, and the Metallurgical Council of the China Council for the Promotion of International Trade.

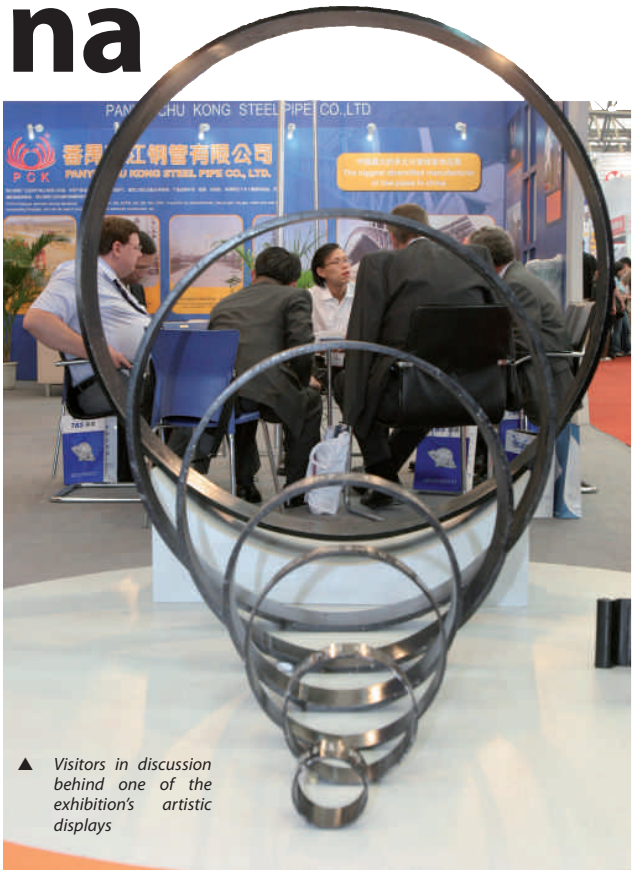
A large number of delegates from Taiwan, India, South Korea, Japan, as well as various provinces, municipalities and regions within mainland China also attended the exhibition.

Attending the opening ceremony on Monday 25th September were Joachim Erwin, Lord Mayor of Düsseldorf; Lu Yansun, former Vice-Minister of Machinery Building Industry and Special Advisor to China Machinery Industry Federation (CMIF); Liu Zhenjiang, Vice-Chairman of China Iron & Steel Association (CISA); Zhang Chengjun, Vice-Director of State-owned Assets Supervision and Administration Commission of Shanghai Municipal Government; Jian Heping, Vice-Director of Shanghai Municipal Foreign Economic Relation & Trade Commission, and Werner Dornscheidt, President & CEO of Messe Düsseldorf GmbH, among many other distinguished guests, who cut the ribbon to mark the official opening.

A total of eight national pavilions from Austria, France, Germany, Italy, North America, UK, South Korea and Spain took part in extensive display areas, while at Tube China, national pavilions from Germany, Austria, UK, North America and Spain also exhibited in similar fashion in a very busy four days.

In addition to the display of latest products, machinery and technologies, the exhibition also demonstrated its groundbreaking calibre with the introduction of a new Chemical Material Zone, where internationally renowned wire and cable material manufacturers took part and displayed their chemical materials and products to trade visitors from home and abroad.

The introduction of the special zone was welcomed by professional buyers from the wire and cable industry who were able to view and purchase products to meet their different needs.



▲ *Visitors in discussion behind one of the exhibition's artistic displays*

Nearly 60 international spring and fastener machine manufacturers and 40 wire and cable product manufacturers were also in attendance.

A total of 22 forums and technical seminars were held, covering a wide variety of topics and attracting a large number of professional delegates.

China Wire & Cable Industry Conference, a popular industry event organised by Shanghai Electric Cable Research Institute, and an 'Exhibition of 30-Year Achievements of China Optical Fiber and Cable Industry' and '30 Years of Optical Fiber and Cable Industry in China', were run in parallel with the exhibition.

Shanghai Electric Cable Research Institute
Fax: +86 21 556 20467
Email: wilson@secri.com

Messe Düsseldorf China Ltd (Exhibitor & Visitor Service)
Fax: +86 21 6279 7337
Email: teddy@mdc.com.cn

corporate at a glance

It was party time in the Ukraine as Maillefer joined Odeskabel for the 20th anniversary of ATKT-100.

Leicester's RG Attachments' purchase of a new swivel bending machine is a real bonus for the company.

A new brochure from DeWAL Industries describes a range of high performance PTFE films, increasingly in demand.

€42million deal to boost development

New Caledonia's economic development will be boosted – thanks to a €42million deal between Alcatel and the Post and Telecommunications Office (OPT).

Alcatel will roll out Gondwana-1, a submarine cable network to link New Caledonia with the Territory, which significantly increases the capacity of OPT's network.

Completion, for the first quarter of 2008, will see the project offer high-speed connectivity to the Territory, and will link Nouméa, in New Caledonia, to Sydney, Australia, where it will interconnect with the international routes towards Europe and the US. A link will also connect Poindimié, on the New Caledonian East coast, to the Loyalty Islands.

Alcatel will deploy its new-generation dense wavelength division multiplexing (DWDM) submarine line terminal – the Alcatel 1620 Light Manager (LM), its cables and repeaters, as well as installing its Optical Multi-Service Node (OMSN) systems to connect the network's landing stations.

All this will be managed by the Alcatel 1350 management suite. They will also be in charge of the configuration and integration of the terrestrial and submarine equipment.

Alcatel – France
Fax: +33 1 4076 1400
Website: www.alcatel.com

Ken steps down after 54 years' service

Technical director Ken Barker has retired after 54 years' service with Ormiston Wire, one of the oldest family-owned manufacturing companies in the UK.

Ken, who joined the company after completing his National Service in 1952, progressed through the company until becoming managing director after the retirement of John Ormiston.

▲ *Ken Barker*

As technical director he oversaw and led the rapid expansion in the mid-1970s when Ormiston's were the major producer of small diameter stainless steel wire ropes for the yachting trade.

He also led the development of mixed materials, i.e. Kevlar/tinned copper braid as antennas.

Ormiston Wire – UK
Fax: +44 208 569 8601
Email: info@ormiston-wire.co.uk
Website: www.ormiston-wire.co.uk

AIM on target with Soco deal

AIM, Inc, manufacturer of CNC wire bending machines and accessories, has chosen SOCO Machinery Ltd as its exclusive representative and service agency for Taiwan and Malaysia.

SOCO will handle all inquiries and sales activity and can give clients demonstrations at its site at Taichung in Taiwan.

SOCO Machinery Co Ltd – Taiwan
Fax: +886 4 2359 2386
Email: socomc@seed.net.tw
Website: www.soco.com.tw

New machine boost for RG Attachments

The purchase of a new swivel bending machine will allow UK firm RG Attachments to form a variety of shapes from large sheet metal.

This task had previously been unavailable for the company who will find the machine especially useful in the primary stages of Tapeformer production, where large metal sheets need to be chopped and formed into smaller, more manageable pieces.

The new purchase will allow a higher quality of Tapeformer to be produced, especially for larger cable sizes.

RG has been producing Tapeformers for more than 25 years, and they are used by cable manufacturers to fold a variety of insulating material around cable cores before entering the final jacketing stage.

They can be used with many insulating tapes including Mylar, paper and metalised foils and can insulate a wide range of cables including LAN, power, telephone, communication and automotive cable.

The Tapeformer is positioned just before the extruder head and guarantees precision folds.

▲ *The new swivel bending machine and, right, in action*

With an extensive selection of models and folding profiles the Tapeformer is manufactured to clients' exact requirements.

RG Attachments – UK
Fax: +44 116 261 2403
Email: info@rga.co.uk
Website: www.rga.co.uk

What's On and When

January

13-16: **Tekno/Tube Arabia 2007** – trade exhibition – Dubai, UAE
Organisers: Al Fajer Information & Services
Fax: +97 14 340 3608
Email: alfajer@emirates.net.ae
Website: www.tekno7.info

May

7-10: **Interwire 2007** – trade exhibition – Cleveland, Ohio, USA
Organisers: Wire Association Int Inc
Fax: +1 203 453 8384
Website: www.wirenet.org

28-31: **wire Russia** – trade exhibition – Moscow, Russia
Organisers: Messe Duesseldorf GmbH
Fax: +49 211 45 6087 7793
Email: info@messe-duesseldorf.de
Website: www.messe-duesseldorf.de

June

21-24: **8th China (Guangzhou) International Metal & Metallurgy Exhibition** – Guangzhou, PR China
Organisers: Julang Exhibition Co Ltd
Fax: +86 20 38620790
Email: meiwen@julang.com.cn
Website: www.julang.com.cn

October

2-4: **Metaltech 2007** – trade exhibition – Sao Paulo, Brazil
Organisers: Grupo Cipa
Fax: +55 11 5585 4359
Website: www.metaltech.tmp.br

16-18: **wire Southeast Asia 2007** – trade exhibition – Bangkok, Thailand
Organisers: Messe Duesseldorf Asia
Fax: +65 6337 4633
Email: mdafairs@singnet.com.sg
Website: www.wire-southeastasia.com

17: **Non-ferrous Bangkok Seminar** – technical seminar – Bangkok, Thailand
Organisers: IWMA, ITA
Fax: +44 1926 314755
Email: info@iwma.org
Website: www.iwma.org

November

5-7: **wire '07 Bologna** – conference – Bologna, Italy
Organisers: ACIMAF, CET, IWMA & WAI
Fax: +44 1926 314755
Email: info@iwma.org
Website: www.iwma.org

Affiliation ahead for IWCS and ECA?

The International Wire and Cable Symposium, Inc (IWCS) and the Electronic Components, Assemblies and Materials Association (ECA) have entered into a Cooperation Agreement, with the expectation that it will lead to affiliation between the two groups within the next three years.

IWCS is a non-profit organisation whose mission is to provide a forum for the exchange of information among suppliers, manufacturers, operators and users on advancements in materials, processes, products, services and systems for transmission of voice, data, video signal and electrical current. The IWCS has organised an annual conference and symposium for the past 55 years which is recognised globally as the premier technical event in the wire and cable industry.

ECA represents manufacturers and producers of passive, electro-mechanical, wire, cable and connector electronic components, component arrays and assemblies, and materials and support services. It is the electronic components sector of the Electronic Industries Alliance (EIA), a partnership of electronic and high-tech associations and companies comprised of more than 1,300 members in the $400 billion US high-tech and electronics industries. ECA members benefit from a dynamic link into a network of programmes and activities in areas such as business and technical information, market research trends and analysis, access to industry and government leaders, technical and education training, and others.

John Sicotte, Chairman of the Board of Directors of IWCS, said: "The industry we serve has been shifting the focus of its innovation from the wire and cable itself increasingly towards interconnect and application technologies.

"In keeping with this trend, the scope of the IWCS forum is evolving to better address all the constituent and collective elements of end-to-end cable systems. This cooperation, and possible affiliation, with the ECA, is a major step towards expanding the scope and role of the IWCS."

Robert Willis, President of ECA, added: "ECA has always provided the broadest possible platform of services to its member audience. ECA has been a strong supporter of IWCS for many years, having worked together in expanding the IWCS programme to include new programmes such as the Executive Forum in the annual IWCS Conference. This agreement and expected affiliation take this support to a higher level. Technology and innovation are focused on systems and this new combination addresses that focus."

The agreement runs for a period of three years, after which each party will assess the results of the collaboration and take further action to affiliate. It is anticipated that the core IWCS programme will remain in place, with new products and services added.

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Website: www.iwcs.org

ECA – USA
Fax: +1 703 875 8908
Email: Rwillis@ecaus.org
Website: www.ecaus.org

Word on the Wire. . .

EuroWire magazine is introducing a new Letters Page as a regular feature within the magazine, beginning with the March 2007 edition.

The Letters Page gives the Editor the opportunity to publish some of the interesting and newsworthy letters we receive at the EuroWire editorial office each month – and offers our customers and readers the opportunity to write in about any wire and cable related industry topic and have their letter published in the next available issue.

This is a new and ideal platform to reach a large, specific wire and cable audience within the leading international trade magazine.

Letters should be written in English, and be concise (around a maximum of 250 words).

All letters must include the sender's name and address. If you wish to remain anonymous please state this clearly on your letter.

The Editor reserves the right to amend and withhold letters, which should be sent to:

Word on the Wire, Eurowire, 46 Holly Walk, Leamington Spa, Warwickshire, CV32 4HY. UK. Emails to editor@intras.co.uk

JIANGSU
jin tai long

JIANGSU JINTAILONG is the largest equipment manufacturer in China for the steel cord making industry. Over the years we have made high-quality, cost-effective machinery for some of the best-known steel cord producers in the global tyre market. Long-term relationships with our customers have been built upon our proven innovation and our ability to take designs through development and into real-time production. Come to JIANGSU JINTAILONG for high-quality, cost-effective steel cord equipment.

double twisting machine

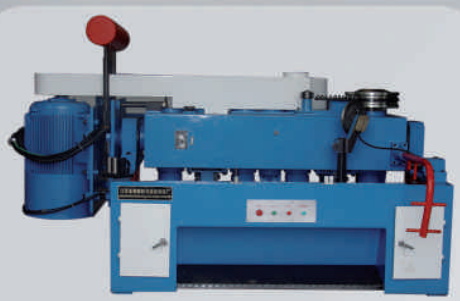
structure	1x3,2+2,2+3,3x4,3x7,1x7, 1x4,3+9,3+6,2+8,1x18
speed(rpm)	2500-3500
main power(kW)	5-22
bobbin size	B40,B60,B80,315

dry drawing machine

	ø1200	ø1000	ø900	ø600	ø560	ø450	ø400
Max.inlet(mm)	16	16	14	6.5	5.5	4.2	3.5
Min.outlet(mm)	4.0	3.2	3.1-3.2	1.6	1.35	1.2-1.0	0.98-0.85
Max.Speed(m/s)	10	7.5	6.5	14	14	15	16
motor power(kW)	132-160	110-132	110-132	55-30	45-30	22-15	18.5-15

wet drawing machine

number of drafts: 11-25
reduction per draft: 11%-16%
capstan: WC, HRC62-64
speed: 8-25 m/s
wire inlet: 0.8-2.8mm
wire outlet: 0.15-1.0 mm
this series is mainly used in production of steel cord, gas-protective welding rod and other high-speed wire processes.



360 drawing machine

number of drafts: 15-17
capstan: WC, HRC62-64
speed: 8m/s
wire inlet : 2.8mm
wire outlet: 0.5mm-0.8mm

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for further information, please visit our website: www.jsjintai.cn

Techint Technologies strengthens position

Techint Technologies has joined forces with Hypertherm, a key-player in India for the design and supply of industrial furnaces for the metal industry.

Located in Mumbai, Hypertherm was set up in late 2001 by six technocrats with a combined furnace industry experience of more than 150 years.

The company, with a reference list of more than 50 installations in India and abroad, is specialised in the thermal engineering field with renowned competences in Reheating Furnaces, Furnaces for Processing Lines, Continuous and Batch Heat Treatment Furnaces, Aluminium Furnaces, Lime and Dolomite Kilns and Kilns for Ceramics.

The joint venture, named Techint Hypertherm Pvt Ltd, will continue its operations from Mumbai where they employ almost 70 people and mainly serve the Indian market.

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New order

Anshan Iron & Steel Co Ltd, China, has awarded SMS Mevac, Germany, a contract to supply a new RH-TOP vacuum unit. Commissioning of the plant is scheduled for early 2008.

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Zwick comes out on top in universal hardness testing

With its latest ZHU-topLine hardness tester, Zwick is strengthening its market lead as a supplier of premium universal hardness testing equipment.

The first fully functioning prototypes were showcased at last year's International Forum for Materials Testing in October in Ulm, Germany. These machines have test loads from 1 to 250kg (9.81 to 2452N) and went on sale at the start of the year.

During the development process, special emphasis was placed on high operating and measurement convenience.

As a technology leader this universal hardness tester is designed for hardness tests according to Vickers, Brinell, Rockwell, and other procedures. It has been developed especially for test laboratories/materials research, or quality assurance in industrial production.

Unique features of the machine include its advanced digital zoom optics for carrying out a wide range of applications using a single lens, and 'closed loop' technology for automatic load application.

An optional image processing system is available for fully automatic evaluation of the indentations, as are other options and modules, like a motorised turret and motorised compound table.

▲ *The ZHU250top – the first machine from a new advanced product line for hardness testing*

The hardness tester connects directly to Zwick's proprietary testXpert® software resulting in a very easy to use and reliable testing system. In addition, the online language switching is extremely useful for international organisations and applications.

Zwick will be introducing more hardness testers from this series up to 750 and 3000kg (7357N and 29,430N) during 2007.

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Improved corrugator technology opens new fields of application

Cable specialist Nexans will present optimised corrugator technologies for its UNIWEMA® machines at TEKNO/Tube Arabia 2007, which takes place in Dubai from 13-16th January 2007.

UNIWEMA machines are used to manufacture smooth or corrugated tubes and cable sheaths by continuous forming and welding of metal strips.

The machines process stainless steel, steel, copper or aluminium and their alloys, welding the material in the TIG (tungsten inert gas) process or using lasers.

Depending on the machine model and equipment, tubes with an outer diameter of 2mm-350mm can be produced. Typical wall thicknesses for steel are between 0.1mm and 3mm.

Corrugation gives tubes or cable sheaths flexibility. A rotating disc-type tool presses helical or annular corrugations into the tube, with the shape of the corrugations varying depending on the tool, feed rate, pressure and corrugator speed.

The company's new optimised tools feature structural improvements to the corrugator head bearing, allowing the creation of deeper corrugations.

Production speeds of up to 35m/min (with UNIWEMA 25) and corrugator speeds up to 6,000rpm can be achieved. The new tools can also be used to retrofit older UNIWEMA systems.

With the corrugation depth, the surface per cable length increases, which improves heat dissipation and increases flexibility.

The improved bending properties of corrugated flexible metal tubes (CFMT), in particular, open up new fields of application, such as the production of easy-to-install water and gas lines for mains connection.

And it is that technology that can also provide benefits in vehicle air conditioning systems, where shock and pressure-resistant flexible corrugated stainless steel tubes take on the task of transporting carbon dioxide, which is soon to replace conventional refrigerants.

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Celebrating success with Odeskabel

It was party time last September as Maillefer joined Odeskabel in the Ukraine to celebrate the 20th anniversary of ATKT-100.

That was the name given to a first-of-its-kind fully automatic production unit for telephone cables, where Maillefer (then Nokia Cable Machinery) was a partner. Initial capacity was calculated for 1.2 million wire kilometres per year in two shifts.

Even today, after 20 years of operation, ATKT-100 operates at planned capacity to answer current demand.

Friends, colleagues and some retired workers travelled from Moscow and Finland to attend the celebrations – expressing their pride in seeing their dream still in full operation. Together they evoked the planning phases of ATKT-100.

Overcoming the challenges and bureaucracy of the former Soviet Union to get project approval and financing proved memorable. It was through the combined efforts from Odeskabel and Maillefer that ATKT-100 became a reality.

Odeskabel is expanding its markets in the Ukraine and surrounding countries as it diversifies its cable products into the communication and energy sectors. According to company reports, investments in production, development and modernisation over the last five years have reached more than €11 million.

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▲▲ *Staff past and present join in the 20th anniversary celebrations*
▲ *Maillefer's Antti-Jussi Rissanen and Odeskabel's Dmitry Vasilievitch Iorgachov (right)*

On time? Check it online!

Customers of Coleman Cables can now keep a check on their orders – on-line and in real-time.

Purchasers can access these tracking capabilities on the home page of Coleman's website – www.colemancable.com – or through their CCI Xpress extranet access code.

Once a purchase order is entered and the 'Track It' button pressed, the user is taken to an order summary page where the status of the order can be viewed. Customers can then link directly to carrier websites, enter their pro numbers and track their order.

Customers can also request a CCI Xpress log-in account where they can view the status of all purchase orders.

This is just part of the latest ongoing e-commerce initiatives from Coleman.

Coleman Cable Inc – USA
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Fax: +1 847 689 1192
Website: www.colemancable.com

▲ *New furnace will help boost production*

Furnace and take-up equipment boosts wire production at Sheffield factory

Wire manufacturer Wintwire Ltd is using a new strand annealing furnace and take-up equipment from Meltech Engineering to boost production of stainless steel wire at its Sheffield factory.

The Meltech furnace allows Wintwire to expand its wire treatment services and significantly reduce manufacturing lead times.

Wintwire is a specialist supplier of steel, stainless steel, copper, aluminium and brass wire and profiles to the medical and dental market worldwide, and leading manufacturer of wire for model railway track. Until recently Wintwire subcontracted strand annealing. However, with increasing demand for its products the company has brought strand annealing in-house.

"We chose the Meltech furnace to give us greater control of both wire production and annealing quality. It also allows us to bring production lead times down and makes our manufacturing process more flexible and efficient," said Marc Turner, commercial director at Wintwire.

The Meltech furnace operates at up to 1,100°C. High specification thermal insulation and rapid heating allow the furnace to reach operating temperature in less than 20 minutes. This, combined with accurate temperature control along the length of the furnace, will enable Wintwire to exceed customer quality expectations.

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Roblon's Middle East network expanding

Danish-based Roblon has further expanded its global network with the appointment of a new representative in the Middle East.

Emichem has been appointed to represent both Roblon Industrial Fiber and its sister division, Roblon Engineering, throughout Kuwait, Oman, Bahrain, Jordan, Saudia Arabia and the United Arab Emirates.

The two Roblon divisions now have almost 60 representatives operating in 60 countries.

Roblon Industrial Fiber develops and manufactures high-tech industrial fibres including glass and aramid strength members, standard and water-blocking binder yarns, tapes and ripcords.

Also a specialist within the offshore industry, the company has been awarded ISO 9001 (quality management) and ISO 14001 (environmental management) certification.

Roblon Engineering develops and manufactures serving, binding, take-up and pay-off equipment. The servers can wind industrial yarns around a cable with high precision and a precisely adjusted tension.

They are available in up to 24 positions, and with various rotation speeds, lay lengths and adjustable tension levels. The two independent divisions also work in partnership to provide joint solutions involving both cable machinery and materials for the cable-making industry.

The Roblon group is based in Frederikshavn in Northern Denmark. Emichem, which has its headquarters in the United Arab Emirates, is headed up by Shabih Rizwan Khan and Dawar Azmi.

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In control. . .

AlphaGary has completed the buy out of Megolon, the halogen free compounds manufacturer, and now offers leading edge technology encompassing halogen free, fire retardant vinyl, and fluoropolymer compounds. That technology is designed to meet the fire safety needs of the global wire and cable industry.

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New facility in Grand Rapids, Michigan

Interwire Products, USA, has opened a new 80,000ft^2 facility in Grand Rapids, Michigan, to service the Western Pennsylvania, Ohio, Indiana and Michigan markets. This brings the company's total warehousing in the United States to 400,000ft^2.

The InterWire Group supply ferrous and non-ferrous spring wire, special temper wires and strips, and second process operation needs such as flattening, shaping, plating, edging, torsion straightening and cutting. The company has also added new products to its product line for the spring and OEM industry.

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at a glance. . .

Joining forces has been one big success story for Nashtec – the offshoot of an alliance between Germany's Nabaltec AG and American Alumina producer Sherwin Alumina.

In October last year they started production at their ultra-modern newly-built facility in Corpus Christi, Texas, of fine precipitated Aluminium hydroxide as halogen free, flame retardant filler (registered trademark Apyral®40CD).

The plant, adjacent to the Sherwin Alumina site, includes a precipitator, a drying and filter system, and has an annual production capability of 25,000 tonnes.

◆ ◆ ◆

Techint Goodfellow Technologies Inc (TGTI), Canada, has received an order from Ternium Hylsa, Mexico, to install a Goodfellow EFSOP™ process control system.

Ternium Hylsa's activities cover a wide range of areas, from the extraction of iron from its own mines and the manufacture of steel, to the production of finished products.

The new Goodfellow EFSOP system is destined for Ternium Hylsa's Monterrey plant, the company's flat products division. The system will be installed in a scrap preheating finger shaft furnace which operates with scrap and continuous DRI pellet meltdown conditions.

◆ ◆ ◆

DSM, Holland, shareholders have appointed Rolf-Dieter Schwalb as a member of the managing board of directors and chief financial officer.

Born and raised in Germany, he is an all-round and experienced CFO at Board level with business experience, who masters all the functional areas of the finance function.

◆ ◆ ◆

Nottingham, UK-based, end-of-line packaging solutions specialists MJ Maillis has introduced a large choice of edgeboard solutions, made of plastic and cardboard, for companies who want to minimise damage to goods in transit.

Specially formulated to protect products during shipping and storage, the edgeboard has been designed to provide protection against impact, scuffing and scratching.

Three new lines to increase capacity at WISCO

Wuhan Iron & Steel Group Company (WISCO), China, produced the first galvanised coil on the last of three new continuous hot-dip galvanising lines supplied by SMS Demag, Germany, on 1st October – two months after the third and second had processed their first coils.

The coating processes used by line one, involving GA (Galvannealed) and GI (Galvanised), and those used by line two with GI and GF (Galfan), and by line three with GI and AL/Zn enable WISCO to produce high-quality grades such as CQ, DQ, DDQ, EDDQ, SEDDQ, CQ-HSS, DQ-HSS, DDQ-HSS, BH-HSS, TRIP and DP.

Strip width for the new line is 1,000 to 2,080mm and the strip gauge is 0.4 to 2.5mm with an annual capacity of around 475,000 tonnes. The maximum process speed amounts to 200m/minute for all three facilities.

The grades produced on the lines find a wide variety of uses in the automotive industry and for the manufacture of household appliances.

With the commissioning of the hot-dip galvanising lines, WISCO will be increasing its annual production capacity by 1,240,000 tonnes.

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Growing range

A growing product range is just one outcome of the collaboration with Haver & Boecker, Germany, for Haver Standard India Pvt Ltd.

One of the leading wire weaving companies in India, Haver Standard's teams have been working closely with customers to expand their range.

Currently they offer woven wire mesh, spinneret disc filters/candle filters, demister pad/misterscreen, knitmesh – column packing pads/random packings, and silver wirecloth/silver granules.

Haver Standard India Pvt Ltd – India
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Email: wiremesh@haverstandard.com
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AIM's European opening

AIM Europe celebrated the grand opening of its new 3,000m² factory in Athens, Greece, last September.

More than 150 guests joined President, Constantine Grapsas in opening the new premises which will serve the markets of Europe, Africa, Middle East and Russia.

"AIM Europe SA will give the same level of quality and support in Europe that we have been giving to our clients for over 15 years in North America," said Grapsas.

AIM Inc – one of the leaders in the steel wire machine industry – manufactures CNC wire bending equipment.

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Success at wire China

Troester GmbH & Co KG, Germany, a supplier of machines and complete lines for the cable manufacturing industry, has announced that its participation in wire China 2006 was a success.

The company, which exhibited in cooperation with Troester Machinery Shanghai, was able to sign three contracts for VCV and CCV lines for the production of medium and high voltage cables, to be delivered into China.

"China is a very important market for Troester, and we are looking forward to continuing good business here also in the future," stated Mr Dirk Schmidt, sales director.

The main attraction at the company's stand was the Triple Cross Head TQu 50, which features conical design of the material distribution flow channels, and a precise fit, to ensure high quality sealing.

Computer calculated flow channels and precise temperature control of all three layers allow very low wall thickness tolerances, resulting in material savings.

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▲ *The Troester stand at wire China*

New president for ANIMA

ANIMA – the Federation of the Italian Associations of Mechanical and Engineering Industries – has elected Ettore Riello as its new president.


▲ *Ettore Riello*

ANIMA represents all major companies of the mechanical and engineering industry within the Italian Confederation of the Industry – Confindustria, that employs 200,000 people.

Riello, a graduate of the University Ca' Foscari in Venice, is president of Riello SpA.

He is a member of the Directive Council of the European Heating Industry (EHI), Palladium Financial, Veneto Nanontech and TeleArena.

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Consteel for Arvedi

Italian steelmaker Arvedi is to install a 250-tonne Techint EAF-Consteel® system, to supply the liquid steel for its new endless steel production (ESP) line. The company's new EAF (electric arc furnace) will be integrated with Techint's patented Consteel continuous preheating system, and will reach the worldwide highest capacity for a single furnace: 300 t/hr with 100 per cent scrap feeding.

The melting unit will be equipped with technological solutions developed by Techint Technologies for electric arc furnaces, such as the Goodfellow EFSOP™ off-gas process control system, KT™ oxygen and carbon/lime lances for chemical injection, and TDRH, the electrode digital regulation system. Two Techint 250-tonne ladle furnaces will also be installed downstream of the furnace.

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▲ *The new Nexans plant at Tokyo Bay*

It's all systems go for Nexans

Nexans celebrated the start of production at its new submarine high voltage power cable plant at Tokyo Bay, Japan, at the start of November 2006.

The opening ceremony follows the creation of the production joint venture NVC, owned 66% by Nexans and 34% by Viscas (JV between Furukawa Electric Co Ltd and Fujikura Ltd).

Gérard Hauser, Chairman and CEO of the Group, and Teruyoshi Tanabe, President of Viscas, along with senior management from both companies, shareholders, local dignatories and the Mayor of Futtsu – where the plant is located – attended the opening ceremony.

During the ceremony, Gérard Hauser, Teruyoshi Tanabe and Jean-Luc Canivet, the new managing director of NVC, underlined the strategic importance of the new manufacturing facility.

"By creating this joint venture and obtaining a new production facility, Nexans confirms its leadership position in the fast-growing submarine high voltage power cables market," said Gérard Hauser.

"The Tokyo Bay plant will actually allow Nexans to increase significantly its cable and service activity in this field."

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Multi-billion dollar expansion plans

Borouge – one of the leading providers of innovative plastics solutions – has outlined its progress towards awarding engineering, procurement and construction (EPC) contracts for the multi-billion dollar expansion of its production facilities in Ruwais, Abu Dhabi.

The company also announced that it initiated the tender process for distribution and storage hubs in the Middle East, North East Asia and South East Asia and the provision of global shipping between all hubs.

These hub operations will be implemented in phases beginning in 2007.

As one of the world's largest plastics projects, Borouge 2 is a key part of Borouge's strategy for growth, tripling its production capacity and consolidating its position in markets throughout the Middle East, Asia-Pacific and Africa.

The Borouge 2 project comprises an ethane cracker that will produce 1.4million tonnes of ethylene per annum and the world's biggest olefins conversion unit, producing 752 Kilotonnes per annum.

Its two Borstar® polypropylene plants will have a combined annual capacity of 800 Kt while the Borstar Enhanced PE plant will have an annual capacity of 540 Kt. The new expansion will be located next to Borouge's existing petrochemical complex in Ruwais.

The company has invited expressions of interest for:

- A distribution and storage operations hub in South-East Asia
- A distribution and storage operations hub in the UAE
- Two distribution and storage operations hubs in North-East Asia
- Container and product handling in Ruwais, UAE
- Global shipping between hubs in Middle East, North East Asia and South East Asia including ports of destination

Hubert Puchner, chief executive of Borouge Pte Ltd, said: "Together, these facilities will put in place the integrated, flexible and competitive supply chain needed to support Borouge's expanded market positions and broader product portfolio."

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Online promotion

Wiredrawing.net is an international showcase for exhibitors to display their business online. On virtual stands exhibitors can promote both company and products, advertise events, articles and pictures in four different languages.

www.wiredrawing.net – Italy
Fax: +39 0341 581141
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Website: www.wiredrawing.net

DeWAL brochure offers engineered solutions for manufacturing wire and cable

A new brochure available from DeWAL Industries details a wide variety of high performance PTFE films increasingly in demand in the wire and cable industry.

The DeWAL brochure gives specs and lists pertinent features of skived PTFE (Teflon®) films, both virgin and conductive. It also gives specs and distinguishes the features of DeWAL extruded PTFE films – unsintered, low density and specialty laminated.

The new brochure

The brochure describes a broad range of standard and custom DeWAL films as well as the considerations to be made when selecting traverse, pyramid or flat pad packaging.

DeWAL Industries – USA
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Order books are bulging at Concast

Concast, Switzerland, has seen the order books bulging recently, picking up a number of contracts worldwide.

Zhangjiagang Rongsheng Steelmaking Co Ltd, a subsidiary of the Shagang Group, China, has ordered a five-strand billet caster.

The new section sizes to be cast are 150mm-160mm square. The Concast high-speed caster with an 8m radius will be supplied with a CCS-Concast Continuous Straightener, mould and retractable oscillator, as well as secondary cooling.

Tunisia's Elfouladh, Société Tunésienne de Sidérurgie, has ordered a 25 tonne arc furnace, following the successful revamping of the existing ABB-EAF in June 2005.

The new furnace, with an annual production of 230,000 tonnes, will be equipped with EBT lip and ConsoTech burner. Commissioning is scheduled for the end of 2007.

Mechel Targoviste AG, Romania, a member of the Russian Mechel group, has placed an order to build a continuous caster. With its three strands, the caster will guarantee an annual production of 500,000 tonnes.

The section sizes cast will be 140 x 140mm and 150mm x 180mm. The facility will be equipped with a new stopper rod mechanism for both open and submerged casting, and the supply scope includes modern CONVEX® technology and marking machines.

Concast is also supplying Pohang Iron & Steel Co, Ltd (POSCO), Korea, with a three-strand continuous bloom caster – increasing the annual capacity at the site to 1.1million tonnes.

The section size of the blooms is 400 x 500mm, and the special steel grades to be cast will include cold-heading steels, spring steel, bearing steel, tyre wires and welding wires.

The plant, with a 16.5m casting radius and multi-point straightening, is equipped with Concast technology: plate-type moulds with mould stirrer, strand stirrer (rotating), air-mist cooling system, mechanical soft reduction at the pinch roll unit (a total of eleven modules), torch cutter with deburrer as well as bloom marking.

Together with the consortium partners POSCO E&C and POSCON, two companies of the POSCO group, Concast bears the overall responsibility for the technological concept and will supply the core components. The first cast is planned for 31st December 2007.

Zhangjiagang Hongchang Wire Rod Co Ltd, part of the Shagang Group, China, has ordered a minimill from Concast. The commissioning of the minimill, with an annual capacity of 1.15 million tonnes, is planned for the spring of 2007.

The scope of supply includes a 110 tonne electric arc furnace with single-bucket charging and supply of hot metal, a ladle furnace with a turret for four different positions as well as a twin-tank vacuum degassing facility. The six-strand caster to be supplied for the 150mm square section size is equipped with CONVEX® technology and accessories.

Kardemir AS with its head office in Karabük, Turkey, has awarded Concast an order for a 90 tonne vacuum degassing facility with mechanical vacuum pumps.

The vacuum facility is to be integrated into the existing process chain in order to treat the steel arriving from the 90 tonne BOF.

Intensive consultancy services and technical support regarding the production of vacuum-treated steel are integral parts of the contract. Commissioning is scheduled for January 2007.

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New extrusion film technology to AAPPI

Wayne Machine and Die Company has designed, built and sold a combination 5-layer yellow jacket laboratory blown and cast film line to the Advanced and Applied Polymer Processing Institute in Danville, Virginia.

This system is based upon new Yellow Jacket die technology that is capable of producing 5-layer blown and cast plastic film in A-B-C-B-A and other configurations. The line can process polyolefins such as LDPE, LLDPE, and HDPE, barrier materials such as EVOH, and adhesives for tie layer applications.

It is ideal for rapid development of multi-layer structures for subsequent testing, while using small amounts of raw material, utilising 5-Layer blown film stack type die and a 5-Layer feedblock and cast film die.

▲ *The 5 layer cast film line*

The line consists of three 1" 24:1 yellow jacket extruders, dies, blown film takeoff, cast film takeoff and torque controlled winder. The new line is capable of up to 12" layflat blown film and 8" wide cast film.

Full instrumentation, including digital auto-tune temperature controls and melt pressure indicators are part of each extruder.

The line includes a PC-based data acquisition system that interfaces to each extruder control panel and to record process parameters for statistical analysis, create trending plots and perform recipe storage.

The Advanced and Applied Polymer Processing Institute is a full-service polymer processing and research centre.

AAPPI is an innovation enterprise of the Institute for Advanced Learning and Research, in partnership with Virginia Tech.

The Institute for Advanced Learning and Research is focused on the economic transformation of Southside Virginia.

Wayne Machine and Die Company – USA
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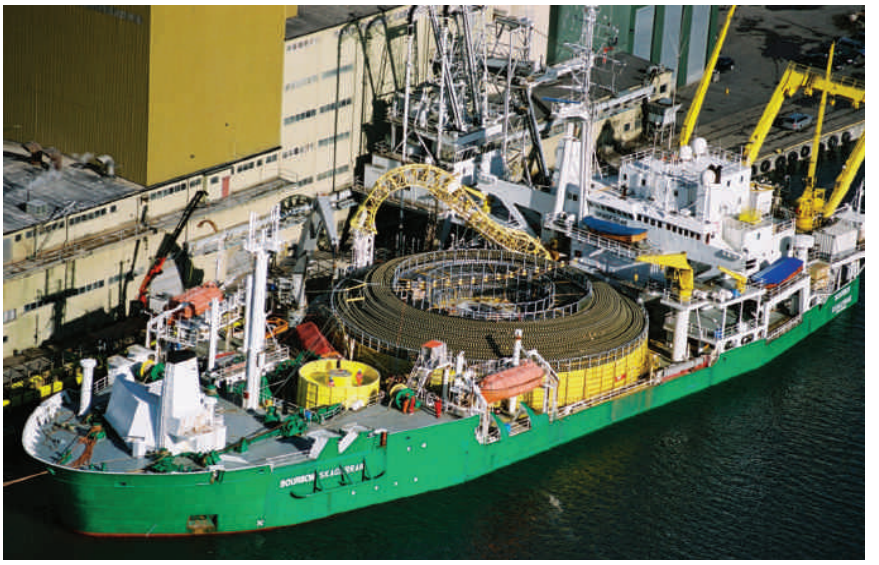
Fax: +1 973 256 1778
Website: www.waynemachine.com



▲ *The C/S Skagerrak - soon to be renamed the C/S Nexans Skagerrak*

Joining the fleet . . .

As part of its submarine energy cables activities, Nexans has bought the C/S Skagerrak – one of the world's most advanced cable-laying vessels.

Nexans, a global leader in the cable industry, purchased the vessel from Bourbon Cable AS, a Norwegian subsidiary of French company Bourbon, after operating her exclusively for a number of years.

The ship is also to be re-named C/S Nexans Skagerrak.

"This purchase confirms Nexans' commitment to the submarine cable and umbilical markets and underlines our strategy to provide our customers with a comprehensive turnkey service from design, development and manufacture to installation," said Yvon Raak, Nexans' Executive Vice President Europe.

Nexans has retained operational control of the C/S Skagerrak on a long-term charter basis for many years, during which time she has been involved in a variety of major submarine cable projects such as: both power links between Spain and Morocco (1997 and 2005); the Gemini project in the Gulf of Mexico (1999); the Abu Safah project in Saudi Arabia (2004).

C/S Skagerrak is currently involved in the NorNed link between Norway and the Netherlands which, at 580 km, will be the world's longest high-voltage submarine power link.

The C/S Skagerrak – one of only two vessels of this kind in the world – was the first purpose-built ship to be designed specially for the transport and installation of submarine high-voltage power cables and umbilicals.

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at a glance. . .

Blistein GmbH & Co's four stand tandem mill is to be modernised by Germany's SMS Demag during the winter shutdown in 2008.

The facility, at Hagen-Hohenlimburg, is used for the roughing and finish-rolling of hot-rolled structural steels, quenched and tempered steel grades and highly work-hardened special sheets.

In order to revamp the mill to a standard which exceeds current state-of-the-art levels, new servo-hydraulic control systems will be provided for roll-gap adjustment and roll bending, as well as roll-gap lubrication dependent on strip width and the DS (Dry Strip) system for strip drying, patented by SMS Demag.

◆ ◆ ◆

Altana Electrical Insulation, a Division of Altana Chemie AG, is announcing price increases for its wire enamel product line in Europe of 7-8% from 1st February 2007, or as contracts allow.

The increase is to offset increases in raw material costs and operational costs such as energy, environmental, legal and regulatory compliance.

This price adjustment will allow Altana Electrical Insulation and its affiliates to continue to offer the high performance of products and services that the customers expect.

◆ ◆ ◆

Scott Coope has been promoted to senior product manager, wire and cable systems, at US firm Davis-Standard, LLC.

He has held a variety of positions within the company since joining them in 1994.

Part ownership for Lesjöfors

Lesjöfors has taken part-ownership of gas spring manufacturer Hanil Precision Co Ltd, of Korea, and extended its range of development and production.

Established in 1984, Hanil's springs are certified according to QS9000, TS16949, Single PPM and ISO 14001.

Dating back to 1675, Lesjöfors Gas Springs are manufactured from the highest quality material, benefiting from the most modern production processes and a certified quality system.

The firm's gas springs can be used for balancing, unloading or as a safety trigger in many designs.

Sweden's Lesjöfors has recently unveiled a new gas springs guide, providing everything needed to know about their design, manufacture and performance.

The group is organised into three main business areas focusing on flat strip components, coil springs, wire products and after sales products for vehicles.

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Second Duisburg order within the year for SMS Demag

ThyssenKrupp Steel AG, Germany, has placed an order with SMS Demag, Germany, for the supply of three new coiler units for the hot strip mill at Beeckerwerth – making this the second order within a year for the modernisation of coiler units in the hot strip mills at Duisburg.

The work includes three shiftable coilers, including all mechanical equipment, utility systems and the entire electrical and automation systems.

The fully hydraulic three-roll coilers are designed for tube grades up to a thickness of 25.4mm.

A revamping concept has been developed with ThyssenKrupp Steel which has been adapted to the planned short shutdown periods and blocks of shutdown periods to avoid further shutdowns.

This modernisation is a systematic continuation of ThyssenKrupp Steel's strategy to ensure that the Beeckerwerth hot strip mill is always up-to-date with state-of-the-art equipment, with the aim of satifying customer requirements.

Commissioning of the first coiler unit has been scheduled for December 2007.

SMS Demag – Germany
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Email: bettina.altenkamp@sms-group.com
Website: www.sms-group.com

Expansion doubles conditioned laboratory space

▲ *The completed expansion at Plastics Technology Laboratories, USA*

Plastics Technology Laboratories Inc (PTLI), USA, has completed a major expansion which has more than doubled its conditioned laboratory space and added extensive capabilities to the company's full service plastics, elastomers, composites, and film testing services.

The new laboratory capabilities include additions to physical, mechanical, analytical, rheological, electrical, optical, flammability and weathering test services.

The company's new machining laboratory with CNC machining, bridgeport and lathe capabilities can provide machined specimens from virtually any type of parent form, including extruded sheet, rod, tube or profile, composite fabrication, thermoformed or injection moulded part.

PTLI's wet chemistry laboratory allows the company to conduct testing including acid digestion/void content (ASTM D2734), chemical compatibility (ASTM D543, ISO 4599, UL) at elevated temperatures and sealed atmosphere exposure, retention of properties after surface application or immersion, and hydrolytic stability testing.

The company has also created new laboratories for weathering, flammability testing, and tribology (the science of surface technology, friction, lubrication, and wear).

Plastics Technology Laboratories, Inc – USA
Fax: +1 413 499 2339
Email: ptli@ptli.com
Website: www.ptli.com

Management complete Davis-Standard buy out

Davis-Standard has been bought out by its management and an investor group, led by Hamilton Robinson LLC, a Stamford, US-based private equity firm.

The acquisition supports Davis-Standard's strategy to extend its global converting and extrusion systems businesses, as well as the Chemtura Corporation's decision to divest of a non-core business.

The business will continue to be led by the existing Davis-Standard management team and the company's financial strength will be preserved under the new capital structure.

Davis-Standard, LLC, has facilities in Pawcatuck, Conn; Somerville, NJ; Fulton, NY; Germany and the UK.

Davis-Standard LLC – USA
Fax: +1 860 599 9686
Email: swhewell@davis-standard.com
Website: www.davis-standard.com

New advisory board chairman

Dutch company DSM has appointed Professor Bert Meijer as chairman of its new Scientific Advisory Board.

The creation of the advisory body is in line with the company's Open Innovation policy. The other members of the advisory board will be internationally recognised leading experts in fields that are important to DSM, such as biotechnology, nutrition, material sciences, chemistry and process technology.

Professor Meijer is a distinguished University Professor of Molecular Sciences at the Eindhoven University of Technology.

He received his PhD in organic chemistry from the University of Groningen, and has held various positions in both industry and academia. Having worked as a research scientist in molecular materials at Philips Research Laboratories in Eindhoven, he joined DSM Research in 1989 as head of the 'New Materials' department, a position he held until 1992, when he became Full Professor of Organic Chemistry at the Eindhoven University of Technology.

In 2004 he was appointed to his current professorship. Professor Meijer is an acclaimed scientist who has won several prestigious national and international awards.

DSM – Holland
Email: media.relations@dsm.com
Fax: +31 45 5740680
Website: www.dsm.com

Innovative – that's FIB

At the heart of award-winning FIB's business lies the production of heat treatment lines for the steel wire industry, where the company is one of the world's leading suppliers.

Having just collected the Brussels Export Award for 2006, FIB's range of products in this field includes continuous or batch heat treatment installations, galvanising lines with wiping systems and oil tempering lines.

Wires processed on its installations go on to become, among others, tyre cord, springs, lift and crane cables, dry clean hangers, nails and piano wire.

The company's policy of continually researching new and innovative technologies has led to the development of dynamic wiping which allows fine and accurate control of the quantity of zinc on the wire.

Continuous galvanising lines have to run at higher and higher speeds and the control of the zinc coating was becoming a critical challenge parameter to master.

FIB – Belgium
Fax: +32 2 376 37 11
Email: info@fib.be
Website: www.fib.be

Leoni's strong sales

Leoni AG, Germany, has reported a rise in sales of 35 per cent in the first nine months of 2006, compared with the same period last year.

The jump is partly due to new large-scale orders for the company's wiring systems division from customers in the automotive and commercial vehicle industries. At their peak, these orders amount to more than €400 million.

The company's wire and cable division also made strong gains with sales growing by some 67 per cent, to €815 million. Studer Draht-und Kabelwerk AG, the Switzerland-based special cables company acquired at the end of July 2006, also contributed to the success. With Studer, Leoni AG will expand its position in the market for industrial and transport engineering cables. The company also acquired NBG Fiber-Optic GmbH, Austria, in October 2006.

Leoni AG – Germany
Fax: +49 911 2023 231
Email: info@leoni.com
Website: www.leoni.com

Rothe Erde orders a further ring rolling machine

▲ *Rothe Erde manufactures large-sized anti-friction bearings*

SMS Eumuco GmbH, Germany, has received an order from Rothe Erde GmbH, part of ThyssenKrupp Technologies, Germany, for the supply of a further ring rolling machine for its manufacturing works in Dortmund.

Rothe Erde is a major producer of large-sized anti-friction bearings, such as ball joints and roller-bearing slewing rings, wire-race bearings and seamless-rolled rings of steel and non-ferrous metals.

The company will use the new radial-axial ring rolling machine (type RAW 63(80)/63(80)-1250/450) to expand its existing production capacities, to incorporate a planned product range of rings weighing up to around 250 kg.

The maximum dimensions of rings produced by the machine are 1,250mm ring outside diameter and 450mm ring height.

The new ring rolling machine will form an integral part of a completely new production line, which will be the fourth production facility for rings in Dortmund, Germany.

At its Dortmund works and at the Rotek subsidiary works in the USA, the company operates a total of three ring blank presses and four ring rolling machines from SMS Eumuco.

A further ring rolling machine of size RAW 200(250)/200(250)-5500/630 is currently being built, for ring production in the Chinese manufacturing works of XREM, belonging to Rothe Erde, in Xuzhou, China.

SMS Eumuco GmbH – Germany
Fax: +49 214 734 1000
Email: info@sms-eumuco.de
Website: www.sms-eumuco.de

Rothe Erde GmbH – Germany
Fax: +49 231 186 2500
Email: rotheerde@thyssenkrupp.com
Website: www.rotheerde.com

6,000km network

Alcatel is to install a new 6,000km optical transport network in Kazakhstan after Kazakhtelecom JSC, the leading service provider in the country, selected the French company to supply the solution to triple play service delivery, including enhanced high-speed Internet access and evolution to IPTV (Internet protocol television).

The network will increase the capacity and extend the reach of Kazakhtelecom's existing infrastructure.

The €5m project is scheduled for completion in the first quarter of 2007. The new network will be the longest backbone network to be rolled-out in Central Asia, covering around 133 districts, 10 regional and 14 local departments.

Alcatel – France
Email: pressnews@alcatel.com
Website: www.alcatel.com

Largest deal yet for Nexans

Nexans is doubling its presence in the Asia-Pacific area by buying out Australian company Olex for A$515m (€310 million).

The purchase of Olex – the cable industry leader in the Australasia region – is the largest deal yet by Nexans.

Olex employs 910 people and has an annual revenue of €330 million from three manufacturing sites in Tottenham and Lilydale in Australia, and in New Plymouth, New Zealand. They also have a dozen sales offices in Australia, New Zealand, Singapore and China.

The company's activities are divided between markets for cables for power network infrastructure (33%), speciality cables for industry such as mining (24%), and cables for the building sector, both energy and telecom (43%).

"This acquisition is in line with our strategy to expand in the Asia-Pacific area, a fast-growing area, and strengthens the geographical rebalancing of our Group," said Gérard Hauser, Nexans' Chairman and CEO.

This transaction is subject to the approval of the Australian authorities.

Nexans Deutschland Industries GmbH & Co KG – Germany
Fax: +49 511 676 3777
Email: info@nexans.com
Website: www.nexans.de

Three more join up for Fastener Tech 07

Three more groups are now on board for Fastener Tech™ '07 to be held 25-28th June in Rosemont, Chicago.

Billed as the 'All Fastener Industry Event in the Heart of Fastener Industry', the exhibition will provide educational value for fastener manufacturers, distributors and users.

New to the show is the ASM Heat Treating Society, the Chicago Metal Finishers Institute (CMFI) and Distributor's Link magazine.

Fastener Tech™ '07 – USA
Fax: +1 330 864 5298
Email: info@fastenertech.com
Website: www.fastenertech.com

And the WCMA's top award goes to . . .

The Wire & Cable Manufacturers' Alliance (WCMA) has created a new industry award, in addition to its annual Distinguished Career Award. Through the new award – the Industry Leadership Award – WCMA will recognise an individual who clearly demonstrates a past, present, and future ability to lead a company and contribute significantly to the industry.

George Graeber, former president and COO of Belden CDT, has been selected for the award.

Mr Graeber, who has also received the organisation's Charles Scott Distinguished Career Award, personifies an industry executive who has selflessly guided numerous careers while holding management and executive leadership posts at companies such as Brand Rex, Montrose, Manhattan Cable, Anixter, and Cable Design Technologies.

He was also a moderator of the 2006 Executive Panel Session at the IWCS/Focus Conference and Exhibition.

WCMA – Wire & Cable Manufacturers' Alliance – USA
Email: mrcdm@snet.net

at a glance . . .

DSM, Netherlands, has announced an operating profit of €209m for the third quarter of 2006 – a fall of some €9m from the same period in 2005.

However, operating profit from continuing operations for the whole of the first nine months of 2006 was €649m, up €42m from the first nine months of 2005. Net profit for the same period was €458m, an increase of €43m.

In the Dow Jones Sustainability World Index, published in September 2006, DSM topped the list for the chemical industry sector – the third year in a row that the company has received the accolade.

◆ ◆ ◆

German company ZWEZ-Chemie GmbH has established and applied an Environmental Management System in accordance with the requirements of DIN EN ISO 14001:2005 with respect to the following scope of supply – development, production and marketing of chemical products for metal-surface treatment and associated waste management.

The fulfilment of the standard was verified by an Environmental Audit. The Certificate was certified by GCE GlobalCert GmbH, Gosheim in October.

◆ ◆ ◆

NLMK AG (Novolipetsk Iron and Steel Works), of Russia, has commissioned SMS Demag, Germany, to modernise the finishing train for the hot strip mill 2000 at Lipetsk Works.

This includes the complete renovation of the entry and exit guides on the stands, the work-roll cooling system, loopers as well as all requisite utility systems. New installations include an inter-stand cooling system and a roll gap cooling system.

◆ ◆ ◆

For German company Altana AG, a good operating performance in the third quarter and the acquisition of the Eckart Group has contributed to a 23 per cent increase in sales over the same period as last year.

Pre-tax earnings (EBT) rose by 22 per cent to €648 million.

◆ ◆ ◆

The world's first credit control solution to automatically check the ongoing creditworthiness of clients is now available – thanks to UK firms Topaz and CreditScorer.

Nextrom delivers another fibre draw tower

Nextrom, Finland, has announced the installation and start-up of its latest fibre drawing tower technology at Jiangsu Alpha Information Technology Co Ltd, China.

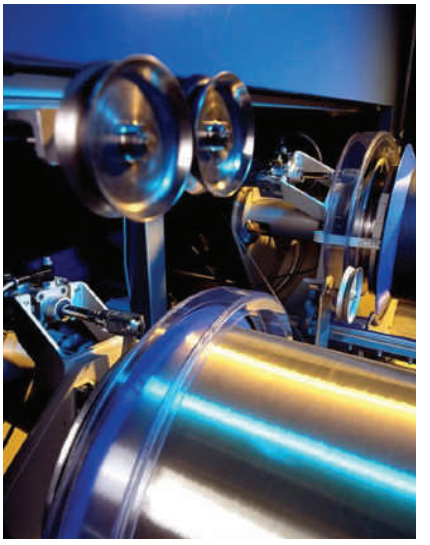
The 26 metre dual sided tower features a graphite induction furnace, high speed transferable dual winding, and wet on wet coating application, which is both easier to use and more space efficient than wet on dry coaters.

The preform feeding design allows for easy loading of preforms over two metres long and, depending upon target line speeds, the added fibre cooling space reduces or eliminates the need for costly helium cooling.

During commissioning and early production on the new lines, Alpha reported high yield rates. The lines were commissioned at high drawing speeds up to 1,600 metres per minute, and the combination of high yield and speed are key to Alpha's low cost, high-volume fibre manufacture.

The tower represents a continuation of the Alpha-Nextrom partnership, which began in 2003 when Alpha started fibre manufacturing. To date, Nextrom has delivered to Alpha eight fibre draw lines and nine proof testers.

In China, Nextrom has over 35 fibre draw lines and 50 proof testers in operation, and has delivered around 160 fibre draw lines worldwide. The company's high yield draw towers are designed for large preforms up to 200mm in diameter and 2.5 metres long, at speeds over 1,600 m/min.



▲ *Close detail of the fibre take-up*

Existing draw towers can be upgraded to increase preform size and speed, or to include dual take-up.

Nextrom OY – Finland
Fax: +358 9 5025 3003
Email: info@nextrom.com
Website: www.nextrom.com

Borouge feasibility study on expansion into base chemicals in Middle East and Asia-Pacific

Borouge, Singapore, provider of plastics solutions for customers throughout the Middle East and Asia-Pacific, has announced the launch of a study to examine the feasibility of a major new expansion of its petrochemical complex in Ruwais, Abu Dhabi, to produce and market base chemicals.

Based on benzene and propane feedstock supplied by Borouge's joint venture co-owner, Adnoc, the project will include world scale propane dehydrogenation and cumene-phenol plants, as well as several other downstream units.

The study is expected to be completed towards the end of 2007, with start up around 2012. The potential expansion would complement the company's planned Borouge 2 polymer project.

Once fully operational, the expanded Ruwais petrochemical complex would be one of the largest plastics and chemicals production complexes in the world, strategically situated to access most major world markets. The proposed complex would produce an extensive and diversified range of chemicals, and introduce new value chains and speciality products to the United Arab Emirates.

Harri Bucht, CEO, Abu Dhabi Polymers Company (Borouge), said: "Expansion into base chemicals is a natural move for Borouge to make as we continue to grow. It capitalises on our existing production assets and our feedstock position as well as the strengths of our owners Adnoc and Borealis."

Borouge Pte Ltd – Singapore
Email: info@borouge.com
Fax: +65 6377 1233
Website: www.borouge.com

Customers benefit from merger

Vitelec Electronics, part of Emerson Connectivity Solutions, is merging with Chelmsford-based Midwest Microwave International Ltd, a leading supplier of low loss RF cable assemblies and microwave components. The merger follows Emerson's recent acquisition of Midwest Microwave, of Illinois, and will provide large scale benefits to customers both in the UK and Europe.

Supplying an extensive range of standard and custom low loss cable assemblies, together with microwave components including attenuators, power dividers, couplers, terminations, precision connectors and adaptors, Midwest's product offering combines perfectly with Vitelec's high-quality range of RF cables and connectors. As well as the clear synergies between the product ranges, Vitelec will also be relocating to Midwest's expanded Chelmsford facility, bringing increased capacity and development of custom solutions.

Customers of the new combined Connectivity Solutions will benefit in a number of areas. Indeed, the new business will provide a wider RF product offering, all supported by a world-class manufacturing and assembly facility, together with a sophisticated European warehouse and logistics operation.

Vitelec Electronics Ltd – UK
Fax: +44 1384 843421
Email: sales@vitelec.co.uk • **Website**: www.vitelec.co.uk

New marketing manager

The Eraser Company – manufacturers of wire, cable and tube processing equipment – has appointed Laura Prattico as Marketing Manager. She will be responsible for marketing initiatives both domestically and abroad.

The Eraser Company – USA
Fax: +1 315 454 3090
Email: lprattico@eraser.com
Website: www.eraser.com

▲ *Laura Prattico*

New deal for wire drawing lubricant distribution

Ajex & Turner, India, produces wire drawing dies and cold heading dies, in PCD, natural diamond, and tungsten carbide from 10 micron to 150mm.

The company serves customers in the die and mould industry, as well as producers of fasteners, ceramics, glass, and steel wire and cable.

The company also manufactures die polishing products and equipment for the in-house polishing and repairing of various types of dies, includes diamond lapping paste and needle files.

Ajex & Turner has recently entered into an agreement with Metalube UK, for the distribution of wire drawing lubricant for copper and aluminium in India, Sri Lanka, Nepal and Bhutan.

Ajex & Turner Wire Dies Co – India
Fax: +91 11 2745 2640
Email: ajex@ndf.vsnl.net.in
Website: www.ajexdiamond.com

Tausendene strömten zur wire China 2006

Sie kamen zu Tausenden . . . und waren nicht enttäuscht.

Insgesamt strömten 32.000 Fachbesucher – davon 3.500 aus mehr als 80 Ländern – auf das Shanghai New International Expo Center für die 2. wire & Tube China, die vom 25. bis 28. September 2006 stattfand.

Auf 40.000 qm Ausstellungsfläche – ein Zuwachs um 14.000 qm gegenüber 2004 – war diese Veranstaltung wirklich gut darauf eingestellt, die Technologie von 923 renommierten Unternehmen aus China sowie aus der ganzen Welt zu präsentieren.

Die Veranstalter, The Shanghai Electric Cable Research Institute und die Messe Düsseldorf China Ltd. (wire China 2006) einerseits und Metallurgical Council of the China Council for the Promotion of International Trade und die Messe Düsseldorf China Ltd. (Tube China 2006) andererseits, konnten alle auf eine breite Unterstützung nationaler wie internationaler Verbände bauen.

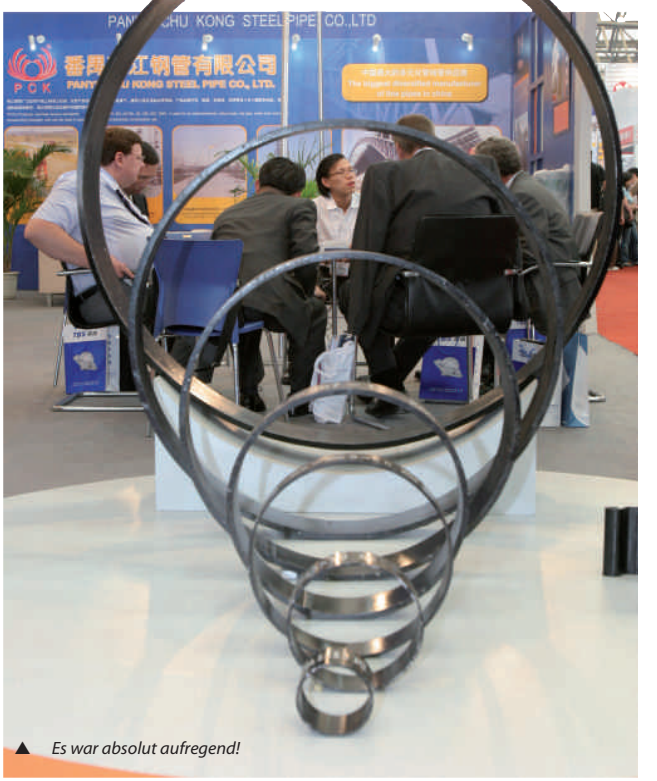
An der Ausstellung nahmen auch zahlreiche Delegationen von Messe Dusseldorf GmbH, aus China, Taiwan, Indien, Südkorea, Japan sowie aus unterschiedlichen Provinzen, Gemeinden und Regionen vom Festland-China, teil.

An der Eröffnungsfeier am Montag den 25. September nahmen Joachim Erwin, Oberbürgermeister von Düsseldorf; Lu Yansun, ehemaliger Vizeminister der Maschinenbauindustrie und Fachberater der China Machinery Industry Federation (CMIF); Liu Zhenjiang, stellvertretender Vorsitzender der China Iron & Steel Association (CISA); Zhang Chengjun, Vize-Direktor der staatlichen Überwachungs- und Verwaltungskommission der Landesregierung von Shanghai; Jian Heping, Vize-Direktor der Landesregierung von Shanghai zuständig für Außenwirtschaftsbeziehungen & Handelskommission, und Werner M. Dornscheidt, Präsident und CEO der Messe Düsseldorf GmbH, und viele andere berühmte Gäste teil, die das Band zerschnitten, um die offizielle Eröffnung zu zelebrieren.

Insgesamt präsentierten sich acht nationale Pavillions aus Österreich, Frankreich, Deutschland, Italien, Nordamerika, UK, Südkorea und Spanien auf dem großflächigen Gelände, während bei Tube China nationale Pavillions aus Deutschland, Österreich, UK, Nordamerika und Spanien in ähnlicher Form während 4 geschäftigen Tagen auf einer großen Fläche ausstellten.

Ihre ausgeprägte fachliche Kompetenz unterstrich die Veranstaltung neben der Präsentation aktueller Produkte und Technologien renommierter Branchengrößen in der Industrie auch mit dem neu eingeführten Sonderbereich Chemie, an dem die Draht- und Kabelhersteller relevanter internationaler Branchengrößen teilnahmen und dabei deren Produkte den in- und ausländischen Fachbesuchern präsentierten.

Das Errichten dieses Sonderbereichs bot den Facheinkäufern der Draht- und Kabelindustrie eine große Hilfe für bedarfsgerechte Angebotssondierung und Beschaffungsentscheidungen. Daneben umfasste der Ausstellerkreis knapp 60 Hersteller aus



▲ *Es war absolut aufregend!*

dem Bereich Federherstellungsmaschinen bzw. Maschinen für Verbindungselemente sowie ca. 40 Aussteller von Draht- und Kabelprodukten aus dem In- und Ausland.

Als besonderer Besuchermagnet erwiesen sich die insgesamt 22 messebegleitenden Foren und Fachseminare zu unterschiedlichsten Themen.

Viel Beachtung auch über die unmittelbaren Branchenkreise hinaus fanden die China Wire & Cable Industry Conference unter Federführung des Shanghai Electric Cable Research Institute sowie eine Leistungsschau zum Thema „30 Jahre Glasfaser-Kabeltechnik in China" – ein eindrucksvoller Beleg für die breite Anerkennung der wire & Tube China in den relevanten Industriezweigen.

All China-International Wire & Cable Industry Trade Fair und All China-International Tube and Pipe Industry Trade Fair

Shanghai Electric Cable Research Institute
Fax: +86 21 556 20467
Email: wilson@secri.com

Metallurgical Council of CCPIT
Fax: +86 10 652 33861
Email: majing@tubechina.com

Messe Düsseldorf China Ltd (Exhibitor & Visitor Service)
Fax: +86 21 6279 7337
Email: teddy@mdc.com.cn

Messe Düsseldorf China Ltd (Media Service)
Fax: +86 23 6292 7738
Email: alice@mdc.com.cn

Websites: www.wirechina.net oder www.tubechina.net

Mit Odeskabel den Erfolg feiern

Einen Grund zum Feiern gab es im September als Maillefer sich Odeskabel in der Ukraine anschloß, um das 20. Jubiläum von ATKT-100 zu feiern.

Das war der Name der ersten vollautomatischen Produktionseinheit für Telefonkabel, an der Maillefer (später Nokia Cable Machinery) als Partner teilnahm.

Die Anfangskapazität wurde für 1,2 Millionen Drahtkilometer pro Jahr in zwei Schichten berechnet.

Selbst heute nach 20 Jahren Betrieb, erbringt ATKT-100 die geplante Kapazität, um die aktuellen Anforderungen zu erfüllen.

Freunde, Kollegen und einige Ruheständler kamen aus Moskau und Finnland, um an dem Jubiläum teilzunehmen und waren stolz als sie sahen wie ihr Traum immer noch in Vollast arbeitet.

Zusammen haben sie die Projektphasen von ATKT-100 ins Gedächtnis zurückgerufen.

Die Herausforderung und Bürokratie der ehemaligen Sowjetunion, um die Genehmigung des Projekts und die Finanzierung zu erlangen, blieben bis heute unvergeßlich. Dank der vereinten Kräfte von Odeskabel und Maillefer verwirklichte sich ATKT-100.

Diese Jubiläumsfeier brachte die Vergangenheit und die Gegenwart

▲ *Antti-Jussi Rissanen von Maillefer und Dmitry Vasilievitch Iorgachov von Odeskabel (rechts)*

zusammen, sowie die der neuen Generation von Kabelherstellern des Unternehmens.

Odeskabel erweitert derzeit seine Märkte in der Ukraine und den umliegenden Ländern, da die Kabelprodukte in den Kommunikations- und Energiesektoren diversifiziert werden.

Wie den Geschäftsberichten entnommen werden kann, haben in den letzten fünf Jahren die Investitionen in der Produktion, Entwicklung und Modernisierung über 11 Millionen Euro erreicht.

Maillefer Extrusion – Die Schweiz
Fax: +41 21 691 21 43
Email: info@maillefer.net
Website: www.mailleferextrusion.com

▲ *Personal von gestern und heute treffen sich bei der 20th Jubiläumsfeier*

Vereinte Kräfte zahlen sich aus

Die Vereinigung der Kräfte stellt eine große Erfolgsgeschichte für Nashtec dar – den Sprössling eines Abkommens zwischen Nabaltec AG und Sherwin Alumina, einem amerikanischen Aluminiumoxid-Hersteller.

Oktober letzten Jahres begann die Produktion in deren ultramodernem neugebauten Werk in Corpus Christi, Texas, von feinst gefälltem Aluminiumhydroxid als halogenfreien, flammhemmenden Füllstoff (unter dem Warenzeichen Apyral®40CD).

Die in der Nähe des Sherwin Alumina Werk liegende Anlage schließt einen Elektrofilter, ein Trocknungs- und Filtersystem ein und hat eine jährliche Fertigungskapazität von 25.000 Tonnen.

Nabaltec AG – Deutschland
Fax: +49 9431 61557
Email: eviehauser@nabaltec.de
Website: www.nabaltec.de

Aim erreicht das Ziel mit einem Vertrag mit Soco

AIM, Inc, Hersteller von CNC-Drahtbiegemaschinen und Zubehör, gab bekannt, daß SOCO Machinery Ltd als alleiniger Vertreter und Servicepartner für Taiwan und Malaysia ausgewählt wurde.

SOCO Machinery Co Ltd – Taiwan
Fax: +886 4 2359 2386
Email: socomc@seed.net.tw
Website: www.soco.com.tw

Neue Anlage in Grand Rapids, Michigan

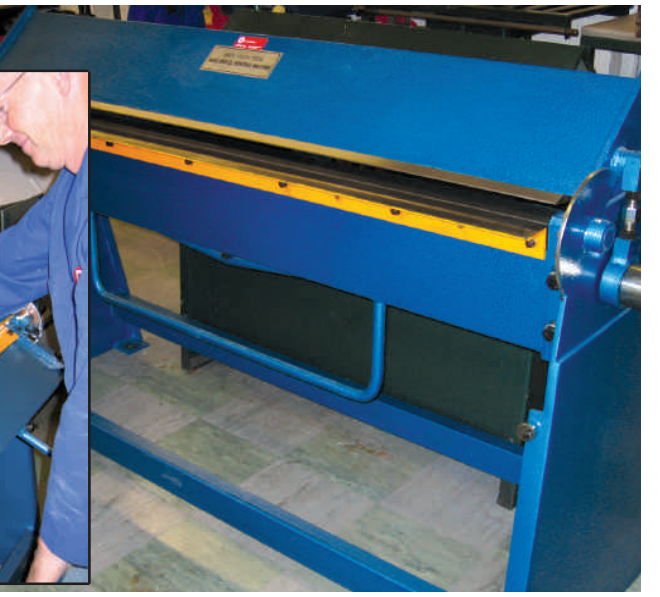
Interwire Products, USA, hat ein neues 80.000 Quadratfuß großes Werk in Grand Rapids, Michigan, eröffnet, um die Märkte von West-Pennsylvania, Ohio, Indiana und Michigan zu bedienen.

InterWire Group kann Eisen- und Nichteisenfederdraht, vergütete Sonderdrähte und -bänder sowie sekundär erforderliche Prozeßverfahren liefern, wie z. B. Flachstanzen, Formung, Platierung, Bekanten, Torsionsrichten und Schneiden.

Das Unternehmen hat seiner umfangreichen Produktlinie für die Federn- und OEM-Industrie auch neue Produkte hinzugefügt.

InterWire Group – USA
Fax: +1 914 273 6848
Website: www.interwiregroup.com

Maschine für RG gewinnbringend



▲ *Das neue Drehgelenk biegend bearbeitet und, hat verlassen, in Handlung*

Dank des Erwerbs einer neuen ausschwenkbaren Biegemaschine wird es RG Attachments aus Leicester nun ermöglicht, zahlreiche Formen aus großen Blechen zu bilden.

Diese Tätigkeit stand dem in der Belper Street ansässigen Unternehmen zuvor nicht zur Verfügung und man wird sicherlich bemerken, daß diese Maschine sich besonders für die Primärphase der Herstellung von Bandformer (tapeformer) eignet, in der große Bleche in kleinere umgängliche Teile geschnitten und geformt werden.

Durch diesen Erwerb können Bandformer höherer Qualität hergestellt werden, vor allem für größere Kabel. RG stellt seit über 25 Jahre Bandformer her, die von Kabelherstellern eingesetzt werden, um verschiedene Isoliermaterialien um Kabelkerne zu falten bevor sie in die Endumhüllungsphase treten.

Sie können mit vielen Isolierbändern benutzt werden, einschließlich Mylar, Papier und Metallfolien und eine breite Auswahl an Kabeln isolieren, wie z. B. LAN-, Starkstrom-, Telefon- und Kommunikationskabel sowie Fahrzeugleitungen.

Der Bandformer wird kurz vor dem Extruderkopf angeordnet und sichert Präzisionsfalten. Mit einer umfangreichen Auswahl an Modellen und Faltprofilen können die Bandformer entsprechend kundenspezifischer Anforderungen hergestellt werden.

RG Attachments – UK **Fax**: +44 116 261 2403
Email: info@rga.co.uk **Website**: www.rga.co.uk

Neuer Beiratsvorsitzender

Das holländische Unternehmen DSM hat Professor Bert Meijer zum Vorsitzenden seines neuen wissenschaftlichen Beirats ernannt.

Die Schaffung des Beirats steht im Einklang mit der Politik der offenen Innovation des Unternehmens. Die anderen Mitglieder des Beirats werden international anerkannte führende Fachexperten in Bereichen sein die für DSM wichtig sind, wie z. B. Biotechnologie, Ernährung, Werkstoffkunde, Chemie und Prozesstechnologie.

Professor Meijer ist ein herausragender Universitätsprofessor für Molekularkunde an der Universität für Technologie von Eindhoven. Er hat die Promotion in organischer Chemie an der Universität von Groningen erhalten und bekleidete verschiedene Positionen in der Industrie sowie in der Akademie.

Vorher als Forschungswissenschaftler im Molekularmaterialbereich in den Forschungslaboratorien von Philips in Eindhoven tätig, schloß er sich 1989 DSM Research an, als Leiter der Abteilung Neue Materialien, eine Position, die er bis 1992 bekleidete, als er ordentlicher Professor für Organische Chemie an der Universität der Technologie von Eindhoven wurde.

2004 wechselte er auf den derzeitigen Lehrstuhl. Seine weiteren akademischen Positionen sind: Assistenzprofessor für makromolekulare Chemie an der Radboud University in Nijmegen sowie anerkannter Gastprofessor dieses Jahres an der University of California in Santa Barbara, USA.

Professor Meijer ist ein Wissenschaftler, der mehrere prestigeträchtige nationale und internationale Preise erhielt, einschließlich der Goldmedalie der Royal Netherlands Chemical Society, den Spinoza-Preis der Netherlands Organisation for Scientific Research und letztens den American Chemical Society-Preis für Polymerchemie.

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Roblon expandiert im Mittleren Osten

Das in Dänemark ansässige Unternehmen Roblon hat sein weltweites Netzwerk durch die Ernennung eines neuen Vertreters im Mittleren Osten erweitert.

Emichem wurde als Vertreter für Roblon Industrial Fiber und der Tochtergesellschaft Roblon Engineering, in Kuwait, Oman, Bahrain, Jordanien, Saudi-Arabien und den Vereinigten Arabischen Emiraten ernannt.

Die beiden Divisionen von Roblon verfügen nun über fast 60 Vertreter, die in 60 Ländern tätig sind.

Die zwei unabhängigen Divisionen arbeiten auch partnerschaftlich um gemeinsame Lösungen anzubieten, die sowohl Kabelmaschinen wie Materialien für die Kabelherstellungsindustrie einschließen.

Emichem, deren Hauptsitz in den Vereinigten Arabischen Emiraten ist, wird von Shabih Rizwan Khan und Dawar Azmi geleitet.

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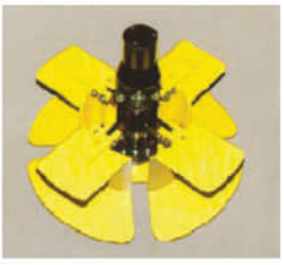
Cables rationally coiled and packed



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Выставка wire China 2006 собрала тысячи посетителей

Тысячи людей пришли на выставку… и не были разочарованы!

На прошедшей 25-28 сентября в шанхайском Новом международном выставочном центре Второй выставке wire & Tube China побывало 32000 специалистов, из которых 3500 приехали из более чем 80 стран мира. Выставочная площадь, составившая 40 тысяч кв. м (на 14 тысяч кв. м больше, чем в 2004 году), была полностью подготовлена под экспозиции всех 923 известных китайских и зарубежных компаний, собравшихся для демонстрации своих технических достижений.

Организаторы выставки wire China 2006 – Шанхайский научно-исследовательский институт электрокабельной промышленности и компания «Мессе Дюссельдорф Чайна лтд» (Messe Düsseldorf China Ltd), и Tube China 2006 – Комитет металлургической промышленности при Китайском совете по содействию международной торговле и «Мессе Дюссельдорф Чайна лтд», получили широкую поддержку зарубежных и отечественных организаций. На выставке побывали представители «Мессе Дюссельдорф гмбх» (Messe Düsseldorf GmbH), делегаты из Китая, Тайваня, Индии, Южной Кореи, Японии, а также посетители из различных провинций, городов и районов континентальной части Китая.

На церемонии официального открытия выставки, прошедшей в понедельник 25 сентября, вместе с другими почётными гостями ленточку разрезали мэр Дюссельдорфа Иоахим Эрвин (Joachim Erwin), бывший заместитель министра машиностроения и специальный советник Федерации китайских машиностроителей (CMIF) Лу Яньсунь (Lu Yansun), вице-председатель Китайской ассоциации черной металлургии (CISA) Лю Чжэньцзян (Liu Zhenjiang), заместитель директора государственной контрольно-административной комиссии по материальным ресурсам муниципалитета Шанхая Чжан Чэнжунь (Zhang Chengjun), заместитель директора Шанхайской муниципальной комиссии по внешнеэкономическим связям и торговле Цзян Хэпин (Jian Heping), президент и главный исполнительный директор компании «Мессе Дюссельдорф гмбх» Вернер М. Дорншайдт (Werner M. Dornscheidt).

На выставочной площади разместилось восемь павильонов для компаний из Австрии, Франции, Германии, Италии, Северной Америки, Великобритании, Южной Кореи и Испании, а на выставке Tube China весьма напряжённо все четыре дня функционировали национальные павильоны для участников из Германии, Австрии, Великобритании, Северной Америки и Испании. Помимо демонстрации новой продукции и технологических новинок известных марок, высокий профессионализм выставки был подтверждён открытием новой «Химической зоны», на экспозиции которой известные мировые производители проводных и кабельных материалов смогли показать свою продукцию деловым посетителям из Китая и других стран.

Организация этой специальной выставочной зоны существенно облегчила профессиональным закупщикам, занятым в проволочно-кабельной промышленности, задачу установления контактов и осуществления закупок в соответствии со своими требованиями. Среди её посетителей

▲ *Действительно, очень привлекательно!*

были также представители почти 60 китайских и зарубежных производителей оборудования для выпуска пружин и крепежных изделий и 40 производителей проволочно-кабельной продукции. Во время выставки было проведено 22 форума и технических семинара по самым разным вопросам, в которых приняло участие немало специалистов.

Одновременно с выставкой были проведены такие мероприятия, как отраслевая конференция China Wire & Cable Industry, организованная Шанхайским научно-исследовательским институтом электрокабельной промышленности, и выставка достижений китайской оптоволоконной и кабельной промышленности (30 Years of Optical Fiber and Cable Industry in China), которые также привлекли большое внимание специалистов проволочно-кабельной и других отраслей, что свидетельствует о широком признании и одобрении выставки wire & Tube China представителями отрасли. Результаты проведения этой выставки дают основания надеяться, что третья всекитайская и международная объединённая выставка-ярмарка All China – International Wire & Cable Industry и All China – International Tube and Pipe Industry, которая пройдёт в Шанхае с 23-го по 26-е сентября 2008 года, будет ещё успешнее.

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Празднование успеха вместе с «Одескабелем»

В сентябре этого года компания «Мэйллефер» (Maillefer) и украинское ОАО «Одескабель» отпраздновали 20-летие АТКТ-100.

Такое название получил первый в своем роде полностью автоматизированный технологический комплекс по производству телефонных кабелей, партнером при создании которого также стала компания «Мэйллефер» (в то время – «Нокия кейбл машинери» (Nokia Cable Machinery)). Начальная расчетная мощность комплекса составляла 1,2 млн. км кабеля в год при двухсменном режиме работы. Даже сегодня, спустя 20 лет, АТКТ-100 работает в режиме проектной мощности и обеспечивает текущие потребности заказчиков.

В празднованиях приняли участие друзья, коллеги и некоторые пенсионеры, прибывшие из Москвы и Финляндии с гордым сознанием того, что их предприятие продолжает успешно функционировать. Вместе они вспоминали, как планировалось строительство АТКТ-100.

Навсегда осталась в памяти история преодоления трудностей и инерции бюрократической машины бывшего Советского Союза на пути утверждения и финансирования проекта. Именно благодаря совместным усилиям «Одескабеля» и компании «Мэйллефер» АТКТ-100 превратился из мечты в реальность.

На празднике встретились бывшие и нынешние работники предприятия в окружении представителей нового поколения производителей кабелей.

«Одескабель» расширяет рынки сбыта на Украине и в соседних с нею странах, осваивая производство коммуникационных и силовых кабелей. Согласно отчётам компании, объем инвестиций в производство, опытно-конструкторские работы и модернизацию за последние пять лет превысил 11 млн. евро.

▲ *Бывшие и нынешние работники предприятия на праздновании его 20-летнего юбилея*

▲ *Антти-Юсси Риссанен (Antti-Jussi Rissanen) из компании «Мэйллефер» и Дмитрий Васильевич Иоргачёв из «Одескабеля» (справа)*

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«Роблон» расширяет свое присутствие на Ближнем Востоке

Назначение представителя в странах Ближнего Востока – очередной шаг датской компании «Роблон» (Roblon) по расширению своего мирового присутствия. Представлять «Роблон индастриал файбер» (Roblon Industrial Fiber) и её сестринскую компанию «Роблон инжиниринг» (Roblon Engineering) в Кувейте, Омане, Бахрейне, Иордании, Саудовской Аравии и Объединённых Арабских Эмиратах будет компания «Эмикем» (Emichem). Теперь у обоих подразделений «Роблон» почти 60 представителей в 60 странах мира.

«Роблон индастриал файбер» специализируется на разработке и производстве высокотехнологичных промышленных волокон, включая усиливающие элементы из стеклянного и арамидного волокна, пряжу, ленту и рипкорд со стандартными и водоблокирующими свойствами. Специализируясь также на поставках продукции для морских нефтепромыслов, компания имеет сертификаты соответствия требованиям стандартов ИСО 9001 (управление качеством) и ИСО 14001 (защита окружающей среды).

«Роблон инжиниринг» занимается разработкой и производством обвязочного, связывающего, натяжного и смоточного оборудования. Устройства обвязки позволяют выполнять обвязку кабелей промышленной пряжей с высокой степенью точности и регулируемым натяжением. Компания поставляет 24 модели обвязочных устройств с различными скоростями вращения, шагом скрутки и регулируемым уровнем натяжения. Оба независимых подразделения в рамках партнерских отношений также разрабатывают совместные технические решения, включая оборудование для производства кабелей и материалы для кабельной промышленности. «Роблон груп», которой в следующем году исполняется 50 лет, находится в городе Фредериксхавн на севере Дании. Компанию «Эмикем», штаб-квартира которой находится в Объединённых Арабских Эмиратах, возглавляют Шаби Ризван Хан (Shabih Rizwan Khan) и Давар Азми (Dawar Azmi).

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Web-страница: www.roblon.com

Совместные усилия приносят свои плоды

Объединение усилий стало основой большого успеха компании «Нэштек» (Nashtec) – детища союза между компанией «Набалтек АГ» (Nabaltec AG) и американским производителем глинозёма «Шервин алюмина» (Sherwin Alumina).

В октябре прошлого года на новом суперсовременном предприятии, расположенном в г. Корпус-Кристи (шт. Техас), было начато производство методом тонкого осаждения гидроксида алюминия, который может использоваться в качестве безгалогенного, не поддерживающего горения наполнителя (зарегистрированная торговая марка Apyral®40CD). Новое предприятие, находящееся по соседству с заводом компании «Шервин алюмина», оснащено установкой для осаждения и системой сушки и фильтрования и способно ежегодно производить до 25 тысяч тонн товарной продукции.

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Новый станок – большая удача для «Ар-джи»

Благодаря приобретению нового поворотного гибочного станка компания «Ар-джи аттэчментс» (RG Attachments) из Лестера сможет выпускать разнообразные профили из металлических листов большой площади. Эта задача ранее была неразрешима для компании с Белпер Стрит, которая теперь сможет оценить, что новый станок окажется весьма полезным на начальных этапах производства лентоформующих машин, на которых большие листы металла требуется нарезать на более мелкие и удобные в обработке части.

Новый станок позволит выпускать лентоформующие машины более высокого качества, особенно для кабелей большего диаметра. Компания «Ар-джи» уже более 25 лет выпускает лентоформующие машины, которые используются в кабельном производстве для покрытия кабельных жил изоляционным материалом перед их заключением в оболочку. Лентоформующие машины могут использоваться со многими изоляционными лентами, включая «Майлар», бумажную и металлизированную фольгу. Они также могут применяться при изготовлении изоляции для широкого спектра кабельных изделий, включая кабели для ЛВС, силовые кабели, телефонные кабели, кабели связи и автомобильные кабели.

Лентоформующие машины устанавливаются непосредственно перед головкой экструдера и обеспечивают прецизионно выполненные сгибы. Номенклатура выпускаемых устройств включает большой выбор различных моделей для различных гибочных профилей, а их производство осуществляется в точном соответствии с требованиями заказчика.

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Слияние, выгодное клиентам

Компания «Вителек электроникс» (Vitelec Electronics), входящая в состав «Эмерсон коннективити солюшнс» (Emerson Connectivity Solutions), объединяется с компанией «Мидуэст майкроуэйв интернэшнл лтд» (Midwest Microwave International Ltd) из г. Хелмсфорда – ведущим поставщиком высокочастотных кабельных узлов с малой потерей мощности и компонентов для микроволновых систем. Слияние компаний, которое должно завершиться к концу этого года, осуществляется вслед за недавним приобретением компанией «Эмерсон» фирмы «Мидуэст майкроуэйв» (Midwest Microwave) из шт. Иллинойс и должно принести немалые выгоды клиентам как в Великобритании, так и в Европе.

Высококачественные ВЧ кабели и разъёмы «Вителек» прекрасно дополняют предлагаемый компанией «Мидуэст» ассортимент стандартных и специализированных кабельных узлов с малой потерей мощности, а также различных микроволновых компонентов типа аттенюаторов, делителей мощности, коммутационных устройств, схем оконечной нагрузки, прецизионных соединительных узлов и адаптеров.

Помимо очевидных преимуществ взаимного дополнения ассортимента выпускаемой продукции, перевод производственных мощностей «Вителек» на новые площади завода компании «Мидуэст» в Хелмсфорде также увеличит эффективность разработки и объем выпуска индивидуальных решений. Клиенты новой, объединенной «Коннективити солюшнс» выиграют с нескольких точек зрения. Безусловно, новое предприятие сможет предложить более широкий выбор высокочастотных компонентов, производимых и собираемых на предприятии мирового класса и поставляемых разветвлённой европейской сетью складирования и доставки. Это позволит значительно повысить качество обслуживания и ещё раз продемонстрировать перспективные планы работы компании «Эмерсон» на рынках Великобритании и других европейских стран.

Проект объединения двух действующих компаний находится на последних стадиях реализации, и процесс слияния предполагается завершить в течение последнего квартала 2006 года. В течение этого периода клиенты будут постоянно получать текущую информацию о ходе объединения. Кроме того, до специального уведомления им рекомендуется продолжать обращаться в подразделение «Вителек» в Дадли.

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Сделка с «СОКО»: точный выбор «Эйм»

Компания «Эйм, инк» (AIM, Inc), производитель проволочно-гибочных станков с ЧПУ и комплектующих деталей, недавно объявила о своём выборе компании «СОКО машинери лтд» (SOCO Machinery Ltd) в качестве эксклюзивного представителя и сервисного агента на Тайване и в Малайзии. Компания «СОКО» будет заниматься обработкой всех запросов, сбытом, а также сможет проводить демонстрационные показы продукции заказчикам в своём подразделении в Тайчжуне (Тайвань).

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Web-страница: www.soco.com.tw

Новое предприятие в Гранд-Рапидс (шт. Мичиган)

Американская компания «Интеруайр продактс» (Interwire Products) открыла новое предприятие в Гранд-Рапидс (шт. Мичиган) площадью 80 000 кв. фут. для обслуживания западных районов Пенсильвании, штатов Огайо, Индиана и Мичиган. Строительство нового здания в дополнение к уже имеющимся восьми центрам распределения увеличило общую площадь складов компании на территории США до 400 000 кв. фут.

Группа компаний «Интеруайр» занимается поставками пружинной проволоки из чёрных и цветных металлов, проволоки и полосовой стали особой закалки, а также предоставлением таких вторичных услуг, как рихтовка, профилирование, плакирование, обжатие, устранение скрутки и резка. Компания расширила пакет предложений за счет новых видов продукции для производства пружин и комплектующего оборудования.

«Интеруайр груп» (США)
Факс: +1 914 273 6848 **Web-страница**: www.interwiregroup.com

Des milliers de personnes se rassemblent à wire China 2006

Ils sont arrivés par milliers . . . et ils ne sont pas restés déçus!

Un total de 32 000 visiteurs, dont 3 500 provenant de plus de 80 pays, sont arrivés au nouveau centre international des expositions de Shanghaï pour la deuxième foire de wire & Tube China qui s'est tenue du 25 au 28 septembre 2006.

Grâce à une surface d'exposition de 40 000m2, 14 000m2 plus qu'en 2004, tout était prêt pour les 923 entreprises connues tant en Chine que dans le reste du monde pour exposer leur technologie.

Les organisateurs, le Shanghai Electric Cable Research Institute et Messe Düsseldorf China Ltd (wire China 2006) d'un côté, et le Conseil Métallurgique du Conseil pour la Promotion du Commerce International de Chine et Messe Düsseldorf China Ltd (Tube China 2006) de l'autre, ont reçu un grand support des associations étrangères et nationales.

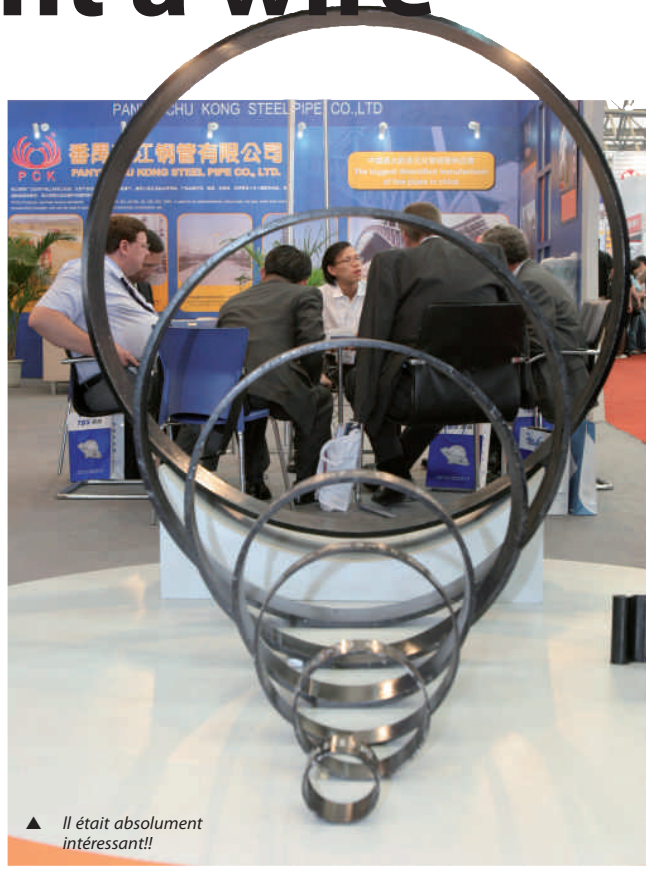
Un grand nombre de délégués de Messe Düsseldorf GmbH, de Chine, Taïwan, Inde, Corée du sud, Japon, ainsi que des déléguées provenant de diverses provinces, municipalités et régions de Chine ont participé à l'exposition.

À la cérémonie d'ouverture célébrée lundi 25 septembre ont participé Joachim Edwin, maire de Düsseldorf, Lu Yansun, ex vice-ministre de l'industrie de fabrication des équipements et conseiller spécial de China Machinery Industry Federation (CMIF); Liu Zhenjiang, vice-président de l'Association China Iron & Steel Association (CISA); Zhang Chengjun, vice-directeur de la Commission de Supervision et Administration des Biens d'État du Gouvernement Municipal de Shaghaï; Jian Heping, vice-directeur de la Commission Municipale des Relations Économiques et du Commerce Extérieur de Shangaï et Werner M. Dornscheidt, président et président-directeur général de Messe Düsseldorf GmbH, parmi plusieurs autres invités distingués qui ont coupé le ruban pour marquer l'ouverture officielle.

Huit pavillons représentant l'Autriche, la France, l'Allemagne, l'Amérique du nord, le Royaume Uni, la Corée du sud et l'Espagne ont occupé des surfaces d'exposition étendues, alors qu'à la foire Tube China, des pavillons occupés par des pays comme l'Allemagne, l'Autriche, le Royaume-Uni, l'Amérique du nord et l'Espagne ont également réalisé une exposition similaire de la durée de quatre jours.

Outre l'exposition des derniers produits et des technologies de marques industrielles fameuses, l'exposition a également accentué son caractère professionnel en lançant une nouvelle Zone Chimique à laquelle ont participé des fabricants de matériaux pour câbles et fils réputés à un niveau international en exposant leurs produits aux visiteurs nationaux et étrangers.

L'organisation de la zone spécialisée a considérablement aidé les acquéreurs professionnels du secteur du câble et du fil à effectuer les visites et les achats en fonction de leurs nécessités. Presque 60 fabricants d'équipements pour ressorts et dispositifs



▲ *Il était absolument intéressant!!*

de fixation et 40 fabricants de produits pour fils et câbles provenant de la Chine et de l'étranger ont également participé à l'événement, et 22 forums et séminaires techniques ont eu lieu, couvrant une vaste gamme de sujets et thèmes et en attirant encore plus de visiteurs professionnels.

La conférence China Wire & Cable Industry, un événement industriel important organisé pour l'Institut de Recherche des Câbles Électriques de Shanghaï, et l'exposition "30 ans de l'industrie de la fibre optique et du câble en Chine", se sont tenus en même temps que la foire, en attirant considérablement les professionnels du secteur et d'autres secteurs, ce qui reflète également l'ample reconnaissance et l'approbation de wire & Tube China de la part des acteurs de l'industrie.

All China – International Wire & Cable Industry Trade Fair et All China – International Tube and Pipe Industry Trade Fair

Shanghai Electric Cable Research Institute
Fax: +86 21 556 20467
Email: wilson@secri.com

Metallurgical Council of CCPIT
Fax: +86 10 652 33861
Email: majing@tubechina.com

Messe Düsseldorf China Ltd (Exhibitor & Visitor Service)
Fax: +86 21 6279 7337
Email: teddy@mdc.com.cn

Messe Düsseldorf China Ltd (Media Service)
Fax: +86 23 6292 7738
Email: alice@mdc.com.cn

Websites: www.wirechina.net o www.tubechina.net

Meillefer célèbre son succès avec Odeskabel

En septembre Maillefer s'est unie à Odeskabel en Ukraine pour célébrer le 20ème anniversaire de ATKT-100.

C'est le nom donné à la première unité de production de câbles téléphoniques de ce genre, entièrement automatique, dans laquelle Maillefer (auparavant Nokia Cable Machinery) a participé en tant que partenaire.

La capacité de production initiale calculée était de 1,2 million de kilomètres de câbles par an dans deux postes.

Même aujourd'hui, après 20 ans d'exploitation, ATKT-100 fonctionne selon la capacité prévue pour répondre aux exigences actuelles.

Les amis, les collègues et quelques retraités ont voyagés de Moscou en Finlande pour participer aux célébrations et exprimer leur fierté en voyant que leur rêve est encore une réalité. Ensemble ils ont évoqué les phases de planification de l'unité ATKT-100.

Les défis et la bureaucratie de l'ancienne Union soviétique pour obtenir l'approbation du projet et le financement se sont démontrés mémorables. L'unité ATKT-100 s'est traduite en réalité grâce aux efforts combinés de Odeskabel et Maillefer.

L'anniversaire a uni le passé et le présent, y compris la nouvelle

▲ *Antti-Jussi Rissanen de Maillefer et Dmitry Vasilievitch Iorgachov de Odeskabel (à droite)*

génération d'équipements pour la production de câbles de la société.

La société Odeskabel est actuellement en plein essor en Ukraine et dans les pays environnants grâce à la diversification de ses produits pour câbles dans les secteurs de la communication et de l'énergie.

D'après les rapports de la société, les investissements dans la production, dans le développement et dans la modernisation au cours des cinq dernières années ont dépassé 11 millions d'euros.

Maillefer Extrusion – Suisse
Fax: +41 21 691 21 43
Email: info@maillefer.net
Website: www.mailleferextrusion.com

▲ *L'ancien personnel et le personnel actuel participent à la célébration du 20ème anniversaire de la société*

La collaboration récompense

La collaboration s'est révélée un grand succès dans le temps pour Nashtec – branche d'une alliance entre Nabaltec AG et le producteur américain d'aluminium Sherwin Alumina.

En octobre dernier les sociétés ont démarré la production de leur nouvelle usine ultramoderne réalisée à Corpus Christi, en Texas, dédiée à la production d'hydroxyde d'aluminium en particules fines précipité comme le matériau de bourrage ignifuge sans halogène (marque de fabrique enregistrée Apyral®40CD).

L'installation, située à proximité de Sherwin Alumina, comprend un séparateur électrostatique, un système de séchage et de filtrage, et présente une capacité de production annuelle de 25 000 tonnes.

Nabaltec AG – Allemagne
Fax: +49 9431 61557
Email: eviehauser@nabaltec.de
Website: www.nabaltec.de

Ken démissionne après 54 ans de service

Le directeur technique Ken Barker a démissionné après 54 ans de service chez Ormiston Wire, l'une des plus anciennes entreprises familiales au Royaume Uni.

Ken, qui s'est uni à Ormiston Wire après avoir complété le service militaire en 1952, a avancé graduellement dans la société jusqu'à occuper la position de Directeur Général après la retraite de John Ormiston.

▲ *Ken Barker démissionne après 54 ans*

En tant que Directeur technique il a dirigé et guidé l'expansion rapide de la société au milieu des années '70 lorsque Ormiston était le principal producteur de câbles d'acier inoxydable de petites dimensions sur le marché des yachts.

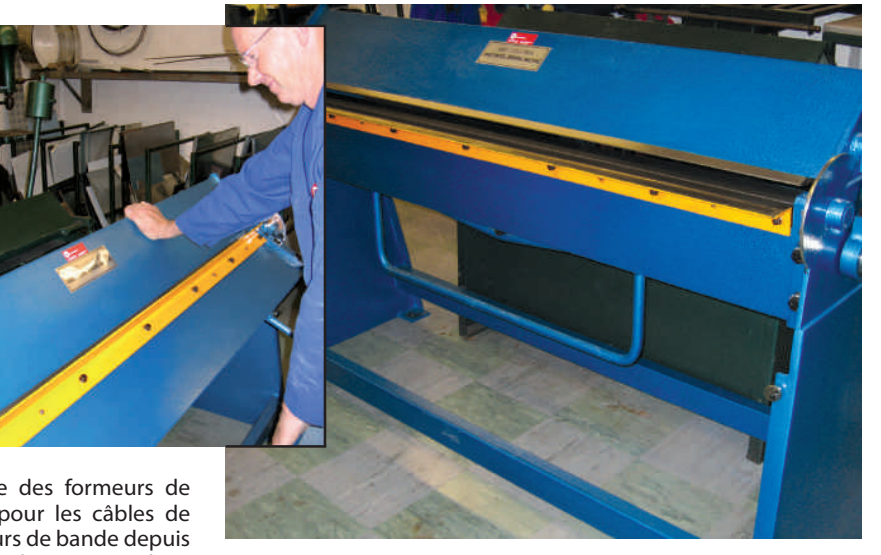
Il a également guidé le développement des matériaux mixtes, tels que les tresses en fil de cuivre étamé/Kevlar pour antennes.

Ormiston Wire – Royaume-Uni
Fax: +44 208 569 8601
Email: info@ormiston-wire.co.uk
Website: www.ormiston-wire.co.uk

Nouvelle machine améliorant la production de RG

Le rachat d'une nouvelle plieuse pivotante permettra à la société RG Attachments de Leicester de réaliser des tôles de grandes dimensions avec des profils différents.

La nouvelle machine consentira de couper et de réaliser des tôles de grandes dimensions en pièces plus petites et maniables, opération impossible à effectuer auparavant dans les établissements de Belper Street de la société et qui s'avérera particulièrement utile durant les phases initiales de la production des formeurs de bandes (tapeformer).



▲ *Le nouveau pivot courbant la machine et, gauche, l'action*

Le rachat permettra également de produire des formeurs de bandes de qualité supérieure, notamment pour les câbles de dimensions supérieurs. RG produit des formeurs de bande depuis 25 ans pour les fabricants de câbles. Ces produits sont utilisés pour plier différents types de matériaux isolants autour des âmes des câbles avant la phase finale d'application du revêtement.

Les formeurs de bande peuvent être utilisés avec plusieurs types de bandes d'isolement tels que: Mylar, papier, et feuilles de métal. Ils sont conçus pour l'isolement d'une vaste gamme de câbles, y compris les câbles LAN, les câbles d'énergie, les câbles téléphoniques et de communication et les câbles pour le secteur automobile.

Les formeurs de bande sont positionnés avant la tête d'extrusion et garantissent des plis précis. Grâce à la vaste gamme de modèles et de profils de pliage, les formeurs de bande peuvent être réalisés en fonction des exigences du client.

RG Attachments – Royaume-Uni **Fax**: +44 0116 261 2403
Email: info@rga.co.uk **Website**: www.rga.co.uk

Président pour la nouvelle commission consultative

La société hollandaise DSM a désigné le professeur Bert Meijer président de sa nouvelle commission scientifique consultative.

La création de ce nouvel organisme de consultation est en ligne avec la politique innovante et ouverte de la société. Les autres membres de la commission consultative seront des experts reconnus à un niveau international dans des secteurs importants pour DSM tels que la biotechnologie, la nutrition, les sciences des matériaux, la chimie et les technologies des processus.

Le professeur Meijer, âgé de 51 ans, est un professeur universitaire distingué de Sciences Moléculaires à l'Université de Technologie de Eindhoven.

Il est titulaire d'une maîtrise en chimique organique de l'Université de Groningen et il a occupé différentes positions au sein de l'industrie et du monde académique. Ayant travaillé en tant que chercheur dans le domaine des matériaux moléculaires dans le Laboratoire de Recherches de Eindhoven, il a été employé par DSM Research en 1989 comme chef de département "Nouveaux Matériaux", position qu'il a occupée jusqu'à 1992, lorsqu'il entra comme professeur titulaire de chimique organique à l'Université de Technologie de Eindhoven.

En 2004 il fut nommé pour le professorat actuel. Les autres charges académiques de Meijer comprennent la position de professeur adjoint de Chimie Macromoléculaire à l'Université de Nijmegen et de professeur invité de l'Université de Californie de Santa Barbara aux États-Unis à partir de l'année en cours.

Le professeur Meijer est un chercheur acclamé qui a reçu de prestigieux prix internationaux et nationaux y compris la médaille d'or de la Société Royale de Chimie Hollandaise, le prix Spinoza de l'Organisme de Recherche Scientifique Hollandais et, plus récemment, le prix de Chimie des Polymères de la Société Chimique Américaine.

DSM – L'Hollande **Fax**: +31 45 5740680
Email: media.relations@dsm.com **Website**: www.dsm.com

Roblon s'étend au Moyen Orient

La société danoise Roblon a étendu davantage son réseau global avec la désignation d'un nouveau représentant au Moyen Orient.

Emichem a été nommé représentant de Roblon Industrial Fiber et de sa division Roblon Engineering au Koweït, en Oman, au Bahreïn, en Jordanie, en Arabie Saoudite et aux Emirats Arabes Unis. Les deux divisions de Roblon disposent ainsi de presque 60 représentants dans 60 pays.

Les deux divisions indépendantes, travaillent ensemble pour offrir des solutions communes en ce qui concerne les équipements pour câbles et les matériaux pour le secteur de la fabrication de câbles.

Le siège du groupe Roblon, qui célébrera son 50ème anniversaire l'an prochain, est situé à Frederikshavn, au Danemark du nord.

Emichem, dont le siège est situé aux Emirats Arabes Unis, est géré par les responsables MM. Shabih Rizwan et Dawar Azmi.

Roblon – Le Danemark
Fax: +45 96 20 33 99
Email: info@roblon.com
Website: www.roblon.com

Migliaia di persone affollano wire China 2006

Sono giunti a migliaia: e non sono rimasti delusi!

32.000 visitatori, di cui 3.500 provenienti da oltre 80 paesi, sono giunti al nuovo centro internazionale delle esposizioni di Shanghai per la seconda fiera di wire & Tube China che si è tenuta dal 25 al 28 settembre 2006.

Con una superficie espositiva di 40.000m², 14.000m² più del 2004, tutto era pronto per le 923 imprese, conosciute sia in Cina che nel resto del mondo, per esporre la loro tecnologia.

Gli organizzatori, lo Shanghai Electric Cable Research Institute e Messe Düsseldorf China Ltd (wire China 2006) da un lato, e il Consiglio Metallurgico del Consiglio Cinese per la Promozione del Commercio Internazionale e Messe Düsseldorf China Ltd (Tube China 2006) dall'altro, hanno ricevuto un notevole supporto dalle associazioni straniere e nazionali.

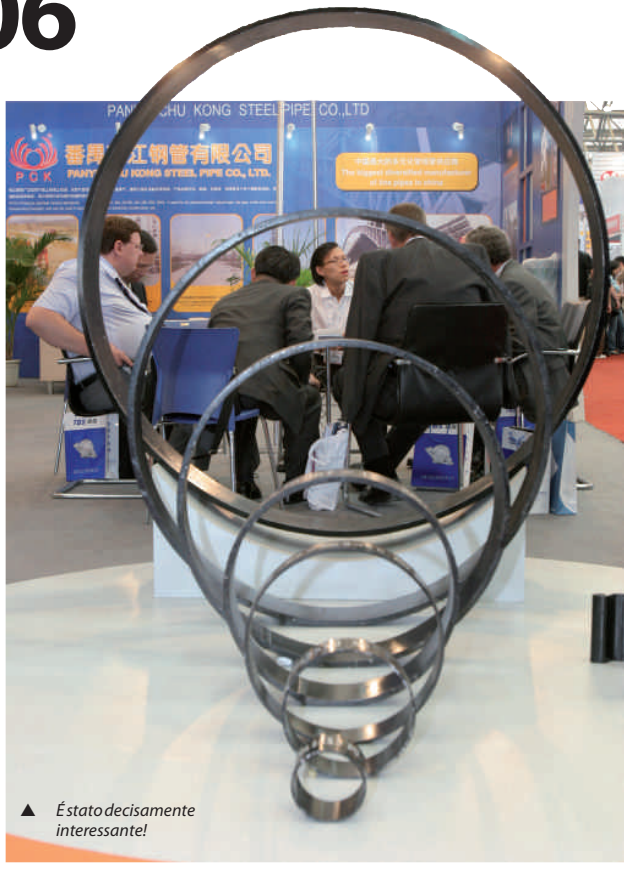
Ha partecipato all'esposizione un gran numero di delegati di Messe Düsseldorf GmbH, dalla Cina, da Taiwan, dall'India, dalla Corea del sud, dal Giappone, nonché delegati provenienti da diverse province, comuni e regioni della Cina.

Alla cerimonia di apertura celebrata lunedì 25 settembre, hanno partecipato Joachim Edwin, sindaco di Düsseldorf, Lu Yansun, ex vice-ministro dell'industria della fabbricazione di equipaggiamenti e consulente esperto di China Machinery Industry Federation (CMIF); Liu Zhenjiang, vice-presidente dell'Associazione China Iron & Steel Association (CISA); Zhang Chengjun, vice-direttore della Commissione di Supervisione e Amministrazione dei beni statali del Governo Municipale di Shanghai; Jian Heping, vice-direttore della Commissione Municipale delle Relazioni Economiche e del Commercio Estero di Shanghai e Werner M. Dornscheidt, presidente e CEO di Messe Düsseldorf GmbH, oltre a numerosi altri distinti invitati che hanno segnato l'apertura ufficiale con il taglio del nastro.

Otto padiglioni rappresentanti Austria, Francia, Germania, Nordamerica, Regno Unito, Corea del sud e Spagna hanno occupato vaste superfici espositive, mentre alla fiera Tube China padiglioni occupati da paesi come la Germania, l'Austria, il Regno Unito, l'America del Nord e la Spagna hanno realizzato un'analoga esposizione della durata di quattro giorni.

Oltre all'esposizione dei recenti prodotti e tecnologie di famosi marchi industriali, l'esposizione ha anche sottolineato il proprio carattere professionale lanciando una nuova Zona Chimica, alla quale hanno partecipato fabbricanti di materiali per cavi e fili, rinomati a livello internazionale, esponendo i loro prodotti a visitatori nazionali e stranieri.

L'organizzazione della zona specializzata ha notevolmente aiutato gli acquirenti professionali del settore del cavo e del filo ad effettuare le visite e gli acquisti secondo le loro necessità. Inoltre, quasi 60 fabbricanti di equipaggiamenti per molle e dispositivi di fissaggio e 40 fabbricanti di prodotti per fili e cavi provenienti dalla Cina e dall'estero hanno partecipato all'evento



▲ *È stato decisamente interessante!*

e si sono tenuti 22 forum e seminari tecnici su svariati argomenti e temi e che attraggono ancora più visitatori del settore.

La conferenza China Wire & Cable Industry, un importante evento industriale organizzato dall'Istituto di Ricerca dei Cavi Elettrici di Shanghai, e l'esposizione "30 anni dell'industria della fibra ottica e del cavo in Cina" , si sono tenuti contemporaneamente all'esposizione, attirando grande attenzione sia all'interno del settore che fuori di esso, rispecchiando l'ampio riconoscimento e l'approvazione da parte dei membri dell'industria.

Vi sono ora grandi speranze che la 3a fiera campionaria All China – International Wire & Cable Industry Trade Fair e la fiera All China – International Tube and Pipe Industry Trade Fair che si terranno dal 23 al 26 settembre 2008 a Shanghai avranno un successo ancora maggiore.

All China – International Wire & Cable Industry Trade Fair e All China – International Tube and Pipe Industry Trade Fair

Shanghai Electric Cable Research Institute
Fax: +86 21 556 20467
Email: wilson@secri.com

Metallurgical Council of CCPIT
Fax: +86 10 652 33861
Email: majing@tubechina.com

Messe Düsseldorf China Ltd (Exhibitor & Visitor Service)
Fax: +86 21 6279 7337
Email: teddy@mdc.com.cn

Messe Düsseldorf China Ltd (Media Service)
Fax: +86 23 6292 7738
Email: alice@mdc.com.cn

Website: www.wirechina.net o www.tubechina.net

Meillefer celebra il suo successo con Odeskabel

In settembre Maillefer si è unita a Odeskabel in Ucraina per celebrare il 20º anniversario dell'unità ATKT-100.

E' il nome dato alla prima unità di produzione di cavi telefonici, completamente automatica, nella quale Maillefer (ex Nokia Cable Machinery) ha partecipato come partner.

La capacità produttiva iniziale calcolata era pari a 1,2 milioni di chilometri di cavo l'anno in due turni.

Anche oggi, dopo 20 anni di funzionamento, la ATKT-100 funziona secondo la capacità prevista per soddisfare le richieste correnti.

Amici, colleghi ed alcuni pensionati hanno viaggiato da Mosca alla Finlandia per assistere alle celebrazioni ed esprimere il loro profondo orgoglio nel vedere il loro sogno è ancora realtà. Insieme hanno evocato le fasi di pianificazione della ATKT-100.

Le sfide e la burocrazia della ex Unione Sovietica per ottenere l'approvazione ed il finanziamento del progetto si sono dimostrate memorabili.

È grazie agli sforzi congiunti di Odeskabel e Maillefer che la ATKT-100 è divenuta realtà.

L'anniversario ha unito il passato e il presente includendo la nuova generazione di macchine produttrici di cavi della società.

▲ *Antti-Jussi Rissanen di Maillefer e Dmitry Vasilievitch Iorgachov di Odeskabel (a destra)*

Odeskabel sta espandendo il proprio mercato in Ucraina e nei paesi circostanti con la diversificazione dei suoi prodotti per cavi nei settori della comunicazione e dell'energia.

Secondo i rapporti della società, gli investimenti nella produzione, nello sviluppo e nella modernizzazione durante gli ultimi cinque anni hanno superato gli 11 milioni di euro.

Maillefer Extrusion – Finlandia
Fax: +41 21 691 21 43
Email: info@maillefer.net
Website: www.mailleferextrusion.com

▲ *Il personale precedente e quello attuale partecipano alla celebrazione del 20° anniversario della società*

Roblon si espande in Medio Oriente

La società danese Roblon ha ulteriormente ampliato la propria rete globale con la designazione di un nuovo rappresentante in Medio Oriente.

Emichem è stato nominato rappresentante di Roblon Industrial Fiber e della sua divisione Roblon Engineering in Kuweit, Oman, Bahrein, Giordania, Arabia Saudita ed Emirati Arabi Uniti. Le due divisioni di Roblon dispongono inoltre di quasi 60 rappresentanti in 60 paesi.

Roblon Industrial Fiber è specializzata nello sviluppo e nella realizzazione di fibre tecniche industriali ad alta tecnologia comprendenti elementi di rinforzo in vetro e aramid, fili di legatura a tenuta d'acqua, nastri e corde di strappo. La società, specializzata anche nel settore dell'industria offshore, ha ottenuto la certificazione ISO 9001 (gestione di qualità) e ISO 14001 (gestione dell'ambiente).

Roblon Engineering sviluppa e produce equipaggiamenti di trecciatura, legatura, avvolgimento e svolgimento. Le trecciatrici sono progettate per avvolgere fili industriali attorno ad un cavo con elevata precisione e una tensione debitamente regolata. Sono disponibili fino a 24 posizioni con diverse velocità di rotazione, lunghezza, passo e livelli di tensione regolabili.

Le due divisioni indipendenti, funzionano assieme per offrire soluzioni comuni per quanto riguarda gli equipaggiamenti per cavi e materiali per il settore della fabbricazione di cavi.

Roblon – La Danimarca
Fax: +45 96 20 33 99
Email: info@roblon.com
Website: www.roblon.com

Aim ha raggiunto l'obiettivo firmando un accordo con Soco

AIM, Inc, produttore di piegatrici per filo e accessori, ha rivelato che la società SOCO Machinery Ltd è stata selezionata come rappresentante esclusivo e agenzia di servizi per Taiwan e la Malesia.

SOCO si occuperà delle richieste d'informazioni e delle vendite, e offrirà ai clienti delle dimostrazioni direttamente presso la loro sede di Taichung a Taiwan.

SOCO Machinery Co Ltd – Taiwan
Fax: +886 4 2359 2386
Email: socomc@seed.net.tw
Website: www.soco.com.tw

Nuova macchina migliora la produzione di RG

L'acquisizione della nuova piegatrice rotativa consentirà alla società RG Attachments di Leicester di realizzare lamiere di grandi dimensioni con profili diversi.

▲ *Il perno nuovo la macchina e, sinistro, nell'azione*

La nuova macchina permetterà di tagliare e realizzare lamiere di grandi dimensioni in pezzi più piccoli e maneggevoli, operazione prima impossibile negli stabilimenti di Belper Street della società, che si dimostrerà particolarmente utile durante le fasi iniziali della produzione di formatori di nastro (tapeformer).

L'acquisizione consentirà inoltre la produzione di formatori di nastro di qualità migliore, soprattutto per i cavi di grandi dimensioni. RG produce formatori di nastro da 25 anni per i fabbricanti di cavi. Tali prodotti sono utilizzati per piegare diversi tipi di materiali isolanti attorno ad anime di cavo prima della fase di applicazione del rivestimento finale.

I formatori di nastro possono essere utilizzati con numerosi tipi di nastro d'isolamento quali: Mylar, carta, e fogli metallici. Sono progettati per l'isolamento di una vasta gamma di cavi, fra cui i cavi LAN, i cavi di potenza, cavi telefonici, cavi di comunicazione, e cavi per il settore automobilistico.

Il formatore di nastro è posizionato proprio di fronte alla testa di estrusione e garantisce delle pieghe precise.

Grazie all'ampia gamma di modelli e di profili di piegatura, i formatori di nastro possono essere realizzati in base alle esigenze precise del cliente.

RG Attachments – Regno unito
Email: info@rga.co.uk
Fax: +44 116 261 2403
Website: www.rga.co.uk

Ken rassegna le dimissioni dopo 54 anni di servizio

Il direttore tecnico Ken Barker ha rassegnato le dimissioni dopo 54 anni di servizio presso la società Ormiston Wire, una delle più conosciute imprese familiari del Regno Unito.

▲ *Ken Barker si dimette dopo 54 anni*

Ken, che è entrato a far parte di Ormiston Wire dopo aver completato il servizio militare nel 1952, ha fatto carriera all'interno della società fino ad assumere l'incarico di direttore generale dopo il pensionamento di John Ormiston.

Come Direttore Tecnico ha diretto e guidato la rapida espansione della società a metà degli anni '70 quando Ormiston era il maggiore produttore di funi in acciaio inossidabile per il mercato delle imbarcazioni da diporto.

Ormiston Wire – Regno Unito
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Presidente per il nuovo comitato consultivo

La società olandese DSM ha designato il professore Bert Meijer presidente del suo nuovo comitato consultivo scientifico.

La creazione di questo nuovo organismo di consultazione è in linea con la politica innovativa e aperta della società. Gli altri membri del comitato consultativo saranno esperti riconosciuti a livello internazionale in settori importanti per DSM quali la biotecnologia, la nutrizione, le scienze dei materiali, la chimica e le tecnologie dei processi.

Il professore Meijer, dell'età di 51 anni, è un rinomato professore universitario di Scienze Molecolari all'Università di Tecnologia di Eindhoven.

Ha conseguito la laurea in chimica organica presso l'Università di Groningen e ha avuto diversi incarichi nell'industria e nel mondo accademico. Avendo collaborato come ricercatore nel campo dei materiali molecolari nel Laboratorio di Ricerca di Eindhoven, è stato impiegato da DSM Research nel 1989 come capo dipartimento "Nuovi Materiali", posizione che ha occupato fino al 1992, quando entrò come professore ordinario di chimica organica all'Istituto di Tecnologia di Eindhoven.

Nel 2004 gli fu assegnato l'attuale incarico. Gli altri incarichi accademici di Meijer comprendono la posizione di assistente di Chimica Macromolecolare presso l'Università di Nijmegen e di professore ospite dell'Università della California di Santa Barbara negli Stati Uniti a partire da quest'anno.

Il professore Meijer è un ricercatore che ha ricevuto prestigiosi premi internazionali e nazionali e la medaglia d'oro della Royal Netherlands Chemical Society, il premio Spinoza dell'organizzazione olandese per la ricerca scientifica, e più recentemente, il premio di Chimica dei Polimeri della Società Chimica Americana.

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Multitudinaria asistencia a wire China 2006

Llegan en tropel . . . ¡y quedan satisfechos!

32.000 visitantes, 3.500 de ellos procedentes de más de 80 países, llegaron al nuevo centro internacional de exposiciones de Shangai para acudir a la segunda celebración de wire & Tube China que tuvo lugar del 25 al 28 de septiembre 2006.

Con un área de exposiciones de 40.000m2, 14.000m2 más que en 2004, todo estaba listo para que las 923 conocidas empresas tanto de China como del resto del mundo hicieran alarde de su tecnología.

Los organizadores, el Instituto de Investigación de Cables Eléctricos de Shangai y Messe Düsseldorf China Ltd (para wire China 2006) por un lado, y el Consejo Metalúrgico del Consejo de China para la Promoción del Comercio Internacional y Messe Düsseldorf China Ltd (para Tube China 2006) por otro, recibieron gran apoyo de las asociaciones extranjeras y nacionales.

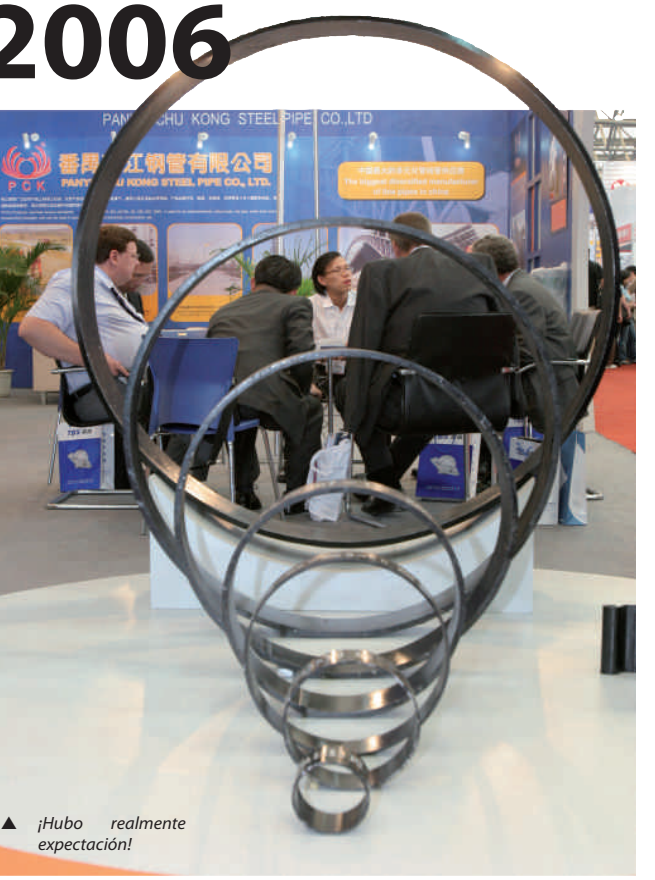
En la feria de muestra se congregaron un gran número de delegados de Messe Düsseldorf GmbH, de China, Taiwán, La India, Corea del Sur, Japón, además de delegados de varias provincias, municipios y regiones de China.

En la ceremonia de apertura celebrada el lunes 25 de septiembre se dieron cita Joachim Edwin, alcalde de Düsseldorf, Lu Yansun, ex vice ministro de la industria de la fabricación de maquinaria y asesor especial de la Federación China de la Industria de la Maquinaria (CMIF); Liu Zhenjiang, vice presidente de la Asociación China de Hierro y Acero (CISA); Zhang Chengjun, vice director de la Comisión de Supervisión y Administración de Bienes Estatales del Gobierno Municipal de Shangai; Jian Heping, vice director de la Comisión Municipal de Relaciones Económicas y de Comercio Exterior de Shangai y Werner M. Dornscheidt, presidente y CEO de Messe Düsseldorf GmbH, entre muchos otros distinguidos invitados, quien cortó la cinta que marcó el inicio oficial de la feria.

Ocho pabellones de Austria, Francia, Alemania, Italia, Norteamérica, Reino Unido, Corea del Sur y España ocuparon amplias zonas de exposición, mientras en Tube China, pabellones ocupados por países como Alemania, Austria, Reino Unido, Norteamérica y España expusieron igualmente su tecnología durante cuatro intensos días.

Además de escaparate para los últimos productos y tecnologías de famosas marcas industriales, la feria también puso de relieve su carácter profesional lanzando una Zona Química nueva, en la que participaron fabricantes de materiales para cables y alambres de reconocida fama internacional exponiendo sus productos a los visitantes nacionales y extranjeros.

La organización de la zona especializada ayudó mucho a los compradores del sector del cable y alambre a visitar y comprar según sus distintas necesidades. También asistieron al acontecimiento aproximadamente 60 fabricantes de máquinas de resortes y piezas de sujeción y 40 fabricantes de productos para cables y alambres tanto del país como del extranjero.



▲ *¡Hubo realmente expectación!*

Se celebraron 22 foros y seminarios técnicos que cubrieron un amplio abanico de temas y atrajeron más visitantes del sector.

La Conferencia China del Sector del Alambre y Cable, importante acontecimiento industrial organizado por el Instituto de Investigación de Cables Eléctricos de Shanghai, y la exposición de 30 años de logros en el sector de la fibra óptica y del cable en China, también fueron celebradas paralelamente a la feria de muestra, atrayendo fuertemente a los asistentes del sector y fuera de éste, lo que también refleja el amplio reconocimiento y aprobación de wire & Tube China por parte de los empleados del sector.

Las expectativas se han elevado incluso más para la 3ª All China – International Wire & Cable Industry Trade Fair, y All China – International Tube and Pipe Industry Trade Fair, que se celebrarán del 23 al 26 de septiembre de 2008 en Shangai.

All China – International Wire & Cable Industry Trade Fair, y All China – International Tube and Pipe Industry Trade Fair

Shanghai Electric Cable Research Institute
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Metallurgical Council of CCPIT
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Messe Düsseldorf China Ltd (Exhibitor & Visitor Service)
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Fax: +86 23 6292 7738
Email: alice@mdc.com.cn

Website: www.wirechina.net o www.tubechina.net

Meillefer celebra su éxito con Odeskabel

En septiembre Maillefer se unió a Odeskabel en Ucrania para celebrar el 20º aniversario de la ATKT-100.

Así se denominó la primera unidad de producción totalmente automática de cables de teléfono, en la que Maillefer (por aquel entonces Nokia Cable Machinery) participaba como socio.

La capacidad productiva inicial calculada era 1,2 millones de kilómetros de cable al año con dos turnos. Incluso hoy, después de 20 años de funcionamiento, la ATKT-100 funciona según la capacidad prevista respondiendo a las exigencias actuales.

Amigos, compañeros y algunos empleados jubilados viajaron desde Moscú y Finlandia para asistir a las celebraciones y expresar su más sincero orgullo al ver su sueño todavía en pleno funcionamiento. Juntos evocaron las fases de planificación de la ATKT-100.

Los desafíos y burocracia de la ex Unión Soviética que tuvieron que afrontar para obtener la aprobación y financiación del proyecto eran dignos de mención.

La ATKT-100 se hizo realidad gracias a los esfuerzos conjuntos de Odeskabel y Maillefer.

El aniversario aunó el pasado y el presente, que incluye la nueva

▲ *Antti-Jussi Rissanen de Maillefer y Dmitry Vasilievitch Iorgachov de Odeskabel (a la derecha)*

generación de máquinas productoras de cables de la compañía.

Odeskabel se está expandiendo por Ucrania y países circundantes a la vez que diversifica sus productos para cables en los sectores de la comunicación y energía. Según los informes de la compañía, las inversiones en producción, desarrollo y modernización en los últimos cinco años han superado los 11 millones de euros.

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▲ *La plantilla antigua y la actual participan en la celebración del 20º aniversario de la empresa*

Roblon se expande por Medio Oriente

La danesa Roblon ha expandido aún más su red global nombrando un nuevo representante en Medio Oriente.

Emichem ha sido nombrada representante tanto de Roblon Industrial Fiber como de su división Roblon Engineering en Kuwait, Omán, Bahrein, Jordania, Arabia Saudita y Emiratos Árabes Unidos.

Las dos divisiones de Roblon disponen así de unos 60 representantes en 60 países.

Roblon Industrial Fiber desarrolla y produce fibras industriales de alta tecnología entre las que cabe citar elementos de refuerzo de vidrio y de aramida, hilos de empalme estándares y bloqueadores de agua, cintas y cordones de rasgado. La sociedad, especialista también en el sector costa fuera, ha obtenido la certificación ISO 9001 (gestión de calidad) e ISO 14001 (gestión ambiental).

Roblon Engineering desarrolla y produce equipos de trenzado, atado, enrollado y desenrollado. Las trenzadoras pueden enrollar hilos industriales alrededor de un cable con alta precisión y con una tensión debidamente ajustada. Están disponibles hasta en 24 posiciones y con distintas velocidades de giro, longitudes de paso de hélice y tensiones ajustables.

Las dos divisiones, aunque independientes, colaboran mutuamente ofreciendo soluciones conjuntas tanto de maquinaria para cables como de materiales para el sector de la fabricación de cables.

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Aim acierta firmando un acuerdo con Soco

AIM, Inc, fabricante de dobladoras de alambre CNC y accesorios, ha revelado que SOCO Machinery Ltd ha sido seleccionada como representante exclusivo y agencia de servicios para Taiwán y Malasia.

SOCO se ocupará de todas las peticiones de información y de las ventas. Los clientes pueden asistir a demostraciones directamente en su sede de Taichung en Taiwán.

SOCO Machinery Co Ltd – Taiwán
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Una nueva máquina mejora la producción de RG

La adquisición de una nueva dobladora giratoria permitirá a la compañía RG Attachments de Leicester conformar chapas de grandes dimensiones en distintos perfiles.

▲ *La nueva máquina de la inclinación giratoria y, dejó, en la acción*

La nueva máquina permitirá cortar y conformar chapas de grandes dimensiones en piezas más pequeñas y manejables, una operación que anteriormente no era posible realizar en los establecimientos de la compañía situados en Belper Street y que resultará ser particularmente útil en los estadios iniciales de la producción de de formadores de cinta (tapeformer).

La nueva adquisición permitirá producir formadores de cinta de calidad más alta, especialmente los utilizados para cables de grandes dimensiones.

Desde hace más de 25 años, RG produce formadores de cinta usados por los fabricantes de cables para doblar diferentes tipos de materiales aislantes alrededor de los núcleos de los cables antes del estadio final de aplicación de la cubierta.

Los formadores de cinta fabricados por la compañía pueden ser usados con muchos tipos cintas de aislamiento como Mylar, papel y láminas de metal, y permiten aislar una amplia gama de cables, incluidos los cables LAN, de energía, telefónicos, de comunicación y de automóviles.

El formador de cinta se posiciona antes del cabezal de la extrusora y garantiza doblados precisos. Gracias a la amplia gama de modelos y de perfiles de doblado, los formadores de cinta pueden ser fabricados según las exigencias precisas del cliente.

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Presidente para la nueva junta consultiva

La danesa DSM ha nombrado al profesor Bert Meijer presidente de su nueva Junta Consultiva Científica.

La creación de este nuevo organismo de consultoría sigue la política innovadora y abierta de la empresa. Los demás miembros de la junta consultiva serán expertos reconocidos internacionalmente en campos relevantes para DSM como el de biotecnología, nutrición, ciencia de los materiales, química y tecnología de procesos.

El profesor Meijer, de 51 años de edad, es un distinguido profesor universitario de Ciencias Moleculares en la Universidad de Tecnología de Eindhoven.

Se doctoró en química orgánica en la Universidad de Groningen y ha ocupado varios puestos tanto en la industria como en el mundo académico. Tras trabajar como investigador en el campo de los materiales moleculares en los Laboratorios de Investigación Philips de Eindhoven, fue contratado por DSM Research en 1989 como jefe del departamento de "Materiales Nuevos", cargo que conservó hasta 1992, cuando entró como profesor titular de química orgánica en la Universidad de Tecnología de Eindhoven.

En 2004 fue nombrado catedrático. Entre sus otros cargos académicos figuran los de profesor asociado de química macromolecular en la Universidad Radboud de Nijmegen y profesor visitante en la Universidad de California de Santa Bárbara en Estados Unidos a partir de este año.

El profesor Meijer es un aclamado científico que ha obtenido prestigiosos premios nacionales e internacionales, entre los que se pueden citar la medalla de oro de la Real Sociedad de Química Holandesa, el premio Spinoza de la Organización Holandesa de Investigación Científica y, más recientemente, el premio de química de los polímeros de la Sociedad Química Americana.

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Ken se retira tras 54 años de trabajo

El director técnico Ken Barker se ha jubilado después de 54 años de trabajo en Ormiston Wire, una de las empresas familiares más antiguas del Reino Unido.

▲ *Ken Barker se jubila tras 54 años de trabajo*

Ken, quien entró a formar parte de la empresa tras realizar el servicio militar en 1952, fue ascendiendo gradualmente en la empresa hasta llegar al puesto de director general después de jubilarse John Ormiston.

Como director técnico supervisó y dirigió la rápida expansión de la empresa a mediados de los '70 cuando Ormiston era el principal productor de cables de acero inoxidable de pequeño calibre en el mercado de la navegación a vela.

También impulsó el desarrollo de materiales mixtos como las trenzas de cobre estañado/Kevlar para antenas.

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Transatlantic Cable

The economy

Manufacturing slowdown threatens the five-year economic expansion in the US

"We are in a significant slowdown in factory activity," Richard DeKaser, chief economist at the banking group National City Corp (Cleveland) told *Bloomberg News* on 1st November.

"The slowdown in overall economic growth is taking a toll on the factory sector, and the reality of somewhat bloated inventories for certain goods is prompting a cutback in production."

The pessimism was prompted by the announcement by the Institute for Supply Management that its factory index for October fell to 51.2, lower than forecast, from September's 52.9.

A reading higher than 50 signals expansion. A measure of prices paid for raw materials dropped to the lowest in more than four years.

The ISM report provided strong evidence that manufacturing in the US expanded at the slowest pace in more than three years in October. Moreover, the Commerce Department said that construction spending had gone into an unexpected six-month decline because of a deteriorating housing market. Construction had been a steady support to the long-lived economic expansion.

The manufacturing institute's new orders index, which accounts for about one-third of the total index, fell to 52.1, the lowest since May 2005, from 54.2 in September.

The production index, a measure of work being performed, dropped to 51.9, the lowest since April 2003, from 56.1 in September. The supplier deliveries gauge, which covers how long it takes companies to receive goods, dropped to 50.2 from 54.1. The October reading was the lowest since June 2003.

If manufacturers are imparting not much spark to the economy, they themselves may take comfort in the drop in the ISM index of prices they are paying for raw materials. The index fell to 47 from 61 in September, which suggests that inflation pressures are subsiding. The measure was down 26 points in a two-month period, the biggest back-to-back drop since these gauges were instituted in 1948.

Another bright spot is that fewer factories are paying more for crude oil, which may make it less likely they will need to raise prices on finished goods.

On 20th October the price of a barrel of crude oil traded on the New York Mercantile Exchange fell to $56.82, the lowest level for the year to that point.

In brief . . .

- **Caterpillar Inc**, the world's largest maker of earthmoving equipment, plans to cut some jobs at American factories and build more plants in China and India to counter the expected US economic slowdown that will curtail its sales in the home market in 2007. Chief executive officer James Owens said on 3rd November that Caterpillar (Peoria, Illinois) faces challenges in the US housing market and in North America on-highway truck engine sales.

  The company is a bellwether of the US economy because its sales span industries from mining to oil to construction. After Caterpillar on 20th October predicted weakening sales ahead, the company's stock took its biggest drop in 19 years.

Spotlight on: Nucor Corp

Rumors of a Nucor bid for ThyssenKrupp excite the German market

On 26th October, speculation that Nucor Corp, the Charlotte, North Carolina-based steel minimill, would offer to buy ThyssenKrupp AG caused the stock of Germany's largest steel maker to rise to its highest value in more than six years. ThyssenKrupp shares climbed 6.5%, in trading volume – almost twice the daily average for the year to that point. The shares also gained more than any other stock on Germany's benchmark DAX index for the day.

A Nucor takeover of ThyssenKrupp probably would be the steel industry's

Transatlantic Cable

second-largest for 2006, behind the $38.3 billion purchase by Rotterdam-based Mittal Steel Co of Arcelor SA, of Luxembourg. Thom Rose, of *Bloomberg News*, noted that the purchase of Germany's biggest steel maker would almost double Nucor's production and add elevator and cement units to mills in 17 American states. Nucor is the second-largest US steel maker, behind Pittsburgh-based US Steel Corp.

The US-German combination would push Nucor to No 2 worldwide by production, behind Arcelor Mittal. Nucor and ThyssenKrupp produced a total of 34.9 million metric tonnes of crude steel in 2005, according to the Brussels-based International Iron and Steel Institute. Mittal's output was 63 million tonnes; Arcelor's, 46.7 million.

Nucor's chief executive officer Daniel DiMicco said in June 2006 that he wished to expand outside the US through partnerships. ThyssenKrupp CEO Ekkehard Schulz said in September that his company was looking to spend heavily on acquisitions as far away as Japan.

A Nucor-ThyssenKrupp merger would break a run of mergers and acquisitions involving companies from emerging economies, which account for six of the 10 biggest steel making nations. On 20th October, Mumbai-based Tata offered $7.56 billion for Corus Group Plc of the UK.

As many as 252 mergers and acquisitions worth a total of about $78 billion had either been completed or were pending toward the end of 2006. That compares with 219 deals worth less than $20 billion for all of 2005.

In other news of Nucor . . .

- On 6th October, Nucor Corp announced its selection of Memphis, Tennessee, as the site for a $230 million mill to produce steel for the automotive, heavy equipment, and steel service centre industries. The plant, scheduled to open in the first quarter of 2008, will have a rated capacity of 850,000 tonnes a year.

  Other new Nucor factories include a $150 million galvanised steel plant in Decatur, Alabama, and a $27 million facility in Utah. The company's metal shipments have almost doubled in the past five years, over which period Nucor has made a dozen acquisitions.

- On 1st November, Nucor announced that its wholly owned subsidiary Verco Decking Inc had completed the purchase of substantially all of the assets of Verco Manufacturing Co for a cash purchase price of approximately $180 million, subject to post-closing adjustments. Verco produces steel floor and roof decking at three locations in the western United States: Phoenix, Arizona; and Fontana and Antioch, California. Nucor's Vulcraft Group is the largest US manufacturer of steel deck. With the addition of the Verco facilities, Nucor's total annual deck capacity will exceed 500,000 tonnes.

Elsewhere in steel . . .

- Nihon Keizai reported that **Nippon Steel Corp**, Japan's largest steel maker, said it has been in talks with **Usinas Siderurgicas de Minas Gerais SA**, the No 2 Brazilian steel maker, on strengthening their ties. On 5th November the Tokyo newspaper said that Nippon Steel would take a 1.7 per cent stake in Belo Horizonte-based Usinas, and that the two companies may jointly build a new plant in Brazil. Nippon Steel owns a 14.4 per cent stake in **Nippon Usiminas**, which has a 19.4 per cent stake in the Brazilian steel maker. Nippon Steel spokesman told Mariko Yasu, of *Bloomberg News*, that, while nothing had been decided, "[We are] considering methods that will benefit us" by making links with Usinas stronger.

Telecom

Motorola fights for a piece of a large Indian phone contract

Motorola Inc is smarting over the decision by India's dominant mobile phone network Bharat Sanchar Nigam Ltd (BSNL) to exclude the American company from a huge expansion project.

Writing in the *Chicago Tribune* on 3rd November, Mike Hughlett reported that BSNL intends to more than double the capacity of its wireless phone network. "In doing so," he said, "the company is ordering roughly $5 billion worth of wireless equipment, a big contract in a spotty global phone equipment market."

Motorola, the world's second-largest cell phone-maker and also a significant producer of wireless equipment, bid for a share of that business. But BSNL passed over Motorola and ZTE to select Sweden's AB Ericsson and Finland's Nokia as its suppliers, on grounds that the losing bidders failed to meet 'technical specifications.'

Hughlett took note of speculation in the Indian press – denied, eventually, by BSNL – that the state-owned company had security concerns about ZTE and Motorola. ZTE is based in China, a regional rival of India's, and Motorola had planned to source some of its equipment from Huawei, another Chinese company.

A BSNL official told the *Economic Times* of India that his company's decision was prompted by 'major deviations from tender specifications in the case of Motorola and ZTE.' Motorola challenged this assertion, declaring that it 'responded positively' to all technical queries by BSNL and that at no point was it told that its bid was being dropped for technical reasons.

Motorola, which reportedly claims to have underbid Nokia, is not taking the rejection lying down. It promptly took its argument to court and on the 2nd November obtained an injunction from the Delhi High Court that temporarily stops BSNL from awarding the contracts. Another hearing was scheduled for 16th November.

Industry observers consulted by the Tribune consider it unlikely that Motorola will ultimately prevail, but they also doubt that a failure to capture any of the BSNL contract would hurt the American company's position in India. Unlike their counterparts in the US, wireless networks in India – where Motorola's phones sell very well – are not big phone retailers.

One stock analyst told Hughlett: "I don't think Motorola will be locked out of India because they have the hottest phones in the world."

- Motorola found itself involved in unpleasantness on another mobile phone front last year. In the spring, Russian authorities seized 167,000 Motorola phones destined for **Evroset**, Russia's largest mobile phone retailer, and declared them contraband. After several months in the Russian legal system, the matter was resolved when Russian authorities gave back 117,519 of the seized phones – about $15 million worth. The other roughly 50,000 phones were to have been destroyed.

  Motorola did not ask to be compensated for the lost phones, an indication of its grasp of the importance of the so-called BRIC countries – Brazil, Russia, India, China – which are home to the world's fastest-growing mobile phone markets. And the affair of the seized phones has not blunted Motorola's thrust into Russia. On 4th October, the company officially opened its newest flagship store, Red Square MOTO, in the famed GUM retail centre in Moscow.

  "Red Square MOTO is the first and most spectacular of a number of Motorola-branded stores planned for Russia," said Inga Churashova, general manager of Motorola Russia. "We're very excited about Motorola's future in Russia."

Iraq watch

No 1 engineering company Bechtel pulls up stakes in Iraq

The Bechtel Group of San Francisco is a force to be reckoned with. The sixth-largest privately owned company in the US is also the country's largest engineering firm.

Its mighty deeds include the subway system in its headquarters city; Hoover Dam (also known as Boulder Dam) on the Arizona-Nevada border; and a city for 200,000 people in the desert of Saudi Arabia. Bechtel's boast is that it will go anywhere and build anything. "[But] in Iraq," said *Los Angeles Times* staff writer David Streitfeld: "Bechtel met its match."

Under assignment from the US government Bechtel, in early 2003, took on a number of brick-and-mortar projects in Iraq. In late 2006 it declared its work there finished, saying that it had completed 97 of 99 projects for $2.3 billion, a total that includes its undisclosed fee.

The viability of the projects it leaves behind is a separate topic, but Streitfeld detailed the very considerable toll they took on Bechtel.

Transatlantic Cable

Fifty-two workers associated with Bechtel projects were killed, most of them Iraqi; 49 were wounded. The company recorded this toll at one project, in the southern city of Basra: the site security manager was murdered; the site manager resigned after receiving death threats; a senior engineer resigned after his daughter was kidnapped; 12 employees of the electrical-plumbing subcontractor were assassinated in their offices; and 11 employees of the concrete supplier were murdered. ("Bechtel calls it quits after more than three years in Iraq," 3rd November)

Cliff Mumm, who ran Bechtel's Iraq operation, told the *Times*: "We were told it would be a permissive environment. But to the horror of everyone, it never stabilised. It just went down, down, down, and to this day it continues to go down. I'm proud of what we did, but had law and order prevailed it would be a different situation."

In May 2003, when President George W Bush stood before a giant 'Mission Accomplished' sign aboard the USS Abraham Lincoln and declared the end of major combat operations in Iraq, a survey of Iraq's dilapidated electrical system showed 13 downed transmission towers. Four months later, the total had grown to 623. The deteriorating conditions outpaced Bechtel's rebuilding effort and eventually overtook it.

"The company expected Iraq to develop from an aid recipient to a customer," wrote Streitfeld. "The biggest US engineering firm would help one of the world's most distressed countries into the 21st Century."

It was not to be.

Latin America

Colombian leader: peso is too strong, hurting our exporters

President Alvaro Uribe of Colombia has expressed concern that his country's strengthening currency is making its manufacturers uncompetitive. From July through to October, the Colombian peso had gained 11.8% against the American dollar, the second-best performance against the greenback of all 70 currencies tracked by *Bloomberg News*.

"There is no doubt that the government is worried about the revaluation of the peso," President Uribe said on 5th November in Montevideo, Uruguay, where he was attending the 16th Ibero-American Summit meeting of leaders of 22 countries.

The manufacturing sector can make a strong effort to increase productivity and reduce costs, the Colombian leader said in an interview with Bloomberg reporters Carlos Rodriguez and Eliana Raszewski. But, he noted, "If this is not accompanied by a competitive exchange rate, they have serious difficulties in competing in international markets."

Colombia's trade surplus almost halved to $55 million in July from $103 million in May after the peso began to gain, according to the most recent reports on trade. President Uribe said Colombia and the US were expecting US congressional approval of a free trade accord on 22nd November which would boost his country's exports to the world's largest economy.

"The US Congress should consider that it is not giving [Colombia] a present with this accord," President Uribe said. "It should consider that it is a bilateral effort for both countries."

Immigrants to the US send money back to Latin America in record amounts

According to a report on money transfers by legal and illegal immigrants sponsored by a unit of the 47-nation Inter-American Development Bank, the remittances from the United States to Latin America in 2006 will reach more than $45 billion. That is 51% higher than the total only two years earlier.

Moreover, instead of originating from urban centres in four or five states, the money flows south from 48 of the 50 states – even those, like Mississippi and Pennsylvania that had very few Latin American immigrants only a few years ago. Montana and West Virginia were not surveyed because they have statistically negligible Latino populations.

About 75% of Latino immigrants surveyed for the study, on which the report is based, said they send money home regularly, up from some 60% in a similar survey conducted in 2004. This may reflect growth in the population of illegal immigrants, who accounted for about 40% of remitters in the recent survey (up from a third in 2004) and tend to send money home more often than others.

Writing in the *New York Times* for 19th October, Eduardo Porter noted that, "with immigration to the United States a regular part of the life cycle for large numbers of men and women in many parts of Latin America, sending money back to relatives at home has developed into a moral obligation."

Sergio Bendixen, a Miami pollster who surveyed some 2,500 immigrants for the survey, told the *Times*: "If you don't send money to your mother, you are a bad son. Remittances companies say this in their TV ads."

The *Times* article cited the reconstruction of New Orleans after Hurricane Katrina as an example of how immigrant populations coalesce around jobs in the US. Latino immigrants have flocked to New Orleans where another study found that, by last summer, they accounted for half the reconstruction force, with 54% of them working in the US illegally.

Porter noted an interesting, even poignant, aspect of this influx of Latino immigrant-workers into the sixth-poorest state in the union. "They, too, have begun to send money back. According to the [Inter-American Development Bank] survey, remittances to Latin America from Louisiana should top $200 million [in 2006], a 240% increase since 2004."

❉ Apparently, Latino immigrants in the US are influenced much more by family feeling than by political persuasion. Last spring, nationwide demonstrations were sparked by a House bill that would have made it a felony to be in the country

illegally. Activists seized on momentum from the protests and organised what they called Democracy Summer. They pledged to register 1 million new foreign-born voters by the mid-term election on 7th November and another 2 million before the Presidential contest in 2008. But, as of the end of October, organisers said they had signed up fewer than 150,000 people.

"People were waving signs – 'Today We March, Tomorrow We Vote' – but that may not be something that's literally tomorrow," Lionel Sosa, head of the Web-based non-profit Mexicans & Americans Thinking Together told the Associated Press (1st November). "It will be slow, but eventually everyone running for political office will understand that this is a vote to be reckoned with."

Of related interest . . .

- A draft of a final declaration by the leaders of 22 nations gathered on 3rd November in Montevideo, Uruguay, for the 16th Ibero-American Summit, included a statement protesting the US plan for a fence along the border with Mexico to keep out illegal immigrants. In late October, President George W Bush signed legislation approving the construction of the 700-mile security fence, an action promptly condemned by Mexico's government.

  Bush defends his decision as necessary to tighten control of the border. But Mexico asserts that the fence will do little to ease illegal entries and will likely increase deaths along the border.

  Speaking to reporters in Montevideo, President Oscar Arias of Costa Rica called the fence 'shameful' and said the money spent on it "would be better invested . . . by the poor neighbours of the south to educate our kids."

- Texas has started broadcasting live images of the US border on the Internet in a security programme that asks the public to report signs of illegal immigration and other suspicious activity. The test website www.texasborderwatch.com ('Securing the border for the people of Texas') went live on 3rd November with views from eight cameras and instructions for emailing information to the border patrol. Previously, the images had been available only to law enforcement officers and the landowners hosting the cameras.

  Yahoo!news reported that some civil rights groups have criticised the 'virtual border watch,' saying it will instill fear in border communities and could lead to fraudulent crime reports and racial profiling. This is a discredited policing method of detaining suspected lawbreakers on the basis of ethnicity.

Transatlantic Cable

The Northwest Passage

A storied polar sea route roils Canadian-American relations

The very term Northwest Passage recalls gripping history-book accounts of dozens of perilous expeditions – beginning in the mid-16th Century – to find a commercial sea route connecting the Atlantic and Pacific Oceans.

Eventually successful, the quest for a route through the Arctic Archipelago of Canada motivated much of the European exploration of both coasts of North America. Fortunately for international relations since 1851, the Arctic ice pack has prevented regular shipping through the passage, and forestalled pitched battle over its use.

Now, however, global warming is melting the ice pack. The Northwest Passage is becoming more navigable, for longer periods, and raising the prospect of a legal wrangle between Canada – undisputed owner of the passage – and the US that could complicate shipping by way of the route.

The subtitle of an article by Doug Struck, of the Washington Post Foreign Service, neatly summarises the issue: "US Asserts Free Use by All Ships; Canada Claims Jurisdiction."

The US contends that, like other such routes around the world, the Northwest Passage is an international strait with free passage for all. Claiming to be following a long-standing law of the sea that favours keeping straits free to all navigation, American officials want unimpeded movement of US ships.

Struck writes: "Canada counters that it has sole jurisdiction over the Northwest Passage and wants to enforce its own laws on ships in the Arctic waters.

Canadian officials argue that their authority over the myriad channels and straits that make up the legendary route from the Atlantic to the Pacific is the best way to minimise unsafe ships and accidental spills in the pristine North. ("Dispute Over Northwest Passage Revived," 6th November)

Moreover, a Canadian international law expert told the *Post* that, if foreign ships begin using the route, Canada will lose its claim of oversight.

The Canadian position has a champion in Paul Cellucci, the former US ambassador to Canada who, in late October, was quoted in Canadian newspapers as saying that it is "in the security interests of the US that [the passage] be under the control of Canada."

Cellucci's comments prompted the current US ambassador to Canada, David Wilkins, to re-state US insistence that the Northwest Passage is an international strait, open to all.

- The clash of US ambassadors over the terms of use of the Northwest Passage may portend another airing of the law of unintended consequences: the exposure to public scrutiny of an arrangement that was functioning fairly well under the radar. The Washington Post noted that the US and Canada have usually managed to finesse their occasional differences over the use of the route.

Canadians were incensed when Americans drove the reinforced oil tanker Manhattan through the Northwest Passage in 1969, and the icebreaker Polar Sea in 1985 – without asking for Canadian permission either time.

An agreement emerged that icebreakers do not need permission to pass. Now that icebreaking has receded in significance, will the regular traffic of undersea nuclear submarines through the passage become an issue?

Dorothy Fabian
USA Editor

Stepping into a world of reality – virtually!

National Metals Technology Centre (Namtec), UK, in partnership with Corus's Swinden Technology Centre, has launched a new centre of excellence in design modelling and simulation (DMS).

The DMS centre, based in South Yorkshire, UK, will provide engineering solutions to regional companies faced with rising material and energy prices and continued exposure to competitive threats.

The centre is also designed to support the growth of regional and national manufacturers, assisting them in securing new high-value contracts, and providing support in research and development.

Adam Beagles, Namtec's DMS centre manager, explained: "The new technical centre will allow manufacturers to access new state-of-the-art simulation techniques at a fraction of the cost of developing new products and materials in-house."

"We are excited about what this means for the engineering and manufacturing community and we are hoping the centre will become a hub for research and development in engineering, materials and manufacturing modelling."

The bureau-style modelling and simulation service will incorporate virtual reality techniques, casting and solidification, structural and life-modelling, thermo-mechanical process and heat treatment, energy management (furnace optimisation and control), factory layout, product and process flow, and scheduling.

▲ *Namtec's design modelling and simulation centre will help explore the benefits of virtual reality technology*

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technology at a glance

Nextrom are towering high in China after installing the latest fibre drawing technology for Alpha Information Technology Co Ltd.

A completely new design for two new ultrasonic wall thickness scanners from Zumbach, with either four or six measuring points.

It's all about satisfying customer demand as Germany's Sikora put their X-Ray experience to good use . . .

A new generation of spoolers for direct winding on shipping reels comes from Troester.

Nextrom: Towering above in China

Nextrom has installed its latest fibre drawing tower technology at Jiangsu Alpha Information Technology Co Ltd in Wujiang, China.

The 26m dual-sided tower features include high speed wet-on-wet coating application, graphite induction furnace and high speed transferable dual winding.

The pre-form feeding design allows for easy loading of pre-forms over 2m long.

The wet-on-wet coating application is simpler to use and more space efficient than wet on dry coaters.

Depending upon target line speeds, the added fibre cooling space reduces or eliminates the need for costly Helium cooling.

For such a tall structure, the tower layout and controls are user friendly with operator stations at key spots, allowing for increased efficiency.

During commissioning and early production on the new lines, Alpha reported extremely high yield rates.

▲ *Detail of Fibre Take-Up*

The lines were also commissioned at high drawing speeds up to 1,600m per minute. High yield and speed are key to Alpha's low cost, high volume fibre manufacture.

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Website: www.nextrom.com

Soma matching customer need

Soma offers a complete programme of drawing, rewinding and winding units for fine wire with a range between 0.5mm and 0.01mm (0.02–0.0004 inch).

The programme includes the popular drawing machine type ZA, which is used worldwide in different applications. Soma develops customised options and solutions to match customers' needs.

▲ *USP 1000.2 – the modular rewinding solution for bonding and other ultra fine wires*

The drawing machine family includes three different types (ZAL, ZA and ZAM) which cover the fine wire market needs. Several types of spooling systems as well as take up, pay off and rewinding units can be used together with a furnace, wire cleaning unit, rolling unit or simply as a rewinder.

One more speciality is the firm's coil winding machine type RH-10/11, used extensively in the acoustic and watch industry.

All fine wire machines are designed for maximum production output and the highest wire quality for ferrous and non-ferrous materials. Process stability and optimised operating comforts are other key points of the company's product philosophy.

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wire 2006 success for Extrudex

Success at wire 2006 in Düsseldorf, Germany, has seen Extrudex receive a large number of enquiries for extruders and follow-up equipment for the production of miniature cables.

This has included several successful sales of mini extrusion systems for medical technology.

Due to ever complex systems in the medical and automation fields, data and power supplies need to be securely provided in the smallest space available. This means conductor diameters in the range of AWG 25–AWG 50 and wall thicknesses in the micron range, for example 20µ. The required tolerances correspond to these and keeping to them is a must for all processes.

The Extrudex extruders with screw diameters of 12mm and 15mm have a conveying length of 25D. Minimum melt stopovers prevent excessive demands and reduce any quality loss, such as inclusions or burns. In addition to this, possible rejects are kept to a minimum.

▲ *Extrudex – keeping rejects to a minimum*

Output is between 50 and 3,500g/h depending on the material and tools used. The unit is driven by a compact, maintenance-free AC motor. The conveying screw range is designed for standard pellet shapes and can be optimised according to the materials.

More than 50 per cent of all enquiries are about fluoric plastics. Extrudex has long had procedural competence in this field. The extruder for this field is corrosion-protected in all material carrying areas and equipped with high temperature heating systems.

Installation of the extruder can be according to the users needs. There are machine stands with horizontal or vertical adjustability for localised use, or a permanent base frame with integrated gear and temperature controls can also be supplied.

Extrudex – Canada
Fax: +1 416 745 0925
Email: sales@extrudex.com
Website: www.extrudex.com

Suited for any wire flattening

Fenn Technologies supplies a wide selection of mechanical ballscrew and hydraulic cylinder type traversing take-up reels.

With a combination of rugged durability and precise electronic control, the reels are well suited for any wire flattening application and offer high production take-up capacity, dependability and flexibility.

All of the traversing reels are available with electronic control packages and servo controls to perform the traverse operations.

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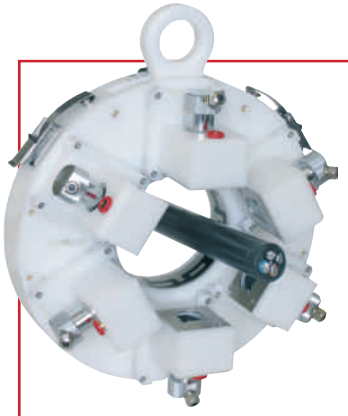
Website: www.fenntech.com



▲ *UMAC Z50 Scanner with 6 measuring points. The same model is also available for 4 point measurement*

New scanners for wall thickness measurement

Zumbach Electronic has introduced two new ultrasonic wall thickness scanners.

With a completely new design – patents pending – the transducers can be synchronously adjusted to the best possible measuring position within seconds. This process can even be motorised.

The scanners cover an outside diameter range from 5-100mm (0.2-4"), depending on the model. They represent a smart and simple solution for fully non-contact, in-line wall thickness measurement of cable jackets, tube and hose.

In combination with the proven Wallmaster data acquisition, processing and display system from Zumbach, a full process control can additionally be accomplished.

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Website: www.zumbach.com

Tungsten carbide products from India

Kay Pee Dies & Tools, India, manufactures tungsten carbide products for applications including drawing, heading, extrusion, forming and wear resistance, for use in wire drawing, profile extrusion, and the production of bright bar, fasteners, and conductors.

Rough cored dies in a variety of pellet sizes, carbide grades, hole sizes, approach angles and cases are available from stock, or custom design dies with special angles, bearings and grades can be made.

They also offer advice on all aspects of die management, including selection of proper pellet sizes, repair and re-cutting of dies, and inventory management/die history record.

Kay Pee Dies & Tools – India
Fax: +91 120 270 1320
Email: kaypeedies@hotmail.com

Speed and efficiency

OML Srl offers a wide range of reels, all of which are fully machined, pressed steel flange collapsible and of any dimension. They are all manufactured according to DIN specification – as well as to customers' specifications.

For almost a year OML has produced reels on cardboard and packings of all kinds in both cardboard and wood.

Production, regulated by CAD-CAM proceedings, allows the control of all machines and guarantees the parameters of the process and quality.

OML Srl – Italy
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Website: www.omlbobine.it

Frictionless drawing of High-Carbon wire

The new PDH lubrication system is used in the most demanding drawing applications, allowing the highest drawing speeds, with all carbon steel rods/wires, mechanically descaled or acid cleaned, bare or pre-coated, bright or galvanised, and in production of high quality wires, including spring, rope, bead, PC strand, stainless steel spring and alloys, galvanised H/C wire, AL-clad wire, plating wire, reflective bright wire, CO_2 welding wire and colleted nail wire.

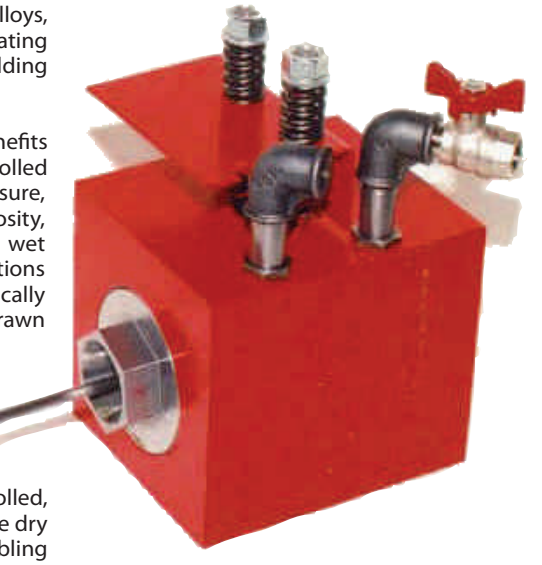
The PDH lubrication system benefits from the unique fully controlled 3-way interaction between the pressure, temperature and lubricant viscosity, completely eliminating traditional wet pre-coatings for all drawing applications form rod to wire, including mechanically descaled 0.90 per cent C rod drawn without pre-coating chemicals.

The system permits 'frictionless' drawing with the full lubricant film at wire-die interface (physical separation of metal-to-metal contact), automatically controlled, thanks to the innovative PDH rod/wire dry coating/lubrication technology enabling automatically controlled fusion of the lubrication compound.

Such a liquefied substance, with controlled viscosity, performs an exceptionally consistent and hard residual coat, adjustable in weight at all speeds, eliminating the need for phosphate and borax pre-coating chemicals and their substitutes.

This new wire coating/lubrication system allows a wide range of residual coats, strongly adherent for high-tensile wire, and light water soluble coat for plating wire.

One of the typical applications of the PDH system includes drawing from 5.5mm (0.218") diameter, 0.83/0.88 per cent, mechanically descaled rod, directly, without pre-coating, with an output of 2.2 tonne/hour, and with a die life of 200 tonnes/die in the first draft and a die wear of 0.30 micron/tonne of wire drawn in the last draft.



▲ *Wire lubrication by PDH system*

In other multi-draft H/C applications, the finishing die produces 40 to 60 tonnes of wire drawn without pre-coating chemicals, with wire properties (ductility, cast and torsion test) improved and exceptionally consistent.

The PDH lubrication system features 'zero' energy consumption, self generating processing heat and pressure. It is easy to install on any wire drawing machine and it can be operational within 2-3 hours.

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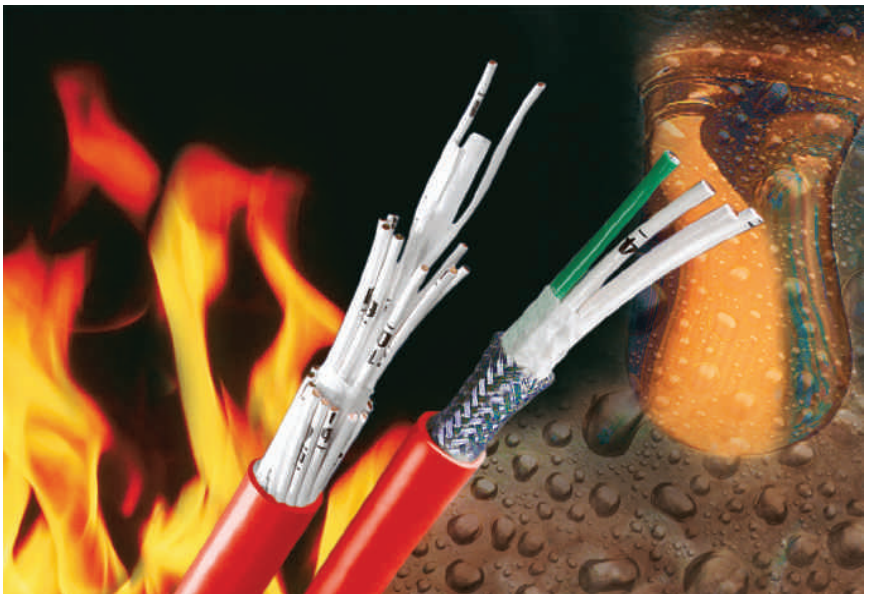
New high temperature cables facility

Leoni, the German wire, cable and wiring systems specialist, has extended its range of special cable products to include cables for use at temperatures above 150°C. The Leoni HighTemp Solutions company was set up in August 2006 to fulfil this role, and they are currently building a new facility, with a production area of approximately 8,500 m^2, that will initially employ 40 people in the development and manufacture of high temperature cables.

Leoni HighTemp Solutions relies on silicone and fluorinated polymers for cable insulation. These materials are well suited for use under adverse conditions at temperatures between 150°C-1,000°C, which are common in industrial plant and in vehicle engine compartments.

The company is being assisted by Studer, the Swiss cable specialist which has been part of the Leoni Group since July 2006. Studer has the equipment required to perform 'irradiation crosslinking', a process by which cable can be made exceptionally resilient and temperature resistant.

The Leoni Group's principal customer base is the automotive industry, for which they develop and manufacture products ranging from single-core automotive cables through to complete wiring systems with integrated electronics.



▲ *Leoni HighTemp Solutions offers cable solutions for use under extreme conditions*

In addition to products for the car and commercial vehicle industry, the company's range of products and services encompasses copper wires and strands, copper flexibles, data cables, insulated high-voltage cables, control cables, power cords and special cables tailor-made to customer specifications.

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Troester's new spoolers for direct winding on shipping reels

Troester, Germany, has launched a new generation of spoolers, used for direct winding on shipping reels in sheathing lines.

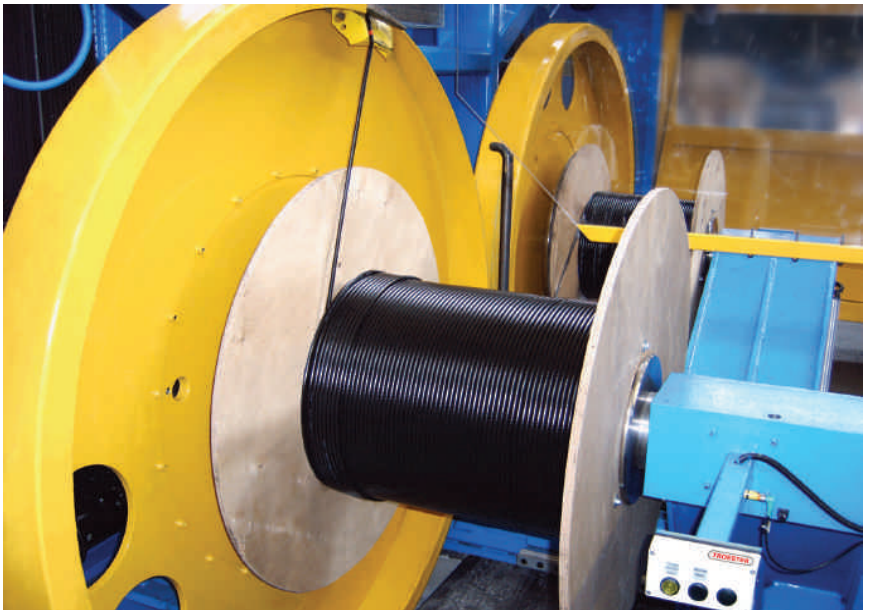
Fully and semi-automatic double-reel spoolers have been used in the cable sector as automatic reel-changing take-ups in fast-running core insulation lines for years. The most obvious advantage of such spoolers is that a reel change can be made under full line speed. Ramping up and down due to reel changes in the take-up area are eliminated, increasing the production capacity. The constant line speed also results in improved dimensional stability.

These benefits are also applicable to sheathing lines that are operated without the customary deceleration during a reel change. Reducing the highest possible manufacturing speed merely to change reels is no longer economically feasible, and fully and semi-automatic double-reel spoolers are the best way to solve that problem. Double-reel spoolers are particularly suitable for integration into constantly faster sheathing lines where short lengths are being produced, eg special coaxial or high frequency cable.

Using double-reel spoolers in sheathing lines where the final product is being manufactured allows direct winding onto shipping reels, eliminating the additional, cost-intensive manufacturing step of winding from production to shipping reels. Cutting this process-step also reduces storage costs, and the shipping reels can be delivered direct to the customer.

For its new machines, Troester has totally revised the design and the machine control of previously manufactured double-reel spoolers. The newly developed semi-automatic double-reel spooler replaces the portal take-ups, and the product is wound up, without using an accumulator, ready to ship. Standard winding lengths are between 500m and 4,000m, and at maximum manufacturing speed a ready-to-ship reel is completed approximately every nine minutes – an increase in average manufacturing speed of up to 50 per cent.

▲ *DAS-type double-reel spooler*



▲ *Close-up view of the DAS 1630 double-reel spooler*

A conventional type DAF double-reel spooler winds up the conductor into a cross lay-up. Precise positioning (winding next to winding) can be dispensed with during this step. During reel changes, the loose end is not fixed on the full reel after cutting, and it whips around inside the blocked take-up area until the rotating reel has completely stopped. However, as the wire is only light, it does not cause any damage.

The requirements placed on the new type DAS double-reel spooler are disproportionately greater. It not only has to cut when the preset length has been reached – whereby the sensitive cable end ('cut end') must not flail around – but it must also prevent any unwinding that would otherwise occur due to the retractive force acting on the cable.

The double-reel spooler obtains its line speed from the line control. The take-up speed is controlled by a pneumatic vertical accumulator. The pressure of the accumulator's pneumatic cylinder determines the tensile force in the cable and can be adapted on the machine's monitor operator stations.

During preparation of the take-up stations, various reel types can be called up from the machine's database by entering a short code number. This immediately transfers all relevant reel dimensions to the take-up and positioning equipment. During reel positioning, errors and invalid positions are immediately reported as plain text messages. It is also important that the reels are aligned to the exact cutting position after installation. This is automatically handled by special sensors and a disk that can be rotated relative to the reel, on which part of the cutting device is also installed. After the reel take-up automation has reported its sign-on message, the machine is ready for production.

The required take-up length can be input manually or stored in the machine's own database, and the machine calculates the 'pre-length' – the length by which a series of automatic processes are initiated for the queued reel change.

After reaching the computed pre-length relative to the entered set-point length, the automatic reel change is initiated independently. The middle safety gate separating the take-ups during operation is automatically opened and makes room for the movable positioning platform. The positioning platform is then automatically moved over the second shipping reel while the traverser is still positioned over the first shipping reel. The second shipping reel is simultaneously accelerated.

When the set-point length is reached, the traverse will already have arrived at the cutting position near the catcher disk. The first shipping reel is stopped, and the hold-down device presses the cable into a newly developed restrainer, preventing the cable from unwinding off the reel. The second shipping reel takes over, and the automatic change is concluded with the middle safety gate being closed.

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State-of-the-art!

For continuous online quality control of wires and cables, Sikora delivers state-of-the-art devices for diameter, wall thickness, eccentricity and ovality measurement, detection of lumps and neck-downs as well as spark testing directly on the extrusion line.

Important for extrusion operations, the Sikora technology features outstanding quality and reliability with X-ray and laser technology with no requirements for calibration.

The use of fast digital signal processors eliminates effects of vibrations, which ensures unprecedented accuracy and long-term stable measurement data.

Sikora presents this data through operator friendly display and control interfaces. The display options provide statistical analysis, data collection and print capabilities. The proven automatic control of the extruder output or the line speed provides fantastic return on investments.

Leading Sikora´s product developments is the X-Ray 2000 series for diameter and wall thickness measurements on

▲ *Outstanding quality and reliability*

insulation and jacketing lines, and the Centerview 2000 series for non-contact eccentricity and diameter measurements on LAN, coaxial, RF, telephone cables, automotive and building wires.

The success of the X-Ray 2000 comes from Sikora's X-ray experience applied to satisfying customer demand for a reliable solution for on-line measurements of the wall thickness, diameter, eccentricity and ovality without any time delay during production process.

Start-up scrap is minimised, material consumption optimised and the line productivity is increased.

Sikora AG – Germany
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Website: www.sikora.com

Worldwide use

Italy's Coremo Ocmea manufactures a wide range of brakes and clutches which are used globally in the wire and cable industry.

The design of the DUAL caliper brakes is conceived from the application on cable pay-off machines. The thruster of this brake is both air-applied and spring-applied to combine controlled tensioning and emergency stopping or holding in one single brake. The DUAL range of caliper brakes is designed to bring lower costs and higher safety.

Coremo Ocmea SpA – Italy
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▲ *A wide range of brakes and clutches from Coremo Ocmea*

Flying rotor bows from ASEA

ASEA, Turkey, makes spare parts for copper wire and cable machines, and supplies companies both in Turkey and worldwide.

The company's range of products includes flying rotor bows for bunching machines (made from pure carbon/aramid fibre, rather than using fragile lamination coating), 99.9 per cent nickel (pure Ni) tubes for multi-wires, ceramic guides, and wearing plates with high friction resistance to ensure wire is unharmed while twisting.

▲ *Some of ASEA's products on display*

The company, which also manufacture economical spare parts with a longer life span, and perform coating work with any kind of plasma coating, can also supply information about its products on a CD.

ASEA Ltd – Turkey **Fax**: +90 264 276 1974
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Website: www.aseaavar.com

Huawei and Global Marine partnership

Huawei Technologies Ltd, China, a provider of next generation telecommunications network solutions, and Global Marine Systems Ltd, UK, an independent subsea cable installation and maintenance company, have announced a partnership to jointly develop a new generation of end-to-end submarine networking solutions.

The combination of Huawei's optical solutions and Global Marine's subsea repeaters and submarine engineering will give submarine network developers and operators an alternative to the high cost of building out submarine networks.

"We are highly impressed with the excellent performance and compatibility of Huawei's Ultra Long Haul optical solutions, high quality of the products, powerful R&D resources and core technologies, quick response to customer's requirements, successful deployments and developments worldwide," said Mr Gabriel Ruhan, Global Marine's chief executive.

Mr Jeffery Gao, Huawei's senior vice president of optical networks, said: "Working with Global Marine, who has over a century's worth of experience in the installation and maintenance of subsea telecommunications with new generation of repeaters, will allow us to expand the capabilities of our networking equipment, and simplify the total ongoing network management costs borne by our customers."

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Website: www.huawei.com

New version of kneader for calender feeding

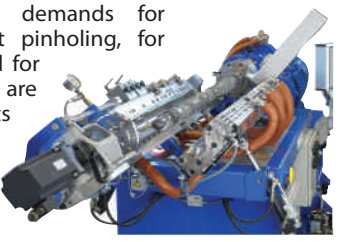
Buss AG, Switzerland, has launched a new version of its Quantec® high performance kneader for use in the compounding of high grade PVC pellets for extrusion and injection moulding. The new machine has been optimised for direct feeding to PVC film calenders.

Throughput is adjustable in a range of 1 to 3, with improved process stability, and the machine is more compact, saving space and investment cost. A newly developed intermittent cutting device ensures non-adhering PVC pieces of uniform size, and the shut-down time required for opening, cleaning and closing is reduced to between 30 and 50 minutes. Melt quality meets high demands for homogeneity without pinholing, for colour uniformity, and for degassing, all of which are essential requirements for high quality PVC film calendering.

The quantec version for calender feeding is a single-stage machine, ie it has no additional discharge screw. Instead, the length L of the mixing and kneading part, normally in the ratio 10 to 11 L/D (where D=screw diameter), is extended by 4 to 5 L/D. The additional space serves for degassing the melt and building up the necessary discharge pressure with minimal energy input. This single stage design offers quality and cost advantages: processing is simpler, and the residence time under thermal and mechanical loading is shorter than with two stage processing. As a result, the sensitive PVC melt is less liable to burn, so process stabiliser consumption can be reduced.

At the end of the processing section the finished PVC melt is extruded through one or more large cross-section nozzles. It is then divided by a cutter with an innovative control system: the intermittent cutter knife timing is synchronised with the screw motion.

As a result, the knives cut at the beginning or end of each cycle when practically no material is being transported. This ensures a smooth cut, and PVC pieces of uniform size. After cutting, the pieces fall onto a conveyor belt which takes them to the calender roll nip, with enough space between them to prevent sticking together. Individual pieces make for better and more uniform filling of the calender roll nip, which improves PVC film quality.



▲ *The quantec kneader for calender feeding*

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Website: www.busscorp.com

Neue Version eines Hochleistungskneters zur Kalanderbeschickung

Buss AG, Schweiz, hat eine neue Version seines Hochleistungskneters quantec® vorgestellt, der beim Compoundieren von hochwertigen PVC-Granulaten für das Extrudieren und Spritzgiessen eingesetzt wird. Die neue Maschine ist zum direkten Beschicken von PVC-Folienkalandern optimiert worden.

Bei verbesserter Prozessstabilität lässt sich der Durchsatz in einem Bereich von 1 bis 3 einstellen, und die Maschine ist kompakter, so dass sich Platzbedarf und Investitionsvolumen reduzieren. Eine neuentwickelte intermittierende Schneidvorrichtung ergibt gleichmäßig große, nicht zusammenhaftende PVC-Brocken und die für das Öffnen, Reinigen und wieder Schließen erforderlichen Ausfallzeiten werden auf 30 bis 50 Minuten reduziert. Die Schmelzequalität erfüllt sehr hohe Anforderungen im Hinblick auf Stippenfreiheit, Farbkonstanz und Entgasung; dies alles sind Voraussetzungen für hochwertige PVC-Folienkalander.

Die quantec® Version für die Kalanderbeschickung ist eine einstufig ausgeführte Maschine, also ohne zusätzliche Austragsschnecke. Statt dessen ist das sonst 10 bis 11 L/D (wo D = Schneckendurchmesser) lange Verfahrensteil zum Mischen und Kneten der Bestandteile um 4 bis 5 L/D verlängert. Der zusätzliche Arbeitsraum dient dazu, die Schmelze zu entgasen und den für den Austrag notwendigen Druck bei geringem

▲ *Der neue Kneter quantec von Buss verfügt über eine neu entwickelte Schneidvorrichtung um PVC-Stücke von einheitlicher Größe sicherzustellen*

Energieeintrag aufzubauen. Diese einstufige Bauweise bietet Kosten- und Qualitätsvorteile: die Prozessführung ist einfacher und die Verweilzeit der Schmelze unter thermischer und mechanischer Beanspruchung ist deutlich geringer als bei einer zweistufigen Aufbereitung. Dies schont die empfindliche, zu Verbrennungen neigende PVC-Schmelze und kann den Bedarf an Verarbeitungsstabilisatoren senken.

Am Ende des Verfahrensteils tritt die aufbereitete PVC-Schmelze durch eine oder mehrere Düsen mit großem Querschnitt aus. Danach wird sie von einer Schneidvorrichtung mit einer neuartigen Steuerung zerteilt: der Schneidtakt der intermittierend arbeitenden Messer ist mit dem Schneckenhub synchronisiert. Dadurch schneiden die Messer stets am Ende oder Anfang jedes Zyklus, bzw. wenn kein Material gefördert wird. Dies ergibt einen glatten Schnitt und PVC-Stücke von einheitlicher Größe. Nach dem Schneiden fallen die Stücke einzeln auf das Transportband zum Walzenspalt am Kalander, mit ausreichendem Platz dazwischen, um zu vermeiden, daß sie beim Transport zusammenkleben. Einzelne Stücke ergeben eine bessere und gleichmäßigere Befüllung des Kalanderwalzenspalts, was wiederum zur Verbesserung der Folienqualität beiträgt.

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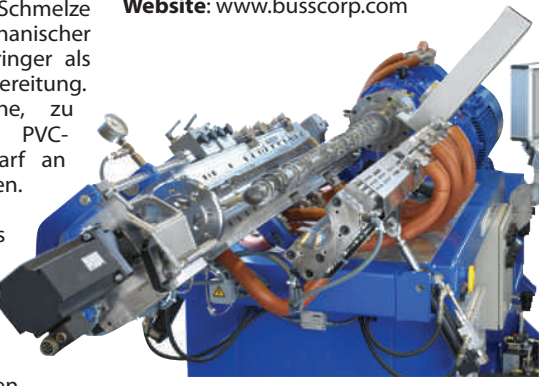

▲ *Der Kneters quantec zur Kalanderbeschickung zeichnet sich durch hohe Schmelzqualität, benutzerfreundliche Handhabung und leichte Reinigung aus*

Drehender Rotorbügel aus der Türkei

Das türkische Unternehmen ASEA produziert Ersatzteile für Maschinen im Bereich Kupferdraht und -kabel und bietet sie nationalen wie internationalen Unternehmen an.

Die Produktpalette des Unternehmens umfaßt drehende Rotorbügel für Bündelverseilmaschinen (bestehend aus reinen Kohlenstoff-/Aramidfasern, statt des empfindlichen durch Extrusion erzielten Mantels), 99,9% Nickelrohre (reines Ni) für Mehrdrähte, Keramikführungen und Verschleißplatten mit hohem Reibungswiderstand, um sicherzustellen, daß sich der Draht während der Verseilung nicht beschädigt.

◄ *Drehende Rotorbügel von ASEA werden mit rein Kohlenstoff-/Aramidfaser hergestellt*

Das Unternehmen kann kostengünstige Ersatzteile mit einer längeren Lebensdauer herstellen und Beschichtungsverfahren mit jeglicher Plasmabeschichtung durchführen.

Außerdem liefert ASEA auf Anfrage eine CD, die sämtliche Zeichnungen, Abmessungen und weitere technische Informationen seiner Produkte enthält.

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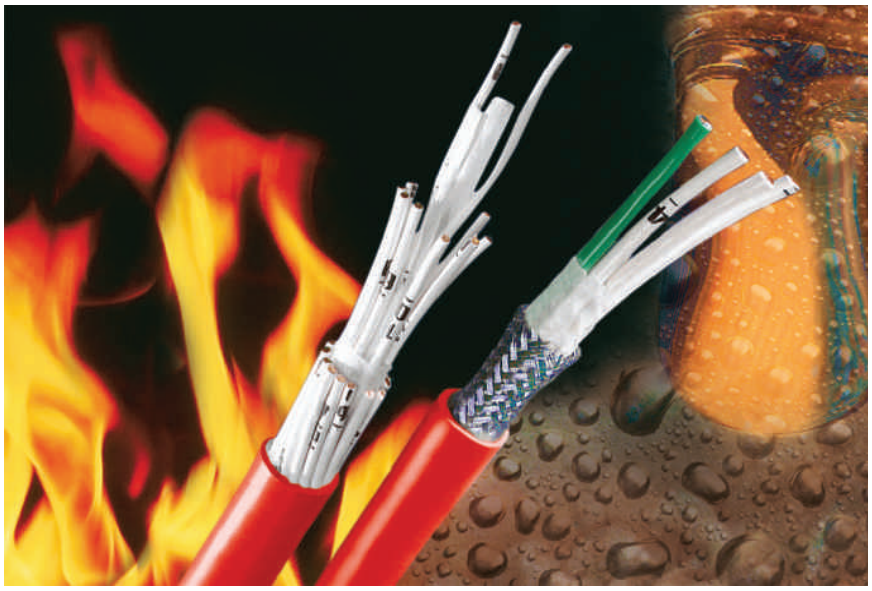
Neue Hochtemperatur-Kabelstandort

Leoni, der deutsche Draht-, Kabel- und Bordnetz-Spezialist baut seine umfangreiche Produktpalette bei Spezialkabeln nun um Kabel für den Einsatz in hohen Temperaturbereichen ab 150°C weiter aus.

Hierfür wurde im August 2006 die Gesellschaft Leoni HighTemp Solutions gegründet und das Unternehmen errichtet derzeit einen neuen Standort, an dem auf einer Produktionsfläche von rund 8.500m^2 zunächst 40 Mitarbeiter mit der Entwicklung und Herstellung von Hochtemperaturkabeln beschäftigt sein werden. Leoni HighTemp Solutions setzt bei der Kabelisolierung auf Silikon und Fluorpolymere.

Diese Werkstoffe eignen sich insbesondere für den Einsatz unter widrigsten Bedingungen bei Temperaturen zwischen 150°C und 1,000°C, wie sie in industriellen Anlagen oder im Motorraum von Fahrzeugen vorkommen. Hierzu trägt auch das Know-how des Schweizer Kabelspezialisten Studer bei, der seit Juli 2006 zur Leoni-Gruppe zählt. Studer verfügt über Anlagen zur "Strahlenvernetzung", wodurch Kabel äußerst widerstandsfähig und temperaturfest gemacht werden können.



▲ *Leoni HighTemp Solutions bietet Kabellösungen für extreme Bedingungen*

Der Hauptkunde der Leoni Gruppe ist die Automobilindustrie, für die Leoni technisch anspruchsvolle Produkte entwickelt und produziert: von der einadrigen Fahrzeugleitung bis zum kompletten Bordnetz-System mit integrierter Elektronik.

Neben Produkten für die Automobil- und Nutzfahrzeugindustrie umfasst das Leistungsspektrum des Unternehmens Kupferdrähte und -litzen, hochflexible Kupferseile, Datenleitungen, isolierte Starkstromleitungen, Steuerleitungen, Netzanschlussleitungen und Spezialkabel nach Kundenspezifikation.

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Huawei und Global Marine bilden eine Partnerschaft

Huawei Technologies Ltd, China, ein Anbieter von Telekommunikationsnetzlösungen der nächsten Generation, und Global Marine Systems Ltd, UK, ein unabhängiges Unternehmen im Bereich Unterseekabelinstallationenund-wartung, geben eine Partnerschaft bekannt, um gemeinsam eine neue Generation von Untersee-Gesamtnetzwerklösungen zu entwickeln.

Dank der Kombination optischer Lösungen von Huawei sowie der Unterseeverstärker und -technik von Global Marine wird Untersee-Netzwerktechnikern und –bedienern eine Alternative zu den hohen Kosten des Aufbaus von Unterseenetzen angeboten.

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wire 2006 erfolgreich für Extrudex

Dank des Erfolges bei wire 2006 in Düsseldorf, Deutschland, hat Extrudex eine große Anzahl an Aufträgen für Extruder und Folgeausrüstungen für die Produktion von Miniaturkabel erhalten.

Wegen der immer komplexeren Systeme im Medizin- und Automationsbereich, sind auch Daten- und Stromversorgungswege immer sicherer und mit niedrigstem verfügbarem Raumbedarf anzubieten. Das ergibt Leiterdurchmesser zwischen AWG 25 und AWG 50 sowie Wanddicken im µ-Bereich, z. B. 20µ. Die erforderlichen Toleranzen entsprechen den erwähnten Werten und deren Einhaltung ist ein Muß für alle darauf folgenden Verfahren.

▲ *Extrudex - Halten von Ausschüßen zu einem minimum*

Die Extruder mit Schneckendurchmessern von 12 und 15mm von Extrudex haben eine Förderlänge von 25D. Minimale Schmelzunterbrechungen vermeiden übermäßige Nachforderungen und reduzieren jeglichen Qualitätsverlust, wie zum Beispiel Einschlüsse oder Verbrennungen. Darüber hinaus werden mögliche Auswürfe auf ein Minimum beschränkt.

Die Leistung beträgt zwischen 50 und 3.500g/h je nach verwendetem Material und Werkzeugen. Die Einheit wird durch einen kompakten, wartungsfreien Wechselstrommotor angetrieben. Die Förderschneckenauswahl ist für Standard-Granulatformen konzipiert und kann entsprechend des Materials optimiert werden.

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Новая модификация смесителя-пластикатора для каландрирования

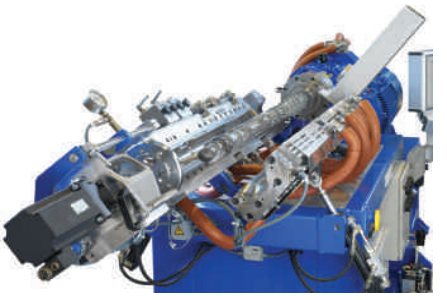
▲ *Новый смеситель-пластикатор «quantec» компании «Бусс» с отрезным устройством новой конструкции, обеспечивающим однородность размеров гранул ПВХ*

Швейцарская компания «Бусс АГ» (Buss AG) выпустила новую модификацию своего высокопроизводительного смесителя-пластикатора quantec®, используемого для подготовки смеси при производстве гранул из высококачественного ПВХ для экструдирования и литьевого формования. Новое устройство оптимизировано для непосредственной подачи материала в каландр при производстве ПВХ-плёнок.

Предусмотрено изменение коэффициента производительности в диапазоне от 1 до 3, повышена стабильность процесса, при этом устройство имеет меньшие габариты, что означает экономию пространства и соответствующих капиталовложений.

Модифицированный нарезчик прерывистого действия обеспечивает получение гранул ПВХ одинакового размера без залипания, а время останова, требуемое на вскрытие, чистку и закрывание устройства, сокращено до 30-50 минут. Качество расплава соответствует высоким требованиям по обеспечению однородности смеси без ноздреватости, обеспечению однородности цвета и отсутствия пузырьков воздуха, что крайне важно для каландрования высококачественной ПВХ-плёнки. Модификация «quantec» представляет собой одноступенчатое устройство подачи материала в каландр, т.е. в нём нет дополнительного разгрузочного шнека.

Вместо этого длина L смесеподготовительного отсека, обычно выбираемая из соотношения L/D, равного 10-11 (где D — диаметр шнека), увеличена на 4-5 L/D. Дополнительное пространство служит для дегазации расплава и создания необходимого давления нагнетания при минимальном расходе энергии.



▲ *Смеситель-пластикатор «quantec» для подачи материала в каландр отличается высоким качеством подготовки расплава, удобством обслуживания и простотой чистки*

Одноступенчатая конструкция обеспечивает более высокое качество при меньших затратах: технологическая операция упрощается, а время нахождения материала под действием термических и механических нагрузок сокращается по сравнению с двухступенчатым процессом. В результате чувствительная к перегреву масса ПВХ подгорает меньше, и, следовательно, расход стабилизатора также может быть сокращен.

В конце перемешивания готовый расплав ПВХ выдавливается через одну или несколько фильер с большим сечением. Выходящая масса режется с помощью отрезной машины, оборудованной новой системой управления, которая синхронизирует периодичность срабатывания ножа отрезной машины с движением шнека.

В результате резка всегда выполняется в начале или конце каждого цикла при практически полной остановке подачи материала. Благодаря этому обеспечивается ровный срез и однородность размеров гранул ПВХ.

После нарезки гранулы попадают на ленту конвейера, который подает их в захватное устройство валка каландра; обеспечивая достаточное расстояние между гранулами для предотвращения их слипания.

Наличие отдельных гранул обеспечивает более равномерное заполнение пространства между валками каландра и соответственно получение плёнки ПВХ более высокого качества.

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Как «спрятать» кабели по-новому

D-Line («Ди-лайн») – это совершенно новое декоративное средство скрытия кабелей, недавно появившееся в Великобритании, которое является идеальным решением для того, чтобы спрятать беспорядочное нагромождение кабельной проводки.

D-Line представляет собой Д-образный короб из поливинилхлорида с откидной крышкой и липкой лентой, который легко может применяться практически в любых условиях для скрытой проводки кабелей. Для электриков D-Line является прекрасной альтернативой долблению стробов в стенах, а пользователи оценят его простую и элегантную конструкцию.

Фактически начало разработке D-Line, которая продолжалась четыре года, было положено в результате обычной жалобы клиента, мечтавшего о новом продукте, который позволил бы ему сэкономить время на стробирование стен и вскрытие полов для укладки кабелей и труб.

Хоть дома, хоть в офисе – D-Line является идеальным средством скрытия потенциально опасных проводов и кабелей, которое может быть прикреплено к любому плинтусу, рабочей поверхности или стене. Учитывая растущую тенденцию встраивания электронных устройств типа телевизоров с жидкокристаллическим экраном и компьютеров в стены и рабочие столы, D-Line рекомендовано в качестве товара для домашнего мастера, позволяющего решить общую для всех проблему укладки открытой и беспорядочно уложенной проводки.

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Бугели для плавающих роторов из Турции

Турецкая компания ACEA (ASEA) выпускает запасные части к станкам для обработки медных проводов и кабелей и является поставщиком для многих предприятий как в самой Турции, так и за рубежом.

В номенклатуру продукции компании входят бугели плавающих роторов для скруточных машин (изготавливаемых только из углеродно-арамидного волокна без использования хрупкого многослойного покрытия), никелевые трубки (с чистотой никеля 99,9 %) для жгутов проводов, керамические направляющие и пластины трения с высокой износостойкостью, обеспечивающие отсутствие повреждений провода во время скручивания. Компания может выпускать запасные части экономичной категории с увеличенным сроком службы и выполнять работы по нанесению покрытий плазменным напылением любой сложности.

По требованию заказчика компания ACEA может предоставить сведения о выпускаемой продукции, включая чертежи, размеры и прочую техническую информацию, на компакт-диске.

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Успех «Экструдекс» на выставке wire 2006

Участие в выставке WIRE 2006, прошедшей в немецком Дюссельдорфе, принесло компании «Экструдекс» (Extrudex) большое число заказов на экструдеры и дополнительное оборудование для производства кабелей сверхмалого диаметра. Несколько успешных сделок по продаже экструзионных мини-систем медицинского назначения позволили компании «Экструдекс» в короткие сроки наладить поставки экструзионного оборудования для кабельного производства. Ввиду крайне высокой сложности медицинских и автоматизированных систем к надёжности физических линий передачи данных и напряжения питания, прокладываемых в условиях чрезвычайно ограниченного пространства, предъявляются особые требования. Это означает необходимость в использовании проводников с калибром жилы в диапазоне AWG 25 – AWG 50 и при микронной толщине изоляции (например, 20 мкм). Соблюдение требуемых допусков является необходимым требованием при всех последующих технологических операциях.

Экструдеры компании «Экструдекс» с диаметром шнека 12 и 15 мм имеют длину подачи в 25 D. Сведение к минимуму количества остановов подачи расплава позволяет избежать чрезмерного расхода материала и ухудшения его качества (например, появление включений или пригара). Кроме того, снижается вероятность брака. Производительность устройства составляет от 50 до 3500 г/ч в зависимости от материала и используемой оснастки. Экструдер приводится в действие миниатюрным необслуживаемым двигателем переменного тока. Длина подачи выгрузного шнека рассчитана на гранулы стандартного размера и может быть изменена в зависимости от используемого материала. В более чем половине заказов была указана необходимость работы с фтористыми пластмассами. Компания «Экструдекс» накопила богатый опыт решения подобных вопросов благодаря поставкам оборудования для самых разных областей применения. Экструдеры для таких случаев оснащаются коррозиеустойчивыми деталями на всей трассе движения материала и оборудованы высокотемпературными нагревательными системами. Установка экструдера осуществляется в соответствии с конкретными требованиями заказчика. К поставке предлагаются регулируемые в вертикальной и горизонтальной плоскостях стойки, а также стационарные рамы со встроенными средствами регулирования скорости и температуры.

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Партнерство «Хуавэй» и «Глобал марин»

Китайская компания «Хуавэй текнолоджиз лтд» (Huawei Technologies Ltd), поставляющая телекоммуникационные сетевые решения следующего поколения, и английская «Глобал марин системс лтд» (Global Marine Systems Ltd), занимающаяся прокладкой и обслуживанием подводных кабелей, сегодня объявили о заключении партнёрских отношений с целью совместной разработки нового поколения подводных кабельных сетей сквозной передачи данных.

За счет комбинированного использования оптоволоконных систем компании «Хуавэй» и подводных ретрансляторов и других специальных инженерных решений «Глобал марин» разработчики и операторы сетей получат альтернативное решение для создания низкозатратных подводных сетей. «Мы восхищены великолепными эксплуатационными характеристиками и параметрами совместимости, которыми обладают оптоволоконные системы «Хуавэй» для сверхдальней связи, высоким качеством продукции этой компании, мощной базой для проведения научно-исследовательских и опытно-конструкторских работ, передовыми технологиями, быстротой реакции на запросы клиентов и успешностью применения их разработок во всём мире, – говорит Габриель Руан (Gabriel Ruhan), главный исполнительный директор «Глобал марин». – Мы уверены в перспективах нашей работы с такими ведущими компаниями, как «Хуавэй», и сможем предложить своим клиентам действительно лучшую альтернативу имеющимся на рынке техническим решениям для создания подводных сетей связи». Джеффри Гао (Jeffery Gao), старший вице-президент «Хуавэй» по оптоволоконным сетям, добавляет: «Мы являемся свидетелями стремительного развития систем связи между странами и регионами, которых разделяет океан, и необходимость в упрощении средств сопряжения наземных и подводных сетей очевидна. Сотрудничество с компанией «Глобал марин», которая вот уже более ста лет занимается прокладкой и обслуживанием подводных линий связи на базе современных ретрансляторов, позволит нам расширить функциональные возможности нашего сетевого оборудования и рационализировать общую структуру текущих издержек на эксплуатацию сетей со стороны наших клиентов».

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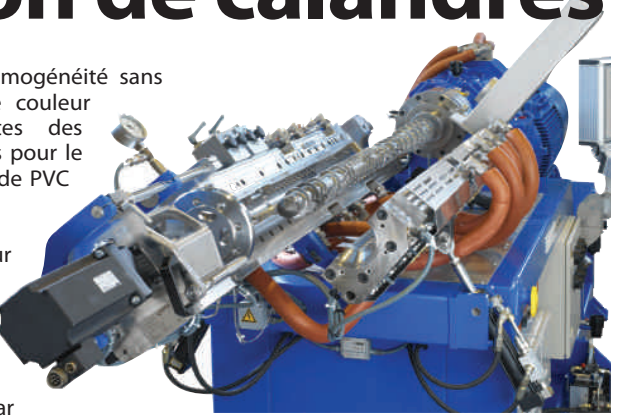
Nouvelle version de malaxeur pour l'alimentation de calandres

La société suisse Buss AG a présenté une nouvelle version de son malaxeur quantec® haute performance, conçu pour être utilisé dans le compactage de boulettes de PVC de haute qualité pour l'extrusion et le moulage par injection. La nouvelle machine a été optimisée pour l'alimentation directe à calandres produisant des feuilles en chlorure de polyvinyle.

Le rendement est réglable dans une gamme allant de 1 à 3 en offrant une majeure stabilité du processus, et la machine est plus compacte, ce qui permet d'économiser de l'espace et de réduire les coûts d'investissement. Un nouveau dispositif de coupe intermittent consent d'obtenir des pièces de PVC non adhérentes et de dimensions uniformes, et le temps d'arrêt requis pour l'ouverture, le nettoyage et la fermeture sont réduits à 30-50 minutes. La qualité de la fusion répond aux strictes exigences en ce qui concerne l'homogénéité sans porosité, l'uniformité de couleur et le dégazage, toutes des spécifications essentielles pour le calandrage de pellicules de PVC haute qualité.



▲ *Le malaxeur quantec pour l'alimentation de calandres permet d'obtenir une haute qualité de fusion, une maniabilité simple et un nettoyage facile*

La version quantec pour l'alimentation des calandres est une machine à simple étage, c'est-à-dire sans vis de décharge supplémentaire. Par contre, la longueur L de la partie de mélange et de malaxage, généralement dans le rapport de 10 à 11 L/D (où D est le diamètre de la vis), a été augmenté de 4 à 5 L/D. L'espace supplémentaire est utilisé pour dégazer la fusion et assurer la pression de décharge nécessaire en réduisant au minimum l'énergie fournie. Cette conception à simple étage offre des avantages en terme de qualité et de coûts: le processus est plus simple et le temps de séjour sous charge thermique et mécanique est plus bref par rapport au processus à deux étages. Par conséquent, le délicat matériau de PVC fondu est moins susceptible de se brûler, et donc la consommation du stabilisateur de processus peut être réduite.

▲ *Le nouveau malaxeur quantec de Buss incorpore un nouveau dispositif de coupe assurant des dimensions uniformes des pièces de PVC*

À la fin de la section de traitement, le matériau fondu de PVC fini est extrudé à travers une ou plusieurs buses de grande section. Ensuite le matériau est divisé au moyen d'une pince coupante équipée d'un nouveau système de commande: la fréquence de coupe du couteau intermittent est synchronisée avec le mouvement de la vis. Par conséquent, les couteaux effectuent la coupe toujours au début ou à la fin de chaque cycle pratiquement en absence de mouvement de matériau. Cela assure une coupe franche, et des pièces de PVC de dimensions uniformes. Après la coupe, les pièces tombent sur une courroie transporteuse qui les achemine à l'espace entre le cylindres de la calandre, avec un espace suffisant entre les pièces pour éviter leur adhésion. Les pièces individeulles permettent une alimentation meilleure et plus uniforme de l'espace entre les cylindres de la calandre, avec pour résultat une pellicule de PVC de qualité supérieure.

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Arcs pour rotors pivotants de la Turquie

La société ASEA, Turquie, réalise des pièces de rechange pour machines conçues pour des fils et des câbles de cuivre, et fournit des sociétés en Turquie de par le monde.

La gamme de produits de la société comprend des arcs pour rotors pivotants pour tordeuses (obtenues de la fibre de carbone/aramide pure, au lieu d'utiliser des revêtements métalliques obtenus par extrusion), de tuyaux de nickel 99,9% (Ni pur) pour multifils, guides en céramique et plaques d'usure à haute résistance à la friction pour éviter d'endommager le fil durant la torsion. La société peut fabriquer des pièces de rechange économiques avec une longévité supérieure, et peuvent réaliser un revêtement avec tout type de plasma.

◀ *Arcs pour rotors pivotants de ASEA produits en utilisant des fibres de carbone/aramide pure*

ASEA peut fournir sur demande un CD contenant des dessins, des dimensions et d'autres informations techniques concernant les produits.

ASEA Ltd – Turquie
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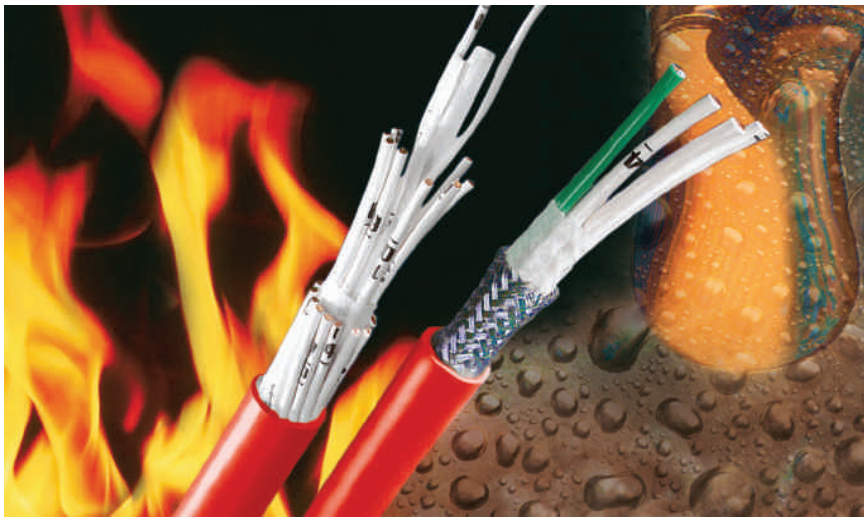
Nouvelle usine de câbles haute température

Leoni, société spécialisée en systèmes de fils, de câbles et de câblages, a étendu sa gamme de produits spécifiques de câbles incluant des câbles pour des applications à des températures supérieures à 150°C. La société Leoni HighTemp Solutions a été créée en août 2006 pour ce type de production. La société réalise actuellement un nouvel établissement, avec une surface de production d'environ 8,500m^2, qui emploiera initialement 40 personnes dans le développement et dans la fabrication de câbles de haute température. La société prévoit de commencer la production dans le nouvel établissement prochainement.

Pour l'isolement des câbles, l'activité de Leoni HighTemp Solutions se base sur des matériaux comme la silicone et les polymères fluorés. Ces matériaux sont indiqués pour être utilisés dans des conditions défavorables à des températures allant de 150°C à 1,000°C, qui sont courantes dans les installations industrielles et dans les compartiments du moteur des véhicules.

La société est assistée par Studer, le spécialiste des câbles suisse qui fait partie du groupe Leoni depuis juillet 2006. Studer dispose des équipements nécessaires pour réaliser la "réticulation par irradiation", un processus par lequel le câble peut acquérir d'exceptionnelles caractéristiques de résilience et de résistance à la température.



▲ *Leoni HighTemp Solutions offre des solutions de câbles pour conditions extrêmes*

Les principaux clients du groupe Leoni font partie du secteur automobile, pour lequel Leoni développe et réalise des produits allant des câbles unipolaires aux systèmes de câblage complets avec électronique intégrée. Outre les producteurs pour voitures et pour l'industrie des véhicules commerciaux, la gamme de produits de la société comprend: fils et torons de cuivre, câbles flexibles, câbles de données, câbles de haute tension isolés, câbles de commande, conducteurs de puissance et câbles spécifiques personnalisés en fonction des exigences des clients.

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Partenariat entre Huawei et Global Marine

Huawei Technologies Ltd (Chine), fournisseur de solutions de réseaux de télécommunication de prochaine génération, et Global Marine Systems Ltd, (Royaume Uni), une société indépendante spécialisée dans l'installation et dans l'entretien de câbles sous-marins, a récemment annoncé d'avoir réalisé un partenariat visant à développer une nouvelle génération de solutions pour réseaux sous-marins de bout-en-bout.

La combinaison des solutions optiques de Huawei et des répéteurs sous-marins avec les techniques sous-marines de Global Marine offrira aux techniciens et aux opérateurs de réseaux sous-marins une alternative aux coûts élevés de construction de ce type de réseaux.

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Succès de Extrudex à wire 2006

Grâce au succès obtenu à wire 2006 à Düsseldorf, Allemagne, la société Extrudex a reçu un grand nombre de demandes de renseignement pour extrudeuses et équipements annexes pour la production de câbles miniature.

Le succès obtenu avec les ventes de systèmes de miniextrusion pour la technologie du secteur médical ont permis à Extrudex de fournir rapidement des unités d'extrusion à l'industrie du câble.

▲ *Extrudex – gardant des rejets à un minimum*

Du fait des systèmes de plus en plus complexe utilisés dans le secteur médical et de l'automatisation, les câbles de données et de puissance doivent être installés de façon sûre et dans un espace le plus réduit possible. Cela entraîne des diamètres de conducteurs dans la gamme AWG 25 et AWG 50 et une épaisseur de l'ordre de microns (par exemple 20µ). Les tolérances requises correspondantes doivent être respectées pour garantir les processus successifs.

Les extrudeuses de Extrudex sont équipées de vis d'un diamètre de 12 à 15mm et d'une longueur de transport de 25 D. La réduction au minimum des arrêts entraîne une consommation inférieure et une meilleure qualité du matériau fondu en évitant d'éventuelles inclusions ou brûlures, ainsi que la réduction au minimum des rebuts.

Le volume de production varie de 50 à 3 500g/h en fonction du matériau et des équipements utilisés. L'unité est actionnée par un moteur CA compact ne nécessitant d'aucun entretien. Conçue pour des grains de forme standard, la gamme de vis de transport peut être optimisée en fonction des matériaux.

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Nuova versione di impastatore per l'alimentazione di calandre

La società svizzera Buss AG ha presentato una nuova versione dell'impastatore quantec® ad alte prestazioni, progettato per essere utilizzato nel compounding di granuli di PVC di alta qualità per l'estrusione e lo stampaggio per iniezione. La nuova macchina è stata ottimizzata per l'alimentazione diretta di calandre per pellicole in PVC.

Il rendimento può essere regolato entro una gamma da 1 a 3 offrendo una maggiore stabilità di processo, e la macchina è più compatta, consentendo un risparmio di spazio e una riduzione dei costi d'investimento. Un nuovo dispositivo di taglio intermittente consente di ottenere pezzi di PVC non aderenti e di dimensioni uniformi, e il tempo di fermata richiesto per l'apertura, la pulizia, e la chiusura sono ridotti a 30-50 minuti. La qualità della fusione è conforme alle rigorose esigenze in termini di omogeneità senza porosità, uniformità del colore, degassaggio, tutti requisiti essenziali per la calandratura di pellicole di PVC ad alta qualità.

La versione quantec per l'alimentazione di calandre è una macchina a stadio singolo, cioè senza vite di scarico supplementare. Viceversa, la lunghezza L della parte di miscela e d'impasto, generalmente nel rapporto da 10 a 11 L/D (dove D è il diametro della vite), è stato aumentato da 4 a 5 L/D. Lo spazio supplementare è utilizzato per degassare la fusione e assicurare la pressione di scarico necessaria riducendo al minimo l'energia fornita. Tale concezione a stadio singolo offre vantaggi in termini di qualità e di costi: il processo è più semplice e il tempo di permanenza sotto sollecitazione termica e meccanica è inferiore rispetto al processo a due stadi. Di conseguenza, il delicato materiale di PVC fuso è meno suscettibile di bruciare, e quindi il consumo dello stabilizzatore di processo può essere ridotto.

▲ *Il nuovo impastatore quantec di Buss è equipaggiato con un nuovo dispositivo di taglio che assicura dimensioni uniformi dei pezzi di PVC*

Alla fine della sezione di trattamento, il materiale fuso di PVC finito viene estruso attraverso uno o più ugelli di grande sezione. In seguito il materiale viene diviso per mezzo di un dispositivo di taglio equipaggiato con un nuovo sistema di comando: la frequenza di taglio del coltello intermittente è sincronizzata con il movimento della vite. Pertanto, i coltelli eseguono il taglio sempre all'inizio o alla fine di ciascun ciclo praticamente in assenza di movimento di materiale. Ciò assicura un taglio netto, e pezzi di PVC di dimensioni uniformi. Dopo il taglio, i pezzi cadono su un nastro trasportatore che li convoglia all'imboccatura della calandra con uno spazio sufficiente fra i pezzi per evitarne l'adesione. I pezzi singoli consentono di alimentare in modo migliore e più uniforme l'imboccatura della calandra, ottenendo una pellicola di PVC di qualità superiore.

▲ *L'impastatore quantec per l'alimentazione di calandre permette di ottenere un'elevata qualità di fusione, ed è facile da maneggiare e pulire*

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Archi per rotore rotanti dalla Turchia

La società ASEA, Turchia, realizza parti di ricambio per macchine progettate per fili e cavi di rame, e fornisce società sia in Turchia sia nel resto del mondo.

La gamma di prodotti della società comprende archi per rotori rotanti per trefolatrici (ottenuti dalle fibre di carbonio/aramid puro anziché utilizzare i fragili rivestimenti ottenuti mediante estrusione), di tubi di nickel 99,9% (Ni puro) per multifilo, guide in ceramica e piastre di usura ad alta resistenza all'usura per evitare di danneggiare il filo durante la torsione.

◄ *Archi per rotori rotanti di ASEA prodotti utilizzando fibre di carbonio/aramid puro*

La società è in grado produrre parti di ricambio economiche con una maggiore durata e realizzare rivestimenti con qualsiasi tipo di rivestimento al plasma.

ASEA fornisce su richiesta un CD contenente disegni, dimensioni ed altre informazioni tecniche sui suoi prodotti.

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Nuovo stabilimento di cavi ad alta temperatura

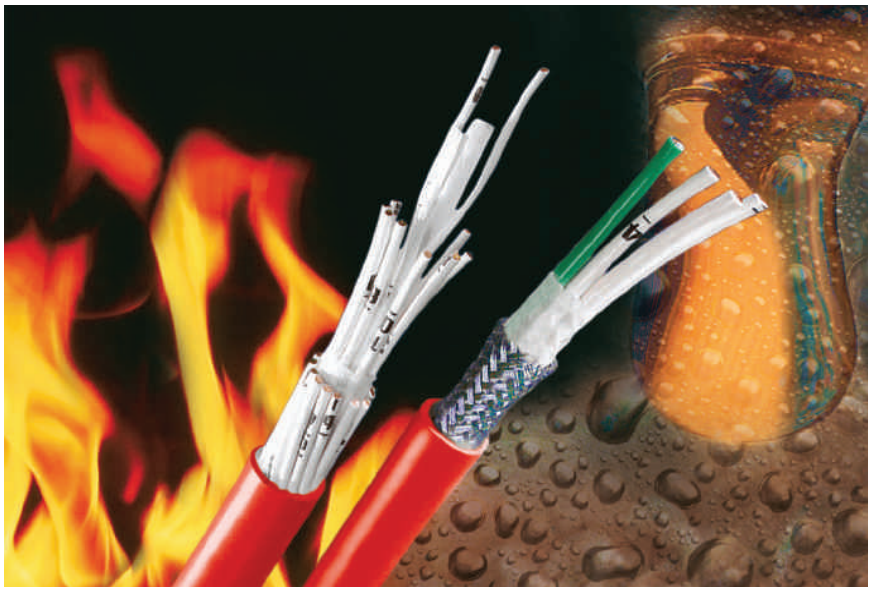
Leoni, società specializzata in sistemi di fili, di cavi e cablaggi, ha ampliato la propria gamma di prodotti specifici di cavi includendo cavi per applicazioni a temperature superiori a 150°C.

La società Leoni HighTemp Solutions fu fondata nell'agosto del 2006 per questo tipo di produzione. Attualmente, la società sta realizzando un nuovo stabilimento con un'area di produzione di circa 8.500m^2, che impiegherà inizialmente 40 persone nello sviluppo e nella fabbricazione di cavi ad alta temperatura. La società prevede di avviare la produzione nel nuovo stabilimento fra breve.

Per l'isolamento dei cavi, l'attività di Leoni HighTemp Solutions si basa su materiali come il silicone e i polimeri fluorati.

Questi materiali sono indicati per essere utilizzati in condizioni sfavorevoli, a temperature che vanno da 150°C a 1,000°C, che sono comuni negli impianti industriali e negli scompartimenti del motore dei veicoli.

La società è assistita da Studer, lo specialista di cavi svizzero che fa parte del gruppo Leoni da luglio 2006. Studer dispone degli equipaggiamenti necessari per realizzare la "reticolazione tramite irraggiamento", un processo per il quale il cavo può acquisire eccezionali caratteristiche di resilienza e di resistenza alla temperatura.



▲ *Leoni HighTemp Solutions offre soluzioni di cavi per condizioni estreme*

I principali clienti del gruppo Leoni fanno parte del settore automobilistico, per il quale Leoni sviluppa e realizza prodotti che vanno dai cavi unipolari ai sistemi di cablaggio completi con elettronica incorporata. Oltre ai produttori per automobili e per l'industria dei veicoli commerciali, la gamma di prodotti della società comprende: fili e trefoli di rame, cavi flessibili, cavi di dati, cavi di alta tensione isolati, cavi di comando, conduttori di potenza e cavi specifici personalizzati secondo le esigenze dei clienti.

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Partnership fra Huawei e Global Marine

Huawei Technologies Ltd (Cina), fornitore di soluzioni di rete di prossima generazione, e Global Marine Systems Ltd, (Regno Unito), società indipendente specializzata nell'installazione e nella manutenzione di cavi sottomarini, ha recentemente annunciato di aver realizzato una partnership allo scopo di sviluppare una nuova generazione di soluzioni per reti sottomarine da estremità ad estremità.

La combinazione di soluzioni ottiche di Huawei e di ripetitori sottomarini con le tecniche sottomarine di Global Marine offrirà ai tecnici e agli operatori di reti sottomarine un'alternativa agli elevati costi di costruzione di questo tipo di reti.

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Successo di Extrudex a wire 2006

Grazie al successo ottenuto a wire 2006 a Düsseldorf (Germania), la società Extrudex ha ricevuto un gran numero di richieste di informazioni su estrusori ed equipaggiamenti ausiliari per la produzione di cavi miniaturizzati.

Il successo ottenuto con le vendite di sistemi di miniestrusione per la tecnologia del settore medicale hanno consentito a Extrudex di fornire in breve tempo unità di estrusione all'industria del cavo.

Data la complessità sempre maggiore dei sistemi utilizzati nel settore medicale e dell'automazione, i cavi per la trasmissione di dati e i cavi di potenza devono essere installati in modo sicuro e in uno spazio il più ridotto possibile. Ciò comporta diametri di conduttori nella gamma AWG 25 e AWG 50 e dello spessore nell'ordine di micron (ad esempio 20µ). Le tolleranze richieste corrispondenti devono essere rispettate per garantire i processi successivi.

Gli estrusori di Extrudex sono equipaggiati con viti del diametro di 12 e 15mm ed una lunghezza di trasporto di 25 D. La riduzione al minimo delle fermate comporta una riduzione del consumo ed una migliore qualità del materiale fuso evitando eventuali inclusioni o bruciature e riducendo gli scarti al minimo.

Il volume di produzione varia da 50 a 3.500g/h in base al materiale e agli equipaggiamenti utilizzati. L'unità è azionata da un motore a CA compatto che non richiede alcuna manutenzione. Progettata per granuli di forma standard, la gamma di viti di trasporto può essere ottimizzata in funzione dei materiali.

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Nueva versión de amasadora para alimentar calandrias

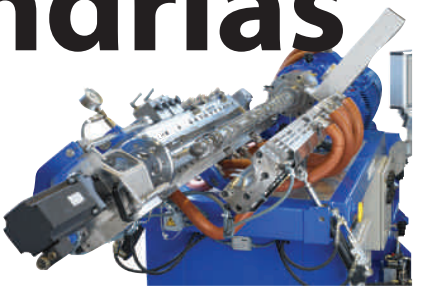
La compañía suiza Buss AG ha presentado una nueva versión de su amasadora quantec® de altas prestaciones para la producción de gránulos de PVC de alta calidad para el moldeado de extrusión y de inyección. La nueva máquina ha sido optimizada para la alimentación directa de calandrias que producen películas de PVC.

El rendimiento puede ser regulado en un rango de 1 a 3 ofreciendo una mayor estabilidad de proceso, y la máquina es más compacta, lo que permite ahorrar espacio y reducir los costes de inversión. Un nuevo dispositivo de corte intermitente permite obtener trozos de PVC no adherentes de dimensiones uniformes, y el tiempo de paro necesario para abrir, limpiar y cerrar la máquina ha sido reducido a 30-50 minutos. La calidad del material fundido responde a las demandas más exigentes por lo que se refiere a homogeneidad sin porosidad, uniformidad de color y desgasificación, todos requisitos esenciales para el calandrado de películas de PVC de alta calidad.

▲ *La nueva amasadora quantec de Buss lleva incorporado un nuevo dispositivo de corte que asegura dimensiones uniformes de los trozos de PVC*

La versión quantec para la alimentación de calandrias es una máquina de una sola etapa, es decir que no está equipada con tornillo de descarga adicional. En cambio, la longitud L de la parte de mezclado y amasado, normalmente en una proporción de 10 a 11 L/D (donde D es el diámetro del tornillo), ha sido ampliada a una proporción de 4 a 5 L/D. El espacio adicional es usado para desgasificar el material fundido y asegurar la presión de descarga necesaria reduciendo al mínimo la energía suministrada. El nuevo diseño de una etapa ofrece ventajas de calidad y costes: el procesamiento es más simple y el tiempo de permanencia bajo carga térmica y mecánica es inferior respecto al procesamiento de dos etapas. Por consiguiente, el delicado material de PVC fundido es menos susceptible a quemarse, y el consumo de estabilizador de proceso puede ser reducido.

Al final de la sección de procesamiento, el material fundido de PVC acabado es extruido a través de una o más boquillas de sección transversal grande. Luego, el material es dividido por dispositivo de corte con sistema de control innovador: la frecuencia de corte de la cuchilla intermitente es sincronizada con el movimiento del tornillo. Por consiguiente, las cuchillas cortan siempre al inicio o al final de cada ciclo, cuando prácticamente no hay movimiento del material transportado. Esto asegura un corte neto y piezas de PVC de dimensiones uniformes. Después del corte, los trozos caen a una cinta transportadora que los transporta al rodillo arrastrador de la calandria, dejando espacio suficiente entre los mismos para evitar que se peguen. Los trozos separados permiten alimentar de manera mejor y más uniforme el rodillo de la calandria, lo que permite obtener una película de PVC. de calidad superior.



▲ *La amasadora quantec para la alimentación de calandrias permite obtener una alta calidad de la fusión, y es fácil de manejar y limpiar*

Buss AG – Suiza
Fax: +41 61 825 68 58
Email: info@busscorp.com
Website: www.busscorp.com

Liras para rotores giratorios de Turquía

La compañía ASEA, Turquía, fábrica repuestos para máquinas que producen alambre y cable de cobre, y abastece compañías en Turquía y en todo el mundo.

La gama de productos de la compañía incluye liras de rotores giratorios para pareadoras (obtenidas de fibra de carbón/aramida pura, en lugar de usar frágiles revestimientos obtenidos mediante extrusión), tubos de níquel 99,9% (Ni puro) para guías de cerámica multihilo, y placas de desgaste con alta resistencia al rozamiento para asegurar que no se dañe el alambre durante la torsión.

◀ *Liras de rotores giratorios de ASEA producidas usando fibra de carbón/aramida pura*

La compañía puede fabricar repuestos baratos de larga duración y puede realizar cualquier tipo de revestimientos de plasma.

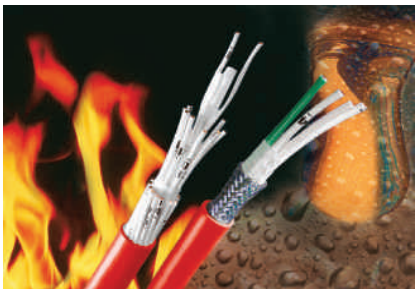
ASEA puede suministrar a petición un CD con planos, dimensiones y otra información técnica sobre sus productos.

ASEA Ltd – Turquía
Fax: +90 264 276 1974
Email: foreigntrade@aseaavar.com
Website: www.aseaavar.com

Nueva fábrica de cables de alta temperatura

Leoni, especialista en sistemas de alambres, cables y cableados, ha ampliado su gama de productos especiales de cables incluyendo cables de uso a temperaturas superiores a 150°C. La compañía Leoni HighTemp Solutions fue creada en agosto de 2006 para este tipo de producción. La compañía está construyendo actualmente una nueva fábrica, con un área de producción de aproximadamente 8.500m², que empleará inicialmente a 40 personas en el desarrollo y la fabricación de cables de alta temperatura. La compañía prevé que la nueva planta entre en producción dentro de poco tiempo.

La actividad de Leoni HighTemp Solutions se basa en materiales como la silicona y los polímeros fluorinados para el aislamiento de los cables. Estos materiales



▲ *Leoni HighTemp Solutions ofrece soluciones de cable para uso en condiciones extremas*

son adecuados para ser usados en condiciones desfavorables a temperaturas de entre 150°C y 1,000°C, que son comunes en las plantas industriales y en los compartimentos del motor de los vehículos.

La compañía cuenta con la asistencia de Studer, especialista de cables suizo que forma parte del grupo Leoni desde julio del 2006. Studer posee los equipos necesarios para realizar la "reticulación por irradiación", un proceso que otorga al cable excepcionales características de resiliencia y resistencia a la temperatura.

Los clientes principales del grupo Leoni forman parte de la industria automotriz, para la cual Leoni desarrolla y fábrica productos que van de los cables unipolares a los sistemas de cableados completos con electrónica integrada. Además de los productos para coches y para la industria de los vehículos comerciales, la gama de productos de la compañía comprende alambres y trenzas, cables flexibles de cobre, cables de datos, cables de alta tensión aislados, cables de control, conductores de potencia y cables especiales personalizados según las especificaciones del cliente.

Leoni AG – Alemania
Fax: +49 911 2023 231
Email: info@leoni.com
Website: www.leoni.com

Asociación de Huawei y Global Marine

Huawei Technologies Ltd, China, proveedor de soluciones de redes de telecomunicaciones de próxima generación, y Global Marine Systems Ltd, Reino Unido, compañía independiente que se ocupa de la instalación y del mantenimiento de cables submarinos, han anunciado recientemente su asociación para desarrollar juntos una nueva generación de soluciones para redes submarinas de extremo a extremo.

La combinación de las soluciones ópticas de Huawei y de los repetidores submarinos y conocimientos técnicos de Global Marine ofrecerán a los desarrolladores y a los operadores de redes submarinas una alternativa a los altos costes de construcción de este tipo de redes.

"Estamos entusiasmados y seguros con la idea de trabajar con un líder del mercado como Huawei, para dar a nuestros clientes alternativas mejores en el mercado submarino." dijo Gabriel Ruhan, director ejecutivo de Global Marine.

Global Marine Systems Limited – Reino Unido
Fax: +44 1245 702210
Email: info@globalmarinesystems.com
Website:
www.globalmarinesystems.com

Huawei Technologies Co Ltd – China
Email: support@huawei.com
Website: www.huawei.com

Éxito de Extrudex en wire 2006

Gracias al éxito obtenido en wire 2006 en Düsseldorf, Alemania, la compañía Extrudex ha recibido un gran número de peticiones de información sobre extrusoras y equipos para la producción de cables miniaturizados.

El éxito obtenido con la venta de sistemas de miniextrusión para la tecnología médica ha permitido a Extrudex suministrar en poco tiempo unidades de extrusión a la industria del cable.

Los sistemas cada vez más complejos utilizados en el campo médico y de la automatización requieren cables que transmitan datos y energía de manera segura en el menor espacio posible. Esto significa tener conductores con diámetros de entre AWG 25 y AWG 50 y espesor de pared del tamaño de micrones, por ejemplo 20µ. Las tolerancias requeridas se ajustan a estos valores y deben ser cumplidas absolutamente para garantizar todos los procesos sucesivos.

Las extrusoras de Extrudex están equipadas con tornillos de 12 a 15mm de diámetro con una longitud de transporte de 25 D. La reducción al mínimo de las paradas permite bajar los consumos y aumentar la calidad del material fundido evitando inclusiones y quemaduras. Por lo tanto, se reducen al mínimo también los posibles rechazos.

El volumen de producción está comprendido entre 50 y 3500 g/h según el material y las herramientas utilizadas. La unidad es accionada por un motor compacto de CA que no necesita mantenimiento. La gama de tornillos de transporte ha sido diseñada para gránulos de forma estándar y puede ser optimizada según los materiales.

Más del 50% de los pedidos recibidos estaban relacionados con los plásticos fluorados. Extrudex tiene una considerable competencia en este campo obtenida con el suministro de equipos para muchas aplicaciones diferentes. Las extrusoras para esta aplicación son protegidas contra la corrosión en todas las partes que transportan material y están equipadas con sistemas de calentamiento a alta temperatura.

Las extrusoras pueden ser instaladas de acuerdo con las necesidades del cliente: en soportes que se pueden regular en horizontal y vertical para usos específicos o en un bastidor permanente con accesorios integrados; se pueden suministrar también dispositivos de control de temperatura.

Extrudex – Estados Unidos
Email: sales@extrudex.com
Fax: +1 416 745 0925
Website: www.extrudex.com

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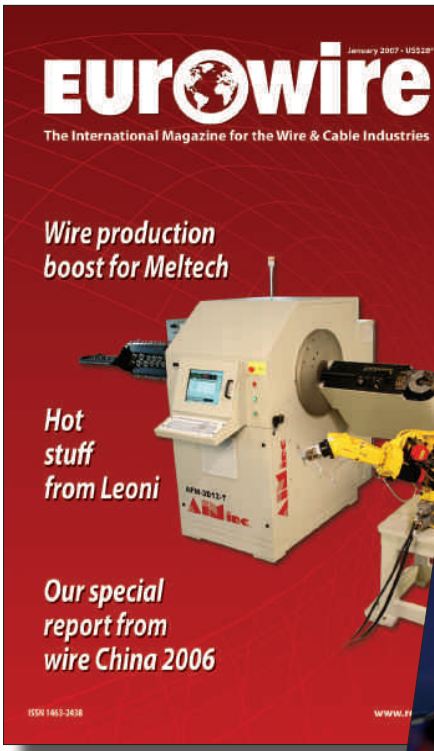

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Handling & Packaging Equipment

Today, producers of wire and cable are able to take comprehensive responsibility for the handling, packaging, storage, transportation, and delivery of their products. In this section of EuroWire we see how they are utilising the many and varied products and services available to them.

▲ *Propaflex from Propack*

High protection packaging

Propack, Italy, specialises in the design, production and distribution of packing, packaging products and systems. The company was initially involved in the distribution of traditional packing products, and has since branched into the sector of safety packing, designed to protect all types of manufactured goods in the severest transport and storage conditions.

The company has developed Propaflex, to guarantee high quality protection for all products sold in rolls. Propaflex is a plastic sheet, extruded so as to obtain two different surfaces: the inner surface is smooth and adheres perfectly and evenly to rounded surfaces, protecting them in the most effective manner; the outer surface is specially undulated to reduce friction with other materials, and is capable of withstanding violent impact, heavy weight, shock or compression.

Propack was one of the first companies to be certified to standard UNI EN ISO 9001- 2000 for the design and manufacture of materials, devices and accessories to protect and prevent damage to finished products during transport and storage.

Propaflex is designed to satisfy the needs of steelmakers and cable manufacturers, but is also suitable for use in many other manufacturing industries. Propack has selected a range of products which, together with those produced internally, enable them to offer a complete, comprehensive service and the most effective, advanced solutions for all packing and shipping problems

▲ *Packaging protection from Propack, Italy*

Propack SpA – Italy
Fax: +39 011 950 7800
Email: info@propackgroup.com
Website: www.propackgroup.com

Eliminating the need for manual handling

The new Swing Lift Foldaway 1000 from Penny Hydraulics is a compact, robust and reliable vehicle mounted crane for pick-ups, drop sides, flat beds and box vans that can lift a full 1,000kg load at the maximum boom extension of 1.5m. The crane is suitable for a wide range of delivery, service and engineering applications. Like all Penny Hydraulics products, it is designed and manufactured to eliminate the need for manual handling and reduce the risk of injury to operators and damage to vehicles and loads whilst helping employers to comply with Health and Safety regulations.

The new Foldaway 1000 incorporates hydraulic slew as standard. This promotes safety by eliminating the need for operators to use physical effort. It provides greater control over the boom and load because all lateral movements are powered smoothly and accurately by the precise hydraulic mechanism.

Hydraulic slew also eliminates the risk of the boom and load from moving unexpectedly, even if the vehicle is parked on an incline. Electrical and mechanical slew options are also available.

Boom height and extension can be specified manually or hydraulically for added versatility. The boom length is 1.5m when extended and 1.2m when fully retracted. Load lifting and lowering is enabled by a powerful and robust electric winch. A hydraulic winch, driven by the vehicle's PTO, is available as an option and enables operators to utilise all of the benefits of a fully hydraulic solution.

▲ *Penny Hydraulics' Foldaway 1000*

The standard 9m rope is ideal for most loads and allows items to be handled below ground level. Longer ropes can be supplied to support deep-hole construction, utility and maintenance applications. The Foldaway 1000's remote control facility and hydraulic slew ensure that operators stand away from the handling area for additional safety when lifting heavy and bulky loads.

Penny Hydraulics – UK
Fax: +44 1246 810403 • **Email**: sales@pennyhydraulics.com • **Website**: www.pennyhydraulics.com

Intelligent solutions from Windak

Windak AB – operating out of new offices in Stockholm, Sweden – offers a complete range of products for fully automatic packaging lines.

The new offices will provide the company with larger facilities for product demonstration, assembly and final testing.

The successful range of palletising equipment to the automotive industry will primarily be built at the new facility.

Windak supplies the following range of equipment:

Windak automatic coilers and spoolers:
- versatile and high output – largest range in the industry;
- fully automatic coilers – from max 360mm coil OD to max 1,000mm coil OD – seven different models;
- fully automatic spoolers – from 165mm-1,200mm spool flange diameter – five different models.

▲ *The Windak CW5 automatic coiler*

Palletising and Pallet handling equipment:
- palletiser for automatic stacking of spools and coils onto pallets;
- multiple pallet handling solutions such as conveyors, intersections, lifts and pallet turners.

Pay-off & take-ups:
- stand alone machines or rewind lines including advanced laying units;
- sizes from: 200mm-3,000mm reel flange diameter – six different models – manual or semiautomatic;
- other sizes and specifications can be discussed per request.

Windak AB – Sweden
Fax: +46 8 580 389 55
Email: info@windak.se
Website: www.windak.se

▲ *The Windak DW32-S automatic spooler*

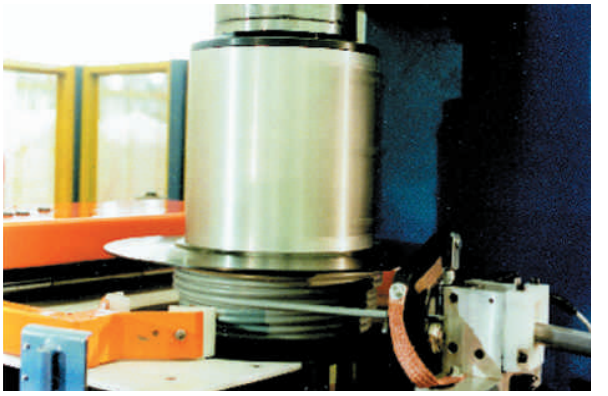
Packaging specialists

Engineering Future Automazione Flessibile – EFAF – is committed to providing innovative and reliable packaging lines to the international wire and cable industry.

EFAF manufactures five ranges of automatic coil winding lines; Mautomatic 300 Evolution, 400, 500, 600 and Mac and two ranges of automatic spool winding lines; Mab 350 and 630. The Mac and B-Mac are the new range of cost-effective, automatic, easy, compact and ready to work coiler and/or spooler.

Last year EFAF introduced a new range of fully automatic rewinding lines for a wide range of wooden spools. In semi-automatic cycle it is also possible to process iron spools.

The line may be composed of an SDA 2240 portal pay-off, a dancer, a feeding and winding spool store, a traversing and cutter unit, an AVP or AVPD in case of double take-up and a film wrapping machine.



▲ *An example of an EFAF automatic coil winding line*

All operations from the feeding of the empty spools up to the packaging with the stretch film are completed automatically. The operator must only position the empty spools on the store and take-off the packaged spool at the end of the line, for a considerable decrease in dead-time.

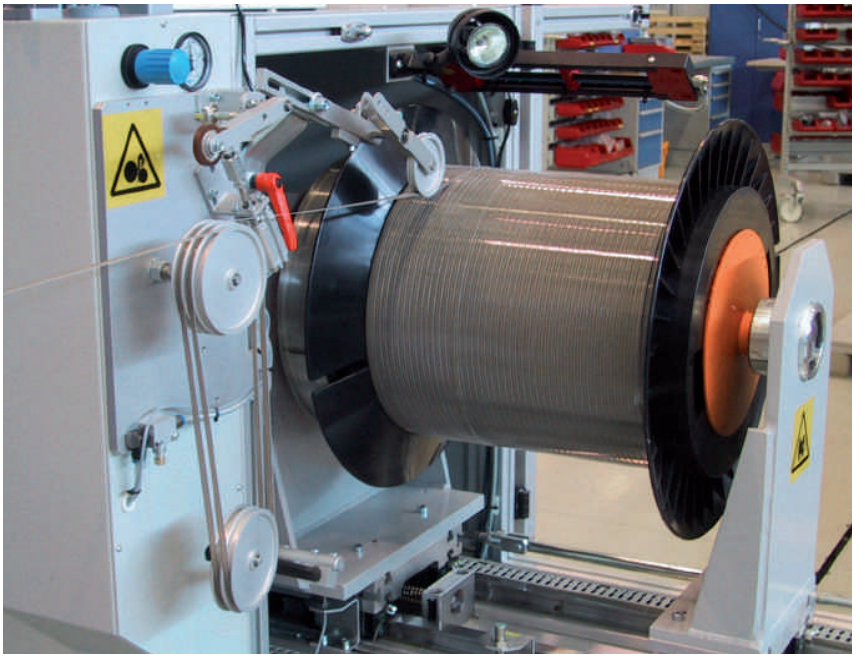
EFAF has recently sold other two automatic rewinding lines to NKT Poland and to Bruno Baldassari & F. lli Spa, Italy, with both customers opting for the version with double take-up.

EFAF Srl – Italy
Fax: +39 0583 981678 • **Email**: efaf@efaf.it • **Website**: www.efaf.it

Cooperation pays off

Sonoco Crellin BV has more than 15 years' experience in producing and marketing a full range of spools and reels that meet the demands of companies producing fibres, fibre ribbon and optical fibre cables.

The company has introduced high capacity reels after working in close cooperation with Nextrom. High capacity reels are designed for use in fibre draw, proof testing, fibre ribbon, blown fibre and UV tight buffering applications and cable stranding equipment.



▲ *High capacity reels from Sonoco*

Reels are now capable of holding 750km and 1,300km lengths of fibre, while flange diameters are 450mm and 540mm. To accommodate different equipment, shaft diameters come in three diameters – 1", 2" and 3" – flanges are tapered in both executions.

For automatic fibre transfer from one reel to another in a dual take-up, tapered flanges can be executed with different slots to pass the fibre through. Both these new reels can be adapted to existing Nextrom machinery. With options of variable traverse sizes, customers can also design their own customised reel.

Sonoco Crellin BV – Netherlands
Fax: +31 10 455 1298
Email: stephan.beke@sonoco.com • **Website**: www.sonoco.com

Quality assured from Bobinor

Bobinor is mainly devoted to the design and manufacturing of all kinds of reels and spools for wires and cables, with a range that also includes some special accessories for the wire and cable industry. The modern manufacturing equipment not only allows the standard production range, but also any special customer designs.

And customers play a large part within the company, helping the technical department to improve the existing product range and adapt it to new needs and technologies. A quality assurance department controls the complete production cycle from the incoming raw materials to the final test and trials, and to guarantee the conformity of the goods ordered to customers' specifications.

Bobinor SA – Spain
Email: comercial@bobinor.com • **Website**: www.bobinor.com

New concept automatic spooling line

Domeks Makine, Turkey, has developed a new fully automatic spooling line, featuring a 2,000mm driven pay-off, horizontal type motor, controlled accumulator, spool feeding conveyor and spooling and stretching head. The company has produced a new concept fully automatic spooling line for flat and round type cable spooling at up to four spools per minute line speed.

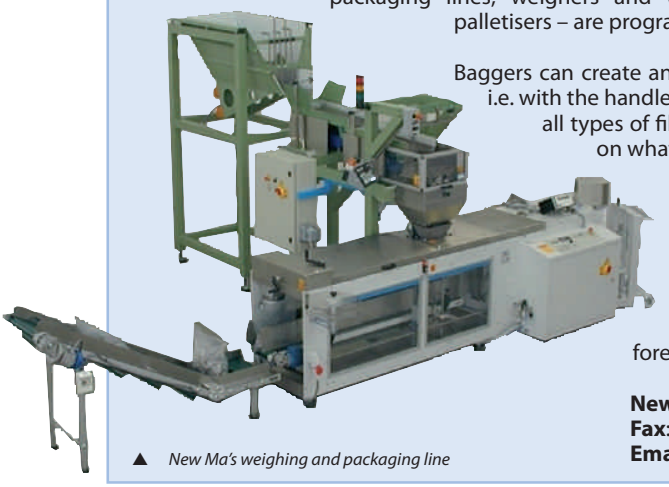
The Reelmatik 350 handles spools with outer diameter from 160mm-350mm, with inner diameter from 70mm-120mm, and with spool height from 80mm-250mm. The cable diameter range is 4mm-12mm. The machine also features stretch wrapping and spool winding in the same head, in a compact design with fewer moving parts than similar machines.

Domeks Makine Ltd – Turkey
Fax: +90 216 364 3913
Email: info@domeksmakine.com
Website: www.domeksmakine.com

Finding the perfect solution to packaging needs

Innovation has led to New Ma staying ahead of the competition and providing the perfect solution to customers' packaging needs. Diversification in their product range allows them to deal with simple solutions through to highly customised systems.

All of their machinery – including vertical and horizontal form-fill seal machines; automatic counting, weighing and packaging lines; weighers and weight checkers; carton forming and closing systems and robotic palletisers – are programmed and controlled by high-end IT programs.



▲ *New Ma's weighing and packaging line*

Baggers can create and fill both simple plastic bags of all sizes, but also more complex bags, i.e. with the handle hole, with the Euroslot, and with seamless sealing. The machines can use all types of film reels (PE, PP, OPP, BOPP, Shrink, MR, BDF, PVC and Stretch) depending on what best applies to the customers' production and marketing strategies.

With worldwide representation, New Ma is continuously striving to position itself in the packaging machinery industry exactly where the highest quality meets with an affordable price.

To do this they not only draw upon the latest technical, electronic and managerial advances, but they continuously research to keep at the forefront of the industry.

New Ma Srl – Italy
Fax: +39 445 575489
Email: info@newmapackaging.com • **Website**: www.newmapackaging.com

No need for adjustment

PS Costruzioni Meccaniche has designed and installed a double packaging line with an automatic pallet unit.

The double plant consists of an automatic coiling line, model PS 470/16, and an auto-matic spooling line, model PS 400/14/B.

The company's automatic lines can also work both in line with an extruder and as an independent unit.

The lines produce different products, namely coils and spools, which are conveyed automatically to an automatic pallet unit.

By using special pliers, this automatic pallet takes both products alternately and places them on the pallets, without the need for adjustment.

After the two pallets are automatically loaded with coils and spools, they move onto motorised rollers, to an automatic pallet wrapper.

Also installed in the plant is an incremental cable marking device, from 0 up to 100m, which uses an ink jet printer. The cable is cut exactly on the 100m mark.

With more than 40 years' experience, PS pride themselves on the construction, craftsmanship and assembling accuracy of their mechanics to remain one of the leaders in the industry.

Constant testing, winding, wrapping with film, labelling and arranging on the pallet ensures that the final product reaches customers in excellent condition.

A high production rate of at least 20km of cable per hour is achieved – thanks mainly to the reduction of dead time and to the extraordinary peak rotation speed of the winding head, performing in just one step these normally separated operations.

The PS machines are produced under a Quality Certification System complying with UNI EN ISO 9002, and are further guaranteed by the PS policy of assistance from a number of centres worldwide.

PS Costruzioni Meccaniche Srl – Italy
Fax: +39 039 689 8769
Email: info@costruzionimeccaniche.it
Website: www.costruzionimeccaniche.it

▼ *The PS 470/16 packaging line from PS Costruzioni Meccaniche*

You can count on Pentre

Pentre Group, incorporating Hearl Heaton design, manufactures and supplies a comprehensive range of high speed steel and plastic ABS process reels, plywood, and cardboard reels, wholly moulded plastic spools, steel and wooden – shipping reels and drums – equipment for the offshore industry.

Hearl Heaton, with more than 40 years' experience, manufactures ABS (plastic flanged) high speed process reels for the wire, cable, telecommunication and fibre optic industries.

Quality and high specification can be guaranteed, by the use of certified materials, which include a special grade of virgin ABS for the flanges, specially selected to give maximum strength without brittleness.

The remaining parts are manufactured in automated machinery to produce an accurate and precise reel with a range from 250mm-1,000mm diameter, conforming to both DIN 46395 and imperial standards for optical fibre tubing.

▲ *A whole range of reels from Pentre*

Pentre's whole operation is focused on developing technically advanced processing solutions for today's new modern and high-speed wire and cable manufacturing plants, including the latest robotic handling systems. Pentre's reels and drums can be manufactured to either international recognised standards or to customers' own specific requirements.

Pentre Group – UK
Fax: +44 1924 400 803
Email: info@hearlheaton.co.uk
Website: www.pentregroup.com

Advanced robotic handling system

The MGS Group (whose member companies include MGS Manufacturing, Hall Industries, and Northampton Machinery) manufactures a technologically advanced robotic handling system.

The ReelBOT robotic automatic combination de-palletising and palletising system uses a robotic jib style arm or gantry crane for de-palletising and palletising.

▲ *MGS Group's ReelBot robotic handling system*

One pallet of empty reels is positioned behind the entry conveyor and one empty pallet is positioned behind the exit conveyor. The PLC directs the three-axis picking device, ReelBot, to remove empty reels from the pallet and load them onto the entrance conveyor, and to remove full reels from the exit conveyor and load them in a programmable pattern onto a pallet. A recipe system stores the pallet patterns.

One gantry crane is capable of servicing two fully automatic take-ups on line with two jacketing lines.

The MGS Group – USA
Fax: +1 315 337 4502
Email: sales@mgshall.com • **Website**: www.mgshall.com

Pay-offs, take-ups and winding systems

The machinery of these three processes is built for performance across the gamut of product handling applications, They serve wire makers with zero tolerance for loss, in time or material, in any phase of the production cycle. The companies reviewed in this section of EuroWire offer that calibre of machinery, products, and services.

▲ *An example of a PS Costruzioni Meccaniche machine*

Portal and Cantilever equipment from PS Costruzioni Meccaniche

It may well be a worldwide well-known company for designing and manufacturing cable packaging and rewinding lines, but Italy's PS Costruzioni Meccaniche also has an outstanding reputation for its production of Cantilever and Portal Pay Off stands and Take-Ups.

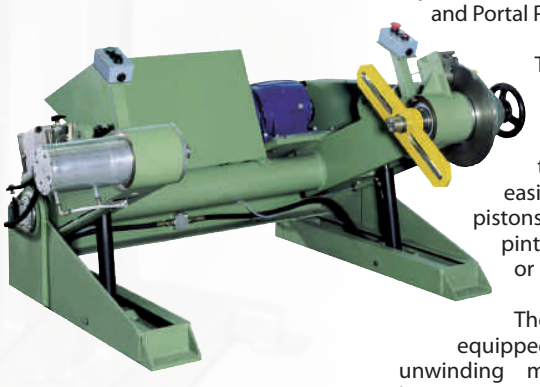
The Cantilever type is used for smaller reels, having a diameter from 400mm up to 1,250mm. Even for this type, the reel lifting can be easily made by using hydraulic pistons, while the closure of the pintles can be either pneumatic or hydraulic.

The Cantilever type is also equipped with AC winding/unwinding motors. The Portal type has various models, according to the reel dimensions to be used and it is normally used for heavy reels, having a diameter starting from 1,600mm up to 3,000mm.

Portal Pay Offs are housed on trails and have a lateral moving, from right to left. In this way, the lifting operations can be easily performed and the Pay Off can also work as a wireguide.

The reel lifting is driven by motorised gearboxes, while the lifting and closure of the pintles is made by a motor gearbox with electric and mechanic torque limiter. This unit is equipped with AC winding/unwinding motors.

PS Costruzioni Meccaniche Srl – Italy
Fax: +39 039 689 8769
Email: ps@pscostruzioni.com
Website: www.pscostruzioni.com



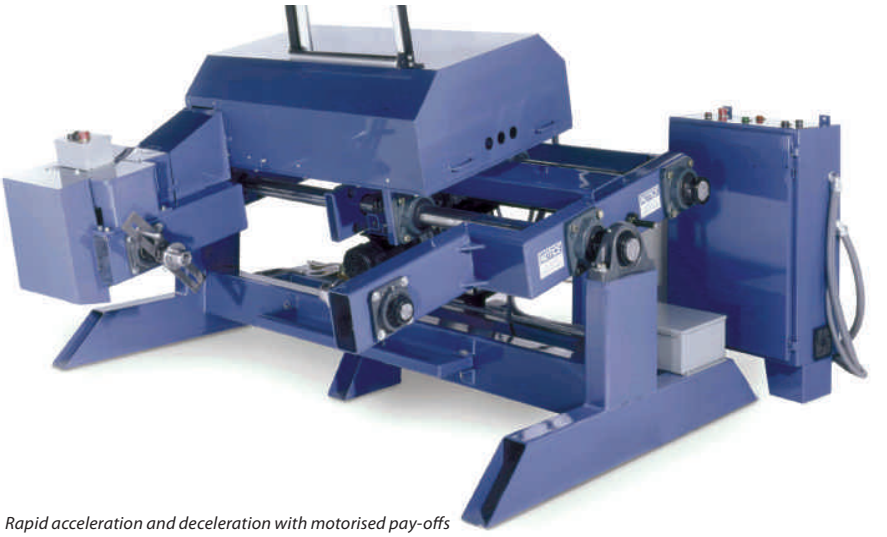
▲ *The Cantilever type is used for smaller reels*

Consistent low line tension

Windings' line of motorised payoffs offers rapid acceleration and deceleration of the supply reel while maintaining consistent low line tension in any rewind application. Features include air powered reel lifting; interchangeable pintles and reel drive dogs, and operator push buttons and relay logic for safe and proper line operation. Precise line tension control is provided by an available air cylinder controlled dancer.

Mechanical features:

- Pay-off reel diameter: 24-52";
- Pay-off reel width: 13-40";
- Maximum payoff reel weight: 3,500lb;
- Maximum line speed: 3,000 FPM;
- Drive motor: choice of 5-10-15 HP;
- Drive type: four-quadrant regenerative DC;
- Transmission: drive-all four speed on z5 and 10 HP, 3:1 and 5:1 on 15 HP;
- Emergency brake: air powered 400 ft-lb;
- Dimensions: 76 x 80 x 58";
- Weight: 2,800 lb;
- Air supply: 70 psi min;
- Power supply: 5/10/15 HP - 230/230/460 V, 1/3/3/ Ph, 30/40/30 Amp, 50/60 Hz.



▲ *Rapid acceleration and deceleration with motorised pay-offs*

Windings' offers a complete line of Reelex coiling equipment and ancillary equipment such as payoffs, accumulators, and spooling machines.

Based upon a series of US and foreign patents that cover the equipment for making Reelex coils, the packaging elements, and the Reelex coil itself, the Reelex System has been a popular, economical, effective alternate to reels and spools for over 25 years.

While originally only used for communication cables, Reelex and Reelex II packagers are now used instead of reels and spools in a variety of wire and cable products including LAN, CATV, signal and alarm, and fibre optic cables, hook-up wires, and many other constructions.

Windings Inc – USA
Fax: +1 845 878 7887
Email: sales@reelex.com
Website: www.reelex.com

Meltech announces new MT-DR automated dual reel take-up machines

Wire processing specialist Meltech Engineering Ltd has revealed the new MT-DR range of automated dual reel take-up machines for continuous production of data communications and LAN cables, general wiring and heat shrink and wire tubing applications.

Offering winding speeds up to 1,500 metres per minute and based on the classic Biwater DR take-up machine design, Meltech has re-engineered the machine and its control system to give improved winding control, layering, speed and length control at point of changeover.

Available in drum sizes from 400mm-1,600mm, the MT-DR is a robust machine that can be readily integrated within an existing wire production line.

Accurate winding control lies at the heart of the flexibility of the MT-DR range. Meltech's proprietary control technology calculates the precise tensioning of the wire during winding. The control system also features a selection of manufacturer-specific recipes based on winding pitch settings, drum sizes and optimum layering patterns.

The Meltech dual reel take-up machines are available in both semi and fully automated operation. In semi-automated mode the drum is manually loaded and unloaded.

When fully automated the drum is automatically loaded and unloaded. In addition, the MT-DR machines offers a smooth upgrade path allowing higher capacity drums to be accommodated to meet production requirements.

Meltech Engineering Ltd – UK
Fax: +44 1245 680175
Email: sales@meltech.co.uk • **Website**: www.meltech.co.uk

Making it simple . . .

Spanish company Electrorrec, founded in 1973, specialises in the supply of machines for the wire and cable industries and is well positioned to offer pay-offs, take-ups, spoolers, winding systems and handling equipment. The motorised rotary pay-off DRM-S is one of the latest developments and has been designed to feed a large variety of machinery due to its simple and efficient synchronisation system. A pneumatically operated dancer arm and a potentiotemer synchronise the pay-off and production line speeds automatically.

The floor mounted design and the electrical cabinet on the machine's frame simplifies its installation. In addition, it runs clockwise or anticlockwise depending on customers' requirements and any kind of coil can be loaded on the clockwise or anti-clockwise spooling system.

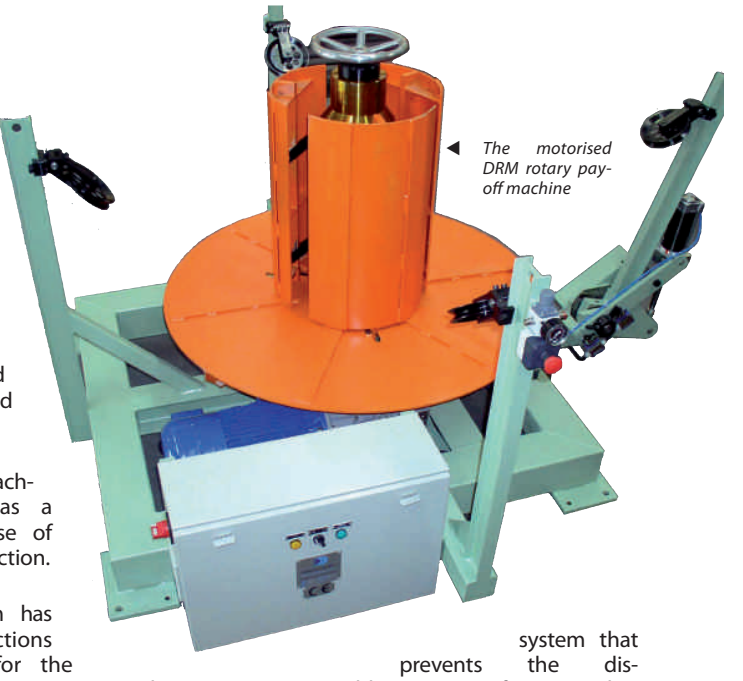
The mechanically operated expanding bore, consisting of three sectors at 120ºC that fit the inner diameter of the coil, covers a range of 430-620mm. These sectors are equipped with rolling devices on sliding guides.

Another significant feature is the three storage arms of the last wrap (the wire is guided through pulleys) to avoid crossings and knots.

The machine is available in different sizes depending on material, wire diameter, pay-off speed and coil weight and measures.

The pneumatic detachable spool CDN has a strong frame because of its heavy steel construction.

The retractable drum has four hinged sections to make it easy for the extraction of the previous strapped material. The disassembly and re-assembly of the spool is pneumatically operated and the compressed air is supplied by means of swift fastenings allocated under the upper flange. The spool is equipped with a mechanical safety system that prevents the disassembly in case of air supplies failure while running.



◀ *The motorised DRM rotary pay-off machine*

Electrorrec SA – Spain
Fax: +34 936 820 383
Email: sales@electrorrec.com
Website: www.electrorrec.com

Fully automatic take-up

The MGS Group manufactures an 18" fully automatic, single or dual take-up for on-line or off-line packaging. The take-up is suitable for use with popular packaging sizes of products such as THHN, NMB, building wires, category, coaxial cable, tubing, hose and optical fibre cable (round or flat cables). The take-up loads empty reels, starts the product on the reel, winds, stops at length, cuts, wraps and unloads the completed packages, all automatically. The two take-up spindles are precision pintle-type traversing reel style, to provide a superior wind on round and flat products.

Reels are loaded, wound, unloaded and stacked all in the vertical orientation, eliminating the need for complicated mechanisms to 'flip-flop' the reels into and out of a horizontal winding position. The cable transfer process is gentle on the product, and the take-up stops, automatically cuts, and transfers to the next reel.

▲ *MGS Group's 18" fully automatic take-up for on-line or off-line packaging*

The take-up will run all types of reels, with a diameter range of 10"-18" (250mm-450mm). The system can be set up to run on- or off-line, or both, and can also work with multiple extrusion lines. A positive automatic stretch wrap applicator is provided at each winding station, and the starting end of the wrap is positively pinched under the end of the product just prior to the end of the winding cycle.

A range of additional features can be integrated into the automatic functioning of the line, including label applicators applying labels under the shrink wrap and/or on the reel flange, ink jet sequential length marking, lump and neck down, spark test and integration into the factory production system.

The MGS Group – USA
Fax: +1 315 337 4502 • **Email**: sales@mgshall.com • **Website**: www.mgshall.com

New concept from Domeks Makine

Domeks Makine has developed a new fully automatic spooling line with a 2,000mm driven pay-off, horizontal type motor controlled accumulator, spool feeding conveyor and spooling and stretching head.

The Reelmatik 350 Automatic spooling line is a new concept and has been produced for flat and round type cables, spooling 50 or 100 metres long with up to four spools per minute line speed.

Available outer spool size diameter ranges from 160mm-350mm with an inner diameter range of 70mm-120mm. Cable diameter ranges from 4mm-12mm.

The new machines main advantage is that the stretch wrapping and spool winding is in the same head, allowing excellent stretch wrapping quality and good fixing of the end of the cable.

Domeks Makine – Turkey
Fax: +90 216 364 3913
Email: info@domeksmakine.com
Website: www.domeksmakine.com

Modular pay-off and take-up systems

Weber & Scher Mfg Co, Inc, a provider of equipment and technology to the wire and cable industry, has launched its latest line of modular cable pay-off and take-up systems.

The new systems are designed to offer cable manufacturers a compact and economical unit that can be used throughout the factory for a variety of applications.

The pay-offs and take-ups are offered in different sizes to accommodate a range of reel diameters and widths. Pay-off systems can be furnished non-driven with a mechanical or electrical brake. Driven pay-off and take-up models are also available that can be either torque regulated, or speed regulated from a dancer to maintain the preset cable tension.

The cable take-up systems can be furnished with a mechanical type cable traversing mechanism to provide a level wind on the cable reel.

▲ *Weber & Scher's shaftless cable take-up*

In addition, reel traversing type cable take-up systems are offered to obtain a level wind on the reel while also maintaining the cable on the wire centreline. Both optical and processor based traversing systems can be furnished to suit any application.

The company also manufactures a variety of cable accumulation systems for use in tandem with the pay-off and take-up units, to allow continuous operation of the production line. Both vertical and horizontal accumulation systems are available in heavy duty and light duty models.

The accumulation systems can be furnished for dancer trim on-line speed control of the pay-off or take-up units for precise tension regulation.

Weber & Scher Mfg Co Inc/AFA Industries – USA
Fax: +1 908 236 7001
Email: webscher@webscher.com
Website: www.webscher.com

Marldon Rolling Ring Traverse Units

What's important to users of a traverse unit? The quality, the performance, the price? The answer is, of course, 'yes' to all three, and Marldon are confident that no customer would find one of their traverse lacking in any. But there are two extraordinary attributes of the Marldon product range which give the customer that extra added value.

Marldon uses a design which is unique in the variable pitch rolling ring traverse market – a monocoque body which is completely stable on the shaft and a separate 'load-isolated' pressure plate to engage the unit with the traverse shaft and drive to the unit.

This is a separation of the two essential functions of a traverse, load carrying and traversing motion. If these functions were not separated and the traverse casing used to both carry an external load and to create traverse drive, it would then be necessary to allow the unit to 'float' on the shaft to accommodate differing conditions which would result in differing performance.

It follows that a requirement to float would mean an inability to remain stable! Not only does this unique Marldon design afford operational advantages - the resulting unit is extremely simple in its construction. It can be disassembled and rebuilt quickly and without specialist equipment thereby making in-house maintenance an easy and economical option

Marldon Group Ltd – UK
Fax: +44 870 90 700 16
Email: sales@marldon.com • **Website**: www.marldon.com

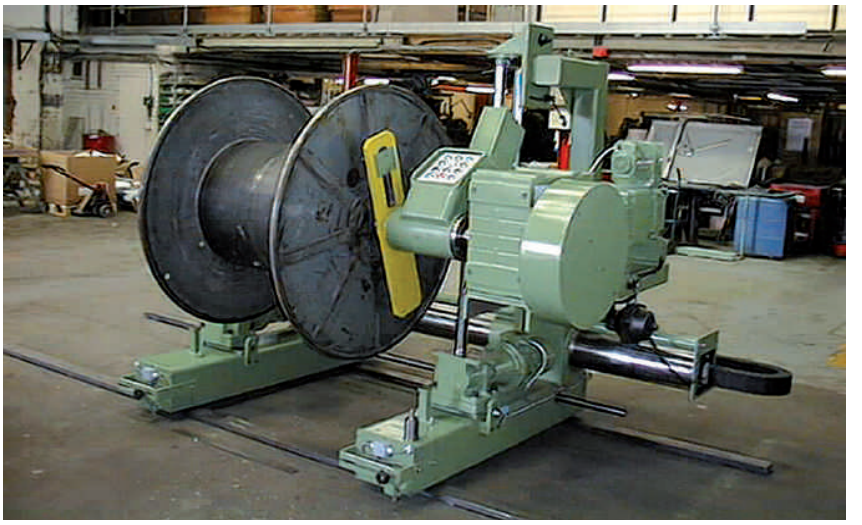
Essential equipment for reliable production

Pay-offs, take-ups and winding systems are not the most exciting pieces of equipment, but the fact remains that these machines are a key part of any reliable production line.

The simple process of winding products off and onto a spool, bobbin, drum or reel is common to a number of related industries. Designers, over the years, have arrived at many different ways (and names) of picking up the drum and turning it. Engineers at Cable Machinery Spares (CMS) have developed a comprehensive range of drum stands, reflecting the changing needs of the industry over 25 years.

Recent developments in drive technology and, in particular, AC drives and servo drives, have enabled much improved tension and speed control, traverse control and maintainability.

Combined with dancers and accumulators, the pay-off speed and tension of the product is accurately controlled. Traversing systems with safe and simple adjustment of pitch and width on the control panel are now available as standard.



▲ *CMS's Traversing take-up range*

With all the different stands available it can be confusing for the customer. CMS can help, using their wide experience to identify the correct equipment from a standard range of well-proven drum stands.

The most cost-effective solution can then be offered: the selection process looks at the weights and speeds involved, as well as the reliability and duty and the best way to handle the product.

CMS are continually developing new applications. Recent installations have included twin pan take-ups for the steel PC wire industry and uncoilers and recoiler stands for steel strip winding up to 30 tonnes capacity.

Cable Machinery Spares Ltd – UK
Fax: +44 1204 669002
Email: sales@cablemachineryspares.co.uk
Website:
www.cablemachineryspares.co.uk

State-of-the-art technology

Drouaire cable winding machines incorporate modern state-of-the-art technology, using a combination of electrical and hydraulic power. The result is one of the most rapid and easily operated units available.

The production range represents the widest possible choice for the cable, wire and optical fibre cable producers.

▲ *Pay-off 2600 and take-up 2600 with 'U cycle' for empty drums and filled drums*

Machines must be fitted to drums – for little drums (less than 1.4 metres Ø). Pay off, traversing unit and take up can all be in one machine.

This winding equipment is conceived for cable sellers and users. With the same machine, users can wind either on a coiler or a drum. The selection is easy and rapid and, of course, in complete harmony with security (CE labelled).

For bigger and heavier drums (1.4-3.4m Ø), a gantry type is highly recommended to work more efficiently. The layering unit should be motorised and controlled by PLC to wind the cable perfectly on the drum.

Drouaire – France
Fax: +33 5 53 88 76 49
Email: contact@drouaire.com • **Website**: www.drouaire.com

Comprehensive cable handling machinery

With an enviable reputation for supplying bespoke equipment, Nottingham, UK-based Autoreel Ltd are one of Europe's leading manufacturers of cable handling machinery for reeling, measuring and cutting cable, wire rope and other flexible products.

Take-ups and pay-offs are supplied for use as rewind systems or for 'on-line' applications in a production environment.

The machines produced range from a simple hand winder unit to large pintle loading, gantry machines with up to 20,000kg capacity.

Machines can be fitted with a wide range of optional extras including measuring meters, cable cutters, coiling attachments and automatic layering.

The company's easy to follow website gives clients an insight into the comprehensive range of take-ups and pay-offs.

Autoreel Ltd – UK
Fax: +44 115 9390201
Email: autoreel@autoreel.co.uk
Website: www.autoreel.co.uk

Winding machinery for the electrical industry

FUR Wickeltechnologie GmbH, Germany, develops and produces winding machines for the electrical industry.

The company's machines are used in the production of heating elements, current and voltage transformers, generator bars, coils for electrical engines, throttles and EMV filter elements.

The company offers an extensive range of winding machinery, mostly equipped with touchscreen displays and programmable logic control (SPS steering), including toroidal winding machines, semi-automatic stator-winding machines, taping machines, form coil-taping machines, winding machines for mica strips, layer winding machines, universal armature winding machines, hand-operated winding machines, wire rewinding machines, wire dereelers, and motor form spooling machines.

FUR Wickeltechnologie GmbH – Germany
Fax: +49 30 926 9262
Email: fur.rudert@t-online.de
Website: www.froitzheim-rudert.de

Don't overlook spool caps and tension brushes

Wyrepak's spool caps and tension brushes are often the simplest and most economical way to pay off wire. Sometimes overlooked for more sophisticated and expensive equipment, spool caps and tension brushes can be used with wire sizes from 0.002" (0.05mm) up to 0.130" (3.0mm).

▲ *A tension brush*

▲ *A belt-wrapped tension capstan*

Speeds of up to 1,200ft/min, (365 metres/min) can be achieved. Simply installed into the bore of the reel and ready to run without commissioning delays, spool sizes from 6"-49" (150-1,245mm) can be accommodated.

Steady back tension is provided as the wire passes through the brush but more precise tension control can be achieved by using one of Wyrepak's belt-wrapped tension capstans.

Wyrepak – USA
Fax: +1 860 632 5775
Email: sales@wyrepakind.com • **Website**: www.wyrepakind.com

Un-Coiler at the forefront of industries

Norwalk Innovation's Un-Coiler wire pay-off system has earned a place at the forefront of wire coil handling equipment for the forming, fastener, spring making and drawing/annealing industries.

The latest generation Un-Coiler features patented, maintenance-free drive, clockwise/counter clockwise uncoiling, portability and proprietary composite material caster wheels for load support, and feeds coiled materials automatically to meet the demand rate of the job without separate speed control settings.

The advanced design has significantly reduced the requirements for installation, adjustment and operation. Up to 10,000lb in weight of coil stock can be loaded to reduce downtime and improve productivity over single coil handling methods. The Un-Coiler will also handle wire carriers, reels or loose bundles.

Norwalk Innovation – USA
Fax: +1 203 944 0753
Email: info@norwalkinnovation.com • **Website**: www.norwalkinnovation.com

Multi-end bobbin winding machine

OMA Srl, Italy, has developed the BS 1 winder and CDE 250 motorised pay-off. On the BS 1 winding machine's bobbin drive and traverse unit, the bobbin is driven by a torque controlled servomotor which maintains the required wire pulling tension, from empty bobbin to full. The traverse width and winding lay length are controlled by a servomotor electronically synchronised with the capstan speed. The motorised capstan pulls the wires from the pay-off stations, supplying them to the bobbin at a controlled tension. This allows the wires to be laid on a flat, smooth surface, so they are wound with the same length and tension.

The electronic motor's synchronisation allows easy parameter changes, and the constant wire linear speed (up to 700 m/min) maximises the winding efficiency. The safety protection cabinet's transparent panels give good visibility and access, while ensuring the full protection of the operator.

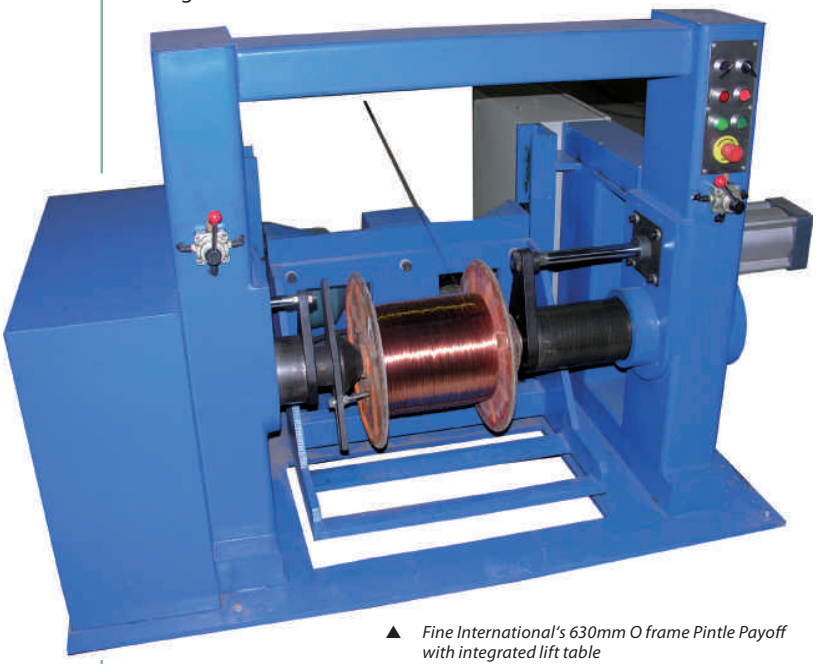
The CDE 250 motorised pay-off unit features a modular system with up to 48 positions. Each spool is driven by an inverter controlled motor, allowing the easy set-up of different tensions. Individual wire tensions are controlled by drop weights on a vertical accumulator, which allows for different pay-off bobbins weights and wire supply bobbins quantity issues. The company's automatic bobbin measuring device – model MB 1 – is a free standing steel cabinet which houses an automatic gauge, able to measure and store the exact traverse width of the bobbin and send the information to the BS 1 winder's control program. This avoids the manual correction of the bobbin traverse width during the winding process, and the measurement is calculated to within one hundredth of a millimetre.

▲ *OMA's BS 1 winder*

OMA Srl – Italy
Fax: +39 039 608 4571 • **Email**: oma@omabraid.it • **Website**: www.omabraid.com

Wide variety from Fine

Fine International offers a wide variety of pay-off and take-up systems for wires, cables and fibre optics applications. Shaft style pay-off machines are available for reel sizes from 250-800mm (10"-32") flange diameters, while units are available in drag or driven mode.


▲ *Fine International's 630mm O frame Pintle Payoff with integrated lift table*

Multiple station units for fibre optic loose tube lines include catenary arm dancers for precise tensioning of each fibre. Shaftless payoff systems 500-1,800mm (20"-72") are manufactured to customer specification, based on line speed and overall reel weight considerations.

Take-up units include belt driven or independently driven traverse units, and traversing reel variations are also available in many styles. Portal style units are available for reel sizes from 1,250mm-3,000mm (48"–120"). Take-up versions include independent traverse assembly, traversing reel or floor traverse. Automatic crossover take-ups are available for reel sizes from 500mm to 1,000mm (24"- 40"). Semi-automatic units can be designed for reel sizes up to 1,800mm (72").

Fine also manufactures a line of Figure 8 reelless spoolers which can be utilised in standalone respool lines or as an extrusion online system.

Fine International – USA
Fax: +1 732 933 4005
Email: sales@fineinternational.com
Website: www.fineinternational.com

The advantages of using induction heat technology in the treatment of wire products

By Martin Wagstaff, Radyne, UK

Induction heating – the basic principles

In order to fully understand the many advantages associated with induction heating, it is first important to understand the very principles at the heart of the technology. Used for many different processes, since the inception of commercial induction heating in the early 1940s, typical applications included the melting of metals, heating prior to bending or forming, various heat treatments including hardening and tempering and the joining of metals by brazing or soldering.

Earlier examples of induction heating also included the development of the radio frequency or tube-type oscillator equipment, which typically operated at high frequencies, and motor generator sets used to develop induction heating power at lower frequencies.

If a textbook definition of the process of induction heating were required, it would invariably be: *"Induction heating occurs when a metallic object is placed in an a varying electromagnetic field. Induction heating occurs due to the agitation of the molecular structure of the object via the electromagnetic field, when molecules are energised, collide and subsequently produce heat."*

Consequently, induction heating may be compared to the electrical arrangement of a humble transformer, whereby the primary of the transformer comprises the induction power source or generator which provides power to the induction coil or element, with the object to be heated being placed in the magnetic field of that coil or element and being the transformer secondary.

An alternating magnetic field is then applied from the induction power source or generator, to the induction coil or element. By means of mutual conduction, magnetic flux lines are passed through the object in order to create a resistance to the flux path; as current subsequently flows, heat is generated.

Penetration depth

English physicist, Michael Faraday, in his development of the electrical transformer, initially noted the above phenomenon. Indeed, to eliminate this heating effect, transformers were subsequently designed with laminations to eliminate or reduce the effects of the electromagnetic field in heating the transformer. The reason why a laminated component built in the form of a transformer does not heat by electromagnetic induction is due to a phenomenon entitled 'penetration depth' or 'reference depth' and refers to the depth at which approximately 80% of current flows in a work piece.

This depth is proportional to the electrical resistance of the material being heated and the operational output frequency (measured in Hertz) of the induction power source or generator developing the magnetic field. At high frequencies, the penetration or reference depth is thin when compared to low frequencies – and this is a key reason why induction heating is so widely used in selective heat treatments of steel where the case depths of heat treatment can be precisely controlled by careful selection of the output frequency of the induction system.

A further determining factor on the effect of heating a metallic object in an electromagnetic field is power density, measured in kilowatts.

Accordingly, the higher the power density for a given frequency, the closer to the surface heating occurs. The lower the power density, the deeper the heating. The basic selection of induction heating for any specific process is, therefore, largely related to the choice of the correct induction power source output frequency and the correct power density for a given application.

Calculating the frequency

At frequencies used for induction heating, the current tends to flow in the surface of the conductor, to a depth dependant on the resistivity of the conductor, the frequency of the alternating current and the effective permeability of the conductor.

The effective depth of current penetration, in metric form, is provided by the formulae:

$$\rho = \frac{1}{20}\pi\sqrt{\frac{10r}{\mu F}}$$

In the above formulae:

p = depth of current penetration
r = resistivity in microhm centimetres
μ = effective permeability
(μ = 1 for non magnetic materials)

Via selection of the correct frequency, we are able to control how much of the material is heated, with high frequencies resulting in low levels of effective penetration and deeper penetration resulting from lower frequencies.

Taking our formulae, approximately 90% of the total heat is produced in the layer depth 'p' with greater depths heated by conduction through the material. However, for the most efficient through heating,

overlapping of the opposing currents flowing in the opposite surfaces of the conductor should be avoided in order to prevent current cancellation.

Typically, 'p' should be less than half the conductor radius, although this rule is not always applied. Different current penetration depths also apply for different materials and temperatures at various frequencies.

In the induction heating process, a metal component placed within or adjacent to an induction coil is heated by passing an induction current through that coil, which in turn, introduces another current within the component. Heat is produced by resistance to that induced current, according to the I^2R law (where I = Current and R = Resistance) and also by hysteresis loss in magnetic materials – an effect that disappears at the Curie temperature (approximately 760°C/1400°F).

Power selection
(relative to through-heated wire)
With correct frequency determined, and suitable power units selected, the next step to consider is power requirement, with the first stage being the determination of the heat content of the conductor. The heat content of a moving wire is purely a function of mass throughput, specific heat and temperature rise.

However, this apparently straightforward calculation is complicated by the fact that specific heat varies as temperature rises. Taking a medium of carbon steel as an example, the specific heat varies by a factor of 1.3 between 68°F (20°C) and 1,022°F (550°C) and 1.5 between 68°F (20°C) and 1,652°F (900°C).

Therefore, in determining heat content to heat carbon steel 1,022°F (550°C) and 652°F (900°C), as a rough rule of thumb, specific heats of 0.58 and 0.63 may be used. Taking this rule, the heat content of wire heated to 1,022°F (550°C) is 2.31 x lb/minute (1.05 x kg/minute) and to 1,652°F (900°C) 4.27 x lb/minute (1.94 x kg/minute) with the result expressed in KW. Having determined the heat content of the product, the next step is to determine the power output of the power unit by establishing a heating efficiency relative to the power unit output.

Heating efficiency
The typical induction system comprises a power unit, a heating coil system and facilities to 'match' the heating coil (and processed wire) to the power unit. The power unit is also known as a converter, inverter, or generator. This unit converts a 3 phase supply of 50 or 60 Hz to a nominal output frequency in the range of 250Hz to 800Khz at a single phase with power outputs from 1KW to 4MW in a wide range of power frequency combinations. Some dual frequency combinations are also available. These power units are either thyristor or transistor based.

The heating coil system, as applied to wire heating applications, consists of a copper tube wound into a spiral. The tube may be round, square or rectangular and often has additional copper strip brazed on the internal diameter of the spiral. The coil length, internal diameter, number of turns and percentage copper to free space along the inside diameter of the spiral are all relevant to efficiency. All power units will run within a frequency band eg 7-11kHz, 20-25kHz, and 40-50kHz for nominal output frequencies of 10kHz, 25kHz and 50kHz units respectively. In order to achieve operation within this band, the coil inductance, coil operational voltage and amount of capacity (KVAR) in the power unit tank circuit are all varied to suit specific wire sizes, materials, throughput rates and temperatures.

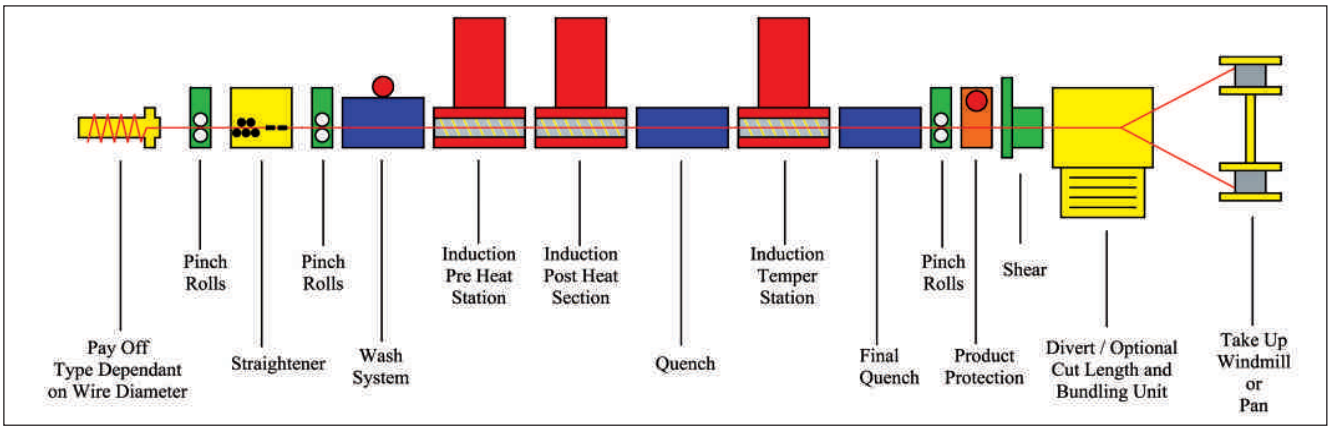
Considering efficiency, we must first look at the coil system. The internal diameter of the copper spiral is the most significant aspect determining the efficiency. In turn, this diameter is dependant on mainly mechanical aspects relative to wire guidance, wire vibration and wire contamination in addition to wire size and method of joining wire reel to wire reel. In general, the closer the coil to the material the higher the efficiency. In many instances, it may be required to run different wire sizes through a single coil.

The smaller sizes will be produced at a lower efficiency, but the compromise may be justified due to lower capital cost for fewer coil sizes and less down time due to reduction in coil changeovers for different sizes. The second aspect of coil design is coil length. In theory, to evenly through-heat a diameter to a given temperature, a time approximately equivalent to $D^2/25$ (where D = wire diameter in mm) seconds is required. The minimum coil length in metres is therefore $D^2M/25$ (where M = wire speed in metres/second).

In practice, particularly for small wire diameters, this minimum length would result in an excessive power density due to very short coil length with a consequent poor efficiency. Coil lengths are extended to improve efficiency. An experienced judgment is made on coil length (with coil diameter fixed due to wire dimensions) and several computations made with respect to coil voltage, number of turns percentage of copper to free space with a view to obtaining optimum efficiency. Within these computations the initial judgement on coil length may be varied to improve efficiency.

Wire heating applications
Nowadays, induction heating is applied to a wide variety of wire processes treating either single wires, multi wires running in parallel or wires stranded into ropes. Applications for wire heating include: heating prior to drawing – generally by heating the drawing dies; heating prior to encapsulation – for example in the manufacture of PVC covered electrical cables; heat treatment of wire – typically hardening, followed sometimes by tempering; annealing of single strand and multi strand wires; heating of wire prior to coating – either with a metallic coating or insulative compounds; relaxation as performed on prestressed concrete wires, and preheating prior to a conventional heating process.

▼ *Harden and Temper process wire line*



▲ *The Radyne continuous heat treatment wire line*

At-a-glance – induction wire heating processes in detail:

Heating prior to drawing
When wire is drawn down to smaller diameter sections it is advantageous to heat the die enabling less force to be applied to the wire while it is being pulled through for the sizing or reduction process. Attention needs to be given to the potential for thermal expansion of the die resulting in extrusion of the incorrect size and, therefore, the temperatures are generally limited.

Heating prior to encapsulation
Generally applied to aluminium wires both single and stranded. Wire is preheated as it leaves the take off roll and the induction coil is positioned on the catenary angle of the wire line. The wire passes through the induction coil where it is heated to approximately 250°F (120°C) and then immediately passes to the encapsulation process where the PVC flows evenly over the wire. The induction coil length is dependent upon the speed of the process and upon the depth of heating required through the wire cross section. As it is not essential that the wire be through heated, the induction coil length is in the range (for most applications) of 20 to 40" (0.5 to 1 m).

Heat treatment of wire
Continuous hardening and tempering of steel wire is particularly important in certain wire applications such as in the production of deformed bar for reinforcing concrete structures. This is achieved by using a horizontal in line process where the wire is heated to an austenizing temperature of 1,742°F (950°C), followed by a quench out with water and then reheated to between 660°F (350°C) and 842°F (450°C) for final temper, the temperature being dependent upon the final product tensile strength requirements. Radyne has a registered 'Hi Bond' process for this specific application.

If the wire size is of large enough section such that current cancellation does not occur at the austenizing temperature, a single power source with a single output frequency may be used.

Annealing
Steel wires typically of between 0.040" (1mm) to 0.400" (10mm) are heated to a specified annealing temperature dependent on the wire grade of between 600°F (315°C) to 1,000°F (540°C) for full body annealing. The output frequency of the induction power source is dependent upon the wire diameter and the power level on the production rate needed. Wires can be annealed as a single strand or in multiple strands, all wires generally running parallel to each other in the horizontal plane. Wires are fed on a centreline distance of 0.61" (15.5mm) to 1.0" (25.4mm) each passing through a ceramic tube for wire guidance through the coil and to ease threading of the line.

Heating prior to coating

The following processes represent two distinctly separate treatment methods; diffusion or metal coating and insulative surface coating.

Diffusion
The most common process for this application globally is in the production of tyre cord but, could be equally applied to other markets. In a similar method to the annealing process, steel wires of between 0.031" (0.8mm) to 0.080 (2mm) diameter are heated to 1,112°F (600°C) to melt surface coatings of copper and zinc which then diffuse into the base wire to provide a barrier for rust formation. Wires are heated generally in multiples arranged in a horizontal plane through an induction coil arranged as an oval shape, the wires being fed through individual ceramic tubes. The production rate is determined by the calculation: D x V where D equals the wire diameter and V the wire velocity or throughput speed. Typical power supplies used are 60 to 240kW at an output frequency of 25kHz, with induction coil lengths of 7 to 8 ft long (2 to 2.5 m). The phenomenon known as current cancellation can be used effectively on the application, in that an induction frequency is chosen that is comparatively low relative to wire section ensuring that if a wire breaks in the line that it cannot be heated above Curie temperature (approximately 1,400°F). This eliminates the need to immediately stop the line in the case of a single wire breakage. The cooling rate is controlled, sometimes by using muffles, which may or may not include gas quenching, or simply in open air.

Insulative surface coating
In the production of electrical wire using coatings such as enamels, epoxies or heat sensitive tape wrappings, the wire can be heated continuously in-line. This technique can also be used for drying paint on wire. As the temperature requirements are generally low (less than 300°F [280°C]), a small power supply can often be incorporated in an existing coating line, the power source operating at a high frequency as it is only necessary to heat the wire surface (not throughout the wire section).

Relaxation
This process is applied to the production of wire rope and is similar to a wire tempering process in that the wire is continuously heated to 600/1,000°F (315/980°C). The system generally comprises a single induction power source rated at an output frequency of 10kHz feeding either a static or moving induction coil assembly. If the direction of the process can be reversed the coil system is static, alternatively the coil system is arranged to move.

When the induction coil travels with the wire at low wire strand speeds, the coil system is physically adjacent to the quenching head and as the line speed increases the distance between the coil assembly and

the quenching head increases, thereby monitoring a constant dwell time between the heating and quenching processes.

Preheating
Induction heating systems have been incorporated on existing wire lines to pre-heat the wire and increase the production capability of existing processes.

For example, consider a single wire being preheated prior to entering an electric furnace or fluidised bed. In a particular project, two lines each incorporating 80kW/25kHz induction power source coupled to 10 ft (3 m) long induction coils were utilised to preheat a single wire from 70°F (25°C) to 1,292°F (700°C) prior to an electric furnace. Production rates were raised from 400 ft/min (122 m/min) to 656 ft/min (200 m/min) on wire sizes from 0.031 to 0.200" (0.8 to 5.0mm) in diameter.

Hardening and tempering – the 'Hi-Bond' process
In line hardening and tempering is a common application where the wire is heated to 1,742°F (950°C), quenched to harden and reheated to between 660°F (350°C) – 1,200°F (650°C) to temper.

Currently this approach is being successfully applied to the treatment of deformed bar for reinforcing concrete structures to give a low relaxation high yield strength to the wire – the Radyne registered Hi-Bond process. The heating for hardening is carried out in two stages using 10 kHz to raise the wire to 1,382F (750°C) with a single coil and 50 kHz or 200kHz to raise the wire from 1,382°F (750C) to 1,742°F (950°C) with two or more coils sizes, subject to wire range, throughput and efficiency requirements.

Typically coils are 6 ft (1.8 metres) in length for each stage and powers of 280KW (at 1,0kHz) and 180KW at 50kHz are used. Immediately after heating to 1,742°F (950°C) the product is sprayed with high-pressure water jets to reduce the temperature to approximately 80°F (30°C) and dried via an air wipe.

Tyre cord diffusion
This application requires simultaneous heating of typically 10 to 24 wires running in parallel and heated to approximately 1,112°F (600°C) to melt surface coatings of copper and zinc which diffuse into the base wire to produce tyre cord wire. The wires typically have an inter axis dimension of 15.5mm to 25.5mm and range from 0.021" (0.8mm) to 0.080" (2.0mm) diameter. Typical throughput is based on a DV=70 (D= diameter and V= velocity). The number of wires within a given heating coil are generally determined by the inter axis dimension; the coil assembly becoming unwieldy for a large number of wires at high inter axis dimensions.

Interactive power control under closed loop conditions
Compared to processes such as gas and electric furnaces, infrared heaters, resistance heaters, and fluidised beds, induction heating responds extremely quickly to changes in process operating parameters. A small change in power or line speed almost instantaneously affects the resultant temperature of the product being processed. For this reason, the control of the line to achieve consistent results needs to be carefully considered. The two standard methods used are feedback from temperature sensing devices (such as infrared pyrometry) and from line speed.

Temperature sensors
In the case of heating magnetic steel to austenizing temperature for a hardening process, unless an atmosphere is incorporated, scale can form on the wire surface, which can affect readings by both single and dual colour infrared pyrometer systems. Therefore the elimination of scale and the accuracy of positioning and focus of the pyrometry system will determine the resultant signal fed back to the induction power supply.

Airborne contamination such as smoke fumes can also affect the signal from pyrometers. Unless particular care is taken in the cleanliness of the wire and exactness of other process parameter feedback and closed loop control using pyrometry is unlikely to be effective.

Temperature sensors also need to be focused on the wire being heated and, particularly in the case of small diameter wire, these wires can move vertically during the process and being removed from the field of view of the pyrometer give false signals to the induction process.

Line speed
Computation of line speed relative to wire size and induction heater power level is a viable process and feed forward controllers have been used successfully.

Nonferrous materials
So far, our considerations have concerned the induction heating of carbon steel wires. Nonferrous materials such as aluminium and brass can be equally heated with induction heating, however, not as efficiently. For example, consider brass wire 0.080" (2.0mm) diameter and the requirement to heat it from ambient 70°F (20°C) to 1,200°F (650°C) at a rate of 985 ft/min (300 m/min).

This will require a total of 540kW of output power at a frequency of 50kHz with a total 10 ft (3 metre) long induction coil. A brass wire of 0.24" (6.00 mm) diameter being heated from 70°F (20°C) to 1,200°F (650°C) at a rate of 985 ft/min (300 m/min) will require 1,500kW of output power

▲ *Multi wire furnace technology*

at a frequency of 10kHz with a total 20 ft (6 metre) long induction coil. The resultant overall efficiencies are, respectively, 6% on the 0.080" (2.0mm) diameter wire in the first example and 20% for the 0.240" (6.0mm) diameter wire in the second example.

When compared to overall efficiencies of up to 80% in heating magnetic steel, it can be seen why induction heating is not used extensively for nonferrous materials. That said, very successful installations are in operation at low efficiencies due to other benefits such as the working environment offered by the induction process.

Looking to the future
Concludes Martin Wagstaff, "Clearly induction heating will continue to be widely used in the wire industry, particularly for steel wires. There will be increased interest and a greater number of systems used to complement and enhance the productivity of existing conventional heating systems. Development will continue in the heating of very thin wires and in heating of special alloys composite metals and materials such a titanium and tungsten. The physical size of induction power supplies will decrease while their performance will increase. There will be future developments in control techniques and systems to ensure very close tolerances and consistency of the wire products and enhancements will be made via inline quality control."

"As further processes where induction heating can be utilised are revealed, each must be considered with regard to its own merits. Our own experience tells us that sometimes the most unlikely application or the one that appears at first to be nonviable, may result in a successful and financially viable installation." ■

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Steigerung des Brennstoff-Wirkungsgrad eines Fließbett-Glühofens

von J Friedman, Ryerson University, Toronto, Kanada, und G Lundy, The ICE Group Ltd, Quebec, Kanada

Einleitung

Fließbett-Glühöfen werden in der Stahldrahtindustrie immer beliebter, da sie die beste durchführbare Alternative zu Bleiglühanlagen darstellen, die wegen strenger Umweltauflagen in mehreren Ländern nur noch schwer oder überhaupt nicht mehr installiert werden dürfen. Selbst wenn das Fließbett eine attraktive Alternative zum Blei ist, so bringt es doch einige Einschränkungen mit sich, besonders in Bezug auf Treibstoffverbrauch bei Schwachlasten.

Diese Einschränkungen haben sich aus der Überzeugung ergeben, daß der Betrieb des Fließbetts bei einer fixen Fließrate erforderlich ist, um sicherzustellen, daß gleichmäßige Wärmeübertragungsbedingungen geschaffen werden. Es schien, daß eine variierende Fließrate die Wärmeübertragungsrate an eingetauchten Drähten beeinflussen würde, was wiederum zu einer variablen Produktqualität führte.

Diese Ansicht stammt aus einer Forschung im Bereich Wärmeübertragung an eingetauchten Zylindern, die in den letzten Jahrzehnten betrieben wurde.

Diese von Saxena[1] zusammengefaßte Studie zeigte deutlich, daß die Wärmeübertragungsrate an einem eingetauchten Zylinder sich jeweils entsprechend der Steigerung der Fließrate erhöhte.

Jedoch basierte diese Forschung lediglich auf Versuchen im Zusammenhang mit einer Wärmeübertragung bei Rohren bis zu 12,7mm Dicke oder noch dicker, im Rahmen der zur Energieerzeugung in Kohle-Fließbetten eingetauchten Kesselrohren. Praktisch berichtet keine Studie von kleineren Zylinderabmessungen.

Dagegen haben die letzten in der Ryerson University[2] betriebenen Versuche gezeigt, daß diese Tendenz bei kleineren Durchmessern als ca. 10mm in Fließbetten aus Aluminiumoxid in der Korngrößenauswahl 50-90 (145-330µm) senkt. Es wurde tatsächlich gezeigt, daß die Wärmeübertragungsrate bei Drähten in einem Fließbett bei einer Fließrate von über $U/U_{mf} > 2$ grundlegend konstant bleibt.

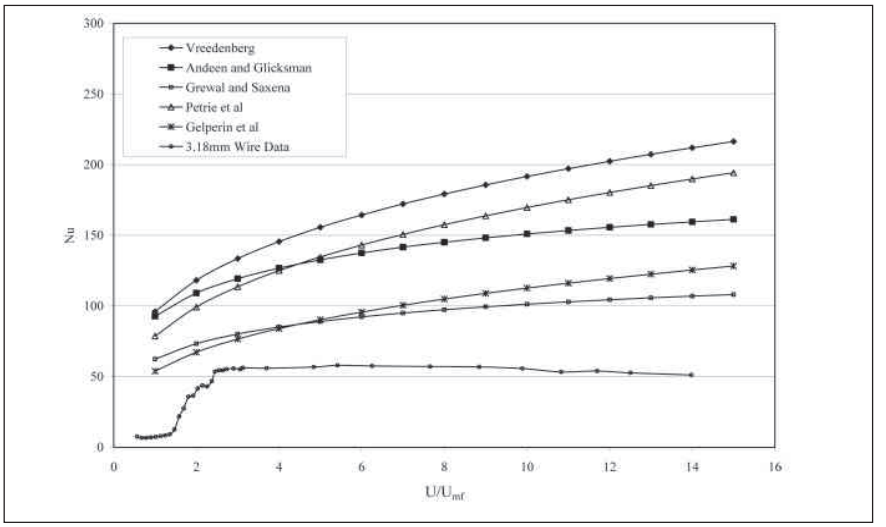
Dies ist deutlich aus *Bild 1* ersichtlich, wo die Ist-Daten für einen 3,18mm (1/8") Draht, der in einem Fließbett mit einer Korngrößenauswahl 60 (250µm) eingetaucht ist, dargestellt wurden.

Die Abbildung zeigt auch die Korrelation-Vorhersagen für einen gleichgroßen Draht unter den gleichen Bedingungen.

Alle diese aus den Daten der Wärmeübertragung an eingetauchten Rohren im Bereich 25-50mm Durchmesser hergeleiteten Korrelationen[1] können natürlich nicht für eine genaue Vorhersage der Wärmeübertragungsrate an drahtgroßen Zylindern benutzt werden.

Eine neue für den Einsatz mit Drähten geeignete Korrelation wurde entwickelt und in [2] wurde darüber ein Bericht gemacht. Eine der Hauptauswirkungen dieser Feststellung liegt darin, daß die Fließrate in einem Fließbett über eine ziemlich große Auswahl variiert werden kann, ohne die Wärmeübertragungsrate bzw. die Produktqualität zu beeinflussen.

▼ **Bild 1**: *Vergleich zwischen Standardkorrelationen und den Angaben der Wärmeübertragung zu einem 3,18mm Draht in einem Fließbett (aus 2)*



Debatte

Die meisten Fließbetten, die für wärmebehandelte Drähte benutzt werden, werden durch drei oder mehrere Kontrollzonen eingestellt.

Jeder Bereich hat sein eigenes Temperatursteuersystem, aber in der Regel haben alle Bereiche die gleiche Länge und werden mit denselben, oder fast denselben Temperaturen und Fließraten eingestellt.

Der Kaltdraht läuft im Ofen des Bereichs 1 ein, wo eine große Menge Wärme aufgenommen wird, weil eine hohe Temperaturdifferenz zwischen Draht und Bett besteht.

Der Draht geht dann in den Bereich 2 über, wo proportional weniger Wärme auf den Draht übertragen wird, da eine niedrigere Temperaturdifferenz zwischen Bett und Draht besteht. Dann läuft der Draht schließlich in den Bereich 3 ein, wo noch weniger Wärme aufgenommen wird.

Bei einer passenden Ofenbauweise erreicht der Draht die Glühtemperaturim Bereich 3, und läuft dann für die Vergütung und darauf folgende Verarbeitungen aus dem Ofen aus.

In der Regel ist der Fließ-Luftdurchsatz zu den einzelnen Bereichen ähnlich, und die Temperatursteuerung erfolgt entweder durch die Modulation des Gases oder über eine Ein/Aus-Gassteuerung, während ein kontinuierlicher Luftdurchsatz erhalten bleibt.

Üblicherweise wird das nachfolgend beschriebene Verfahren benutzt, um das Fließbett auszumessen und die Luftdurchsatzrate zu den einzelnen Bereichen zu bestimmen:

1. Bestimmung der gesamten Wärmebelastung und der Wärmebelastung für den Bereich 1 basierend auf den maximal zu erwartenden Drahtdurchsatz (kg/Std);
2. Basierend auf der Last aus Bereich 1 erfolgt die Festlegung des Treibstoffdurchsatzes, der erforderlich ist, um diese Wärmemenge zu den Drähten zu liefern;
3. Bestimmung der Luftdurchsatzrate zum Bereich 1, die für das völlige Verbrennen des Treibstoffs erforderlich ist (mit 5-10% Luftüberschuß, der für die Ausgleichung der Ungleichheit und der Ungenauigkeiten der Einrichtungen für die Durchflußregelung berücksichtig werden muß);
4. Bestimmung der Länge und Breite des Bereichs, bezogen auf Drahtgeschwindigkeit und -anzahl;
5. Auswahl einer solchen Sandkorngröße, die der Luftgeschwindigkeit im Bereich einer geeigneten Fließrate entspricht, was in der Reichweite von 3-5 x U_{mf} typisch ist. In der Regel ist die ausgewählte Korngröße jene der Korngrößenauswahl 60-70 (200-250μm).

Die auf den genannten Angaben basierende Bauweise führt in der Regel dazu, daß der Bereich 1 ständig eingeschaltet ist wenn der Ofen vollbelastet ist, entweder mit Gasmodulation oder zyklischem Ein/Aus-Ablauf in den darauf folgenden Bereichen und mit identischen Luftdurchsätzen in jedem Bereich. Für einen typischen niedergekohlten Stahldraht, der eine Glühtemperatur von 710°C in einem 730°C Fließbett erreicht, beträgt die gesamte vom Draht aufgenommene Wärme zirka 446,8 kJ/kg.

Rund 65.8% dieser Wärme wird im Bereich 1 aufgenommen, 25% im Bereich 2 und die restlichen 9,2% im Bereich 3 in einem in drei Bereichen aufgeteilten Ofen. Bei Volllast wird der Ofen wie nachfolgend angegeben arbeiten:

Dazu ist zu bemerken, daß kein tatsächlicher Unterschied besteht, unabhängig davon, ob das modulierende oder das Ein/Aus-Gassteuerungssystem benutzt wird. Beide Methoden liefern gleiche Ergebnisse hinsichtlich des Treibstoffverbrauchs.

Wie aus der *Tabelle 1* ersichtlich ist, wird der Bereich 1 mit 5% Luftüberschuß betrieben (entsprechend der Bauweise) und mit 100% Belastung, während die Bereiche 2 und 3 mit hochgradigen Luftüberschüssen betrieben werden.

Daraus ergibt sich, daß die vom Treibstoff gelieferte Wärmeenergie nicht nur das Produkt erwärmt, sondern auch Energie liefern muß, um die nicht benutzte Überschußluftmenge zu erwärmen, zur Verbrennung bei einer Ofentemperatur von 730°C.

Diese Energie ist hauptsächlich verschwendete Energie, da sie nicht für die Produkterwärmung genutzt wird. Diese Situation verschärft sich noch weiter, wenn der Ofen nicht unter Volllast arbeitet. Würde zum Beispiel der erwähnte Ofen bei 50% der Höchstlast betrieben, so würden sich Raten von Gas pro Zeit und Luftüberschluß entsprechend nachfolgender *Tabelle 2* ergeben:

Daraus ergibt sich eine Steigerung des benutzten Treibstoffs je Produkttonne von zirka 26,9m³ Gas/Tonnen auf 39,2m³ Gas/Tonnen, bzw. um 45%. Das Fließbett, das für den Betrieb aller Bereiche mit gleicheingestellter Fließrate gestaltet ist, kann bei Schwachlasten zweifellos nicht effizient arbeiten.

Jedoch, angesichts der Tatsache, daß die Fließrate die Wärmeübertragungsrate nicht wesentlich beeinflußt (wenigstens nicht bei Fließraten über 2 x U_{mf}), besteht die Möglichkeit die Einstellung eines Fließbettes zu ändern, um seine Wärmeleistung zu erhöhen.

Wenn der Ofen zum Beispiel derart entworfen wurde, daß die Einstellungen den Betrieb des Bereichs 1 bei 6 x U_{mf} mit 5% Luftüberschuß bei Volllast, der Bereich 2 mit der Hälfte des Luftdurchsatzes des Bereichs 1 (d.h. 3 x U_{mf}) und Bereich 3 um $^1/_3$ des Luftdurchsatzes des Bereichs 1 (d.h. 2 x U_{mf}) vorsehen, so würden alle Bereiche ähnliche Wärmeübertragungsraten liefern, wobei jedoch die Bereiche 2 und 3 viel niedrigere Luftdurchsatzraten im

▼ **Tabelle 1**: *Ofenbelastung, dabei sind alle Bereiche mit der gleichen Fließrate eingestellt, bei 100% Leistung*

	Bereich 1	Bereich 2	Bereich 3
Gas pro Zeit (%)	100%	56.3%	39.4%
Luftüberschuß (%)	5%	87%	167%

▼ **Tabelle 2**: *Ofenlasten wobei alle Bereiche mit der gleichen Fließrate eingestellt sind, mit 50% Leistung*

	Bereich 1	Bereich 2	Bereich 3
Gas pro Zeit (%)	64.8%	40.8%	32.8%
Luftüberschuß (%)	62.4%	145%	205%

▼ **Tabelle 3**: *Ofenbelastung mit Einstellung des Bereichs 1 auf 6 x U_{mf}, des Bereichs 2 auf 3 x U_{mf} und des Bereichs 3 auf 2 x U_{mf}, mit 100% Belastung*

	Bereich 1	Bereich 2	Bereich 3
Gas pro Zeit (%)	100%	82.9%	59%
Luftüberschuß (%)	5%	27%	78%

▼ **Tabelle 4**: *Ofenbelastung mit Einstellung des Bereichs 1 auf 6 x U_{mf}, des Bereichs 2 auf 3 x U_{mf} und des Bereichs 3 auf 2 x U_{mf}, mit 50% Belastung*

	Bereich 1	Bereich 2	Bereich 3
Gas pro Zeit (%)	64.8%	56.2%	42.1%
Luftüberschuß (%)	62.4%	87.3%	137%

Steuerschemen	Alle Bereiche gleich	Gestufte Bereiche	Modulationssteuerung
Jährlicher Treibstoffverbrauch (m^3)	600.000	482.000	443.600
Jährliche Triebstoffkosten (US$)	$240.000	$192.800	$177.440
Jährliche Ersparnis (über die Steuerung "alle Bereiche gleich") (US$)	$0	$47.200	$62.560

▲ **Tabelle 5**: *Mögliche Treibstoffersparnis bei einer 20.000 Jato-Anlage, 80% durchschnittliche Ofenbelastung*

Gegensatz zum Bereich 1 aufweisen würden. Die sich daraus ergebende Ofenbetriebsbedingungen bei einer Leistung von 100% und 50% sind in den *Tabellen 3* und *4* zusammengefaßt:

Der Vergleich zwischen der *Tabelle 3* und *4* sowie zwischen *Tabelle 1* und *2* zeigt deutlich, daß eine Abstufung des Luftdurchsatzes in den Bereichen den Umfang des zu erwärmenden Luftüberschusses wesentlich reduziert, was wiederum den Wärmwirkungsgrad erhöht.

Der daraus herrührende Gasverbrauch je Produktionstonne für den angenommenen Fall der Luftmenge beträgt nun 22,2m^3 Gas/Tonne bei 100% Leistung und 29,7m^3 Gas/Tonne bei 50% Leistung, was einer Steigerung entspricht von 17,6% und 24,0% über den bereits erwähnten Fall "sämtliche Bereiche gleich".

Weitere Steigerungen der Energieeffizienz können auch erzielt werden, wenn alle Bereiche sowohl Gas wie Luft innerhalb derselben 2 x U_{mf} und 6 x U_{mf} erwähnten Auswahl modulieren können. Das Modulationssystem würde derart eingestellt werden, daß 5-10% Luftüberschüsse durch die Modulationsauswahl geboten werden.

Sollte ein Bereich weniger Wärme erfordern, als jene die bei 2 x U_{mf} und 5% Luftüberschuß geboten wird, würde der Luftdurchsatz bei 2 x U_{mf} festgelegt und der Bereich dann entweder nur Gas modulieren oder auf die Gas Ein/Aus-Steuerung übergehen, um die Defluidisierung sowie die Bereichsüberhitzung zu vermeiden.

Die sich ergebende Treibstoffmenge je Produktionstonne würde 21,7m^3 Gas/Tonne bei 100% Leistung entsprechen und 24,3m^3 Gas/Tonne bei 50% Leistung, was einer Steigerung entspricht von je 19% und 38% über den Fall "sämtliche Bereiche gleich".

Im *Bild 2* wird der Treibstoffverbrauch je Tonne Draht gegenüber der Produktionsrate für alle drei oben erwähnten Steuerungsschemen dargestellt.

Obwohl alle Steuerungsschemen eine Erhöhung des Treibstoffverbrauchs zur Folge haben - während die Ofenbelastung reduziert wird - kann zweifellos eine große Menge Treibstoff unter sämtlichen Betriebsbedingungen mit Einsatz der gestuften Bereichssteuerung sowie der Modulationssteuerung gespart werden.

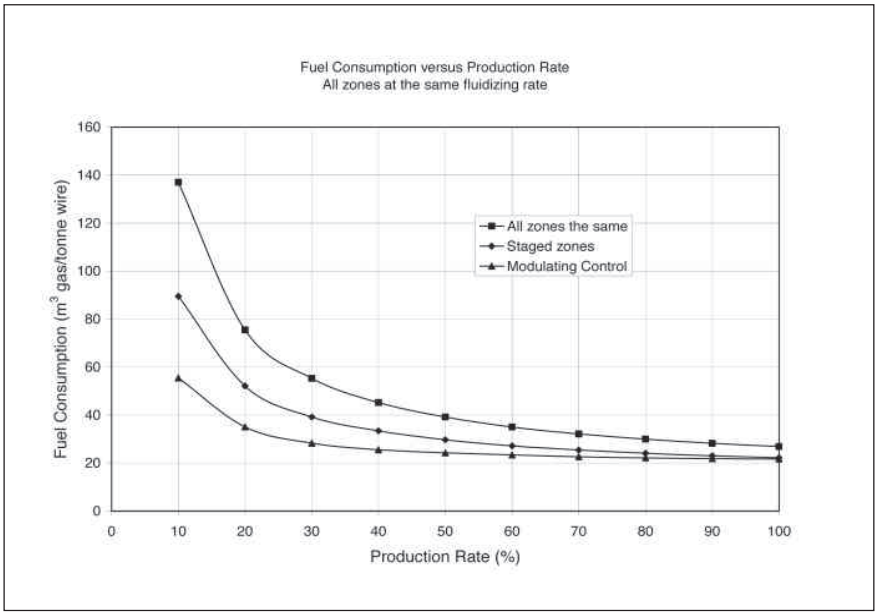
Implementierung

Neue Öfen können von Anfang an so entworfen werden, daß sie mit beiden Betriebsarten laufen. Die gestufte Bereichssteuerung kann leicht mit wenigen oder gar keinen Änderungen in der Bauweise des Steuerungssystems erzielt werden, während die Modulationssteuerung relativ einfache und kostengünstige Änderungen bei den Treibstoff- und Luftsteuerungen erfordern würde. Bestehende Öfen können ebenfalls leicht umgebaut werden.

Ein Ofen, der derzeit mit Ein/Aus-Gassteuerungen läuft, kann einfach umgebaut werden mittels Anpassung der Sandkorngröße, damit der Bereich 1 bei zirka 6 x U_{mf} betrieben wird. Danach würde der Bereich 2 und 3 eingestellt werden, um die gewünschten Fließraten zu erzielen.

Der Umbau der Ofenkamine könnte sich als erforderlich erweisen, um das Übertragen von Sand bei höherer Fließrate/niedrigerer Sandgröße zu vermeiden, selbst wenn man erwarten dürfte, daß in den meisten Öfen die Kamine entsprechen. Es wäre notwendig mit den Ofenherstellern zusammenzuarbeiten, um diese Modernisierungen durchführen zu können.

▼ **Bild 2**: *Vergleich zwischen Treibstoffverbrauch und Ofenbelastung, mit drei verschiedenen Steuerschemen*



Weitaus aufwendiger wäre der Umbau bestehender Öfen, damit sie mit Modulationssteuerungen laufen können, da das Steuerpult und die Treibstoff-/Luftduchsatz-Steuersysteme geändert werden müßten. Jedoch würde man somit höhere Treibstoffersparnisse erzielen. Die Machbarkeit der Änderung würde von der spezifischen Anwendung und der Ofenbauweise abhängen. Hier wäre es wieder nützlich mit den Ofenherstellern zusammen die Änderungen zu besprechen und die Vorteile für spezifische Anwendungen zu erörtern.

Bezüglich möglicher Ersparnisse kann ein typischer Ofen in Betracht gezogen werden, der für einen Betrieb von 6.000 Stunden pro Jahr bei einer Höchstleitung von 4 Tonnen pro Stunde entworfen wird (24.000 Tonnen pro Jahr).

Durch die Erkenntnis, daß die meisten Öfen etwas überdimensioniert sind, und daß es für einen Hersteller fast unmöglich ist einen Produktmix zu erhalten, der die Leistung jederzeit maximiert, kann angenommen werden, daß die tatsächliche Produktion 20.000 Tonnen pro Jahr ausmacht und die typische Ofenbelastung höchstens 80% entspricht. Demzufolge werden in der *Tabelle 5* Treibstoffverbrauch und -kosten zusammengefaßt, mit einem Grund-treibstoffpreis von 0,40 USD/m^3, d. h. den aktuellen typischen Gaskosten auf dem kanadischen Markt.

Wie ersichtlich ist, können wesentliche Treibstoff- und Kostenreduzierungen selbst bei einer Anlage deren Ofen/Öfen nahe der Kapazität laufen erzielt werden.

Bei Anlagen die eine niedrigere Ofenkapazität einsetzen kann entsprechend mehr Treibstoff gespart werden.

Man erwartet, daß bei vielen Anlagen die Amortisierung sämtlicher für die Änderung eines Steuerschemas eines bestehenden Ofens aufgewendeten Kosten in einem Jahr oder sogar noch schneller erfolgt sein wird.

Schlussfolgerungen

Neuerliche Forschungen über Wärmeübertragungsraten bei Drähten in einem Fließbett haben gezeigt, daß die für wärmebehandelte Drähte benutzte Modulationssteuerung oder die gestufte Steuerung der Fließbetten machbar ist.

Die Vorteile eines Einsatzes dieser Steuerschemen schließen eine wesentliche Reduzierung des Treibstoffes ein sowie eine entsprechende Reduzierung schädlicher Emissionen.

Bei der Herstellung neuer Öfen kann zu minimalen Kosten der Einbau dieser Steuerschemen vorgesehen werden, während bestehende Öfen in den meisten Fällen leicht umgebaut werden können. ■

Danksagung

Wir bedanken uns für die Unterstützung bei NSERC (Natural Sciences and Engineering Research Council of Canada).

Widmung

Dieser Artikel ist Philip Cowie (1962-2006) gewidmet, ein guter Freund und enthusiastischer Unterstützer der fortlaufenden Entwicklung des Fließbetts und der Drahtindustrie.

Fachworte

d_w	Drahtdurchmesser (m)
h	Konvektionsbeiwert (W/m^2-K)
k	Fließgas-Wärmeleitfähigkeit (W/m-K)
Nu	Nusselt-Nummer ($Nu = hd_w / k$)
U	Fließgasgeschwindigkeit (m/s)
U_{mf}	Mindeste für die Fluidisierung erforderliche Fließgasgeschwindigkeit (m/s)

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Повышение тепловой эффективности топлива в печи для отжига в псевдоожиженном слое

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Введение

Печи для отжига в псевдоожиженном слое приобретают все большую популярность в производстве стальной проволоки, поскольку являются наиболее приемлемой альтернативой агрегатам для отжига в свинцовой ванне, установка которых во многих странах стала трудноосуществимой или невозможной ввиду жестких экологических стандартов. Несмотря на то что использование псевдоожиженного слоя представляет собой интересное альтернативное решение по сравнению со свинцом, оно имеет ряд присущих ему ограничений, связанных, в частности, с расходом топлива при малых нагрузках.

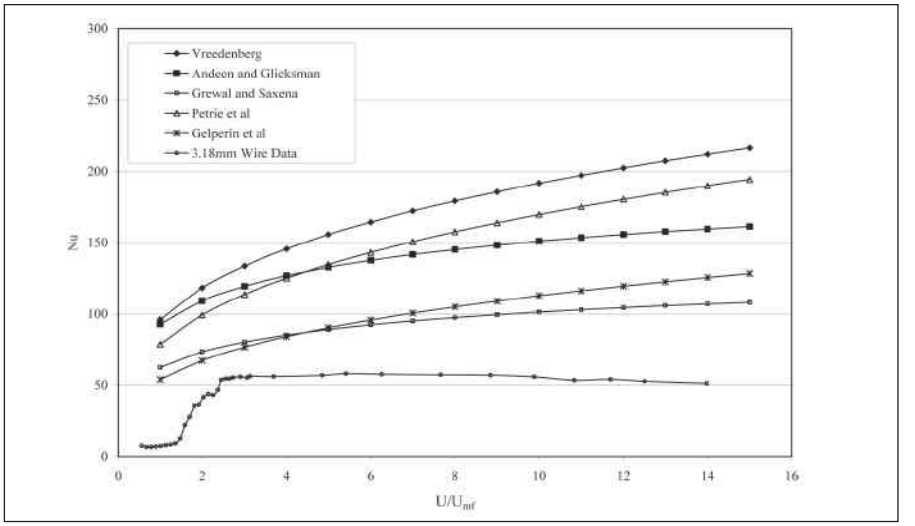
Данное ограничительное условие обусловлено мнением, согласно которому для обеспечения равномерных условий теплопередачи псевдоожиженный слой требуется поддерживать при постоянной скорости псевдоожижения. Считалось, что изменение скорости псевдоожижения отрицательно скажется на интенсивности теплопередачи на погруженные нити проволоки, в результате чего качество продукции будет непостоянным.

Это мнение базировалось на исследованиях проблем теплопередачи на погруженные цилиндрические поверхности, которые проводились в течение последних нескольких десятилетий. Обобщенные (Saxena [1]) результаты проведенных исследований наглядно показали, что интенсивность теплопередачи на погруженную цилиндрическую поверхность возрастала с увеличением скорости псевдоожижения. Однако все эти исследования базировались на экспериментальных работах, в которых теплопередача осуществлялась на трубки диаметром 12,7 мм и больше в контексте изучения характеристик дымогарных трубок, погруженных в псевдоожиженный слой измельченного энергетического угля. Сообщения о работах с использованием цилиндрических поверхностей меньшего размера практически отсутствуют.

Последние эксперименты, проведенные в Университете Райерсона [2], показали, что эта тенденция не выполняется при использовании деталей диаметром около 10 мм и меньше, погруженных в псевдоожиженный слой на основе оксида алюминия с размером частиц в диапазоне №№ 50-90 (145-330 мкм). Фактически было продемонстрировано, что интенсивность теплопередачи на нити проволоки в псевдоожиженном слое является по существу величиной постоянной при значениях скорости псевдоожижения $U/U_{mf} > 2$. Это наглядно продемонстрировано на рис. 1, на котором представлены фактические данные для проволоки диаметром 3,18 мм (1/8 дюйма), погруженной в псевдоожиженный слой с размерностью частиц №60 (250 мкм). На рисунке также представлены данные корреляционного прогноза, выполненного для проволоки того же размера в тех же условиях. Несомненно, что указанные корреляции [1], все из которых получены на основании данных для теплопередачи на погруженные трубки в интервале диаметров 25-50 мм, не могут быть использованы для точного прогнозирования интенсивности теплопередачи на цилиндрические поверхности проволочных размеров.

Новая корреляция, пригодная для использования применительно к нитям проволоки, выведена и представлена в работе [2]. Один из основных выводов, которые можно сделать на

▼ **Рис. 1.** *Сравнительный анализ стандартных корреляций и данных по теплопередаче на проволоку диаметром 3,18 мм в псевдоожиженном слое (по данным работы [2])*



основании этих данных, заключается в том, что скорость псевдоожижения в псевдоожиженном слое может меняться в достаточно широком диапазоне значений, не оказывая влияния на интенсивность теплопередачи и, соответственно, качество продукции.

Обсуждение

В большинстве случаев для создания псевдоожиженного слоя, предназначенного для термообработки нитей проволоки, используются три и более контролируемых зон. Каждая зона имеет собственную систему терморегулирования, однако преимущественно все зоны имеют одинаковую длину и настраиваются на одну или почти под одну и ту же температуру и скорость псевдоожижения.

Ненагретая проволока поступает в печь через зону №1, в которой в результате значительной разницы температур между проволокой и слоем происходит поглощение большого количества тепла. Затем проволока поступает в зону №2, в которой проволоке передается пропорционально меньшее количество тепла, поскольку действующая в это время разница температур между слоем и проволокой меньше, и, наконец, достигает зоны №3, в которой происходит еще меньшее поглощение тепла.

При правильной конструкции печи проволока достигает температуры отжига в зоне №3, после чего она выходит из печи для охлаждения и дальнейшей обработки. В основном, поступающий в каждую зону поток ожижающего воздуха имеет аналогичные характеристики, а температура регулируется либо за счет дросселирования подачи газа, либо с помощью двухпозиционного регулятора подачи газа, при одновременном поддержании непрерывности притока воздуха. Обычно выбор размерности частиц для псевдоожиженного слоя и определение скорости подачи воздуха в каждую зону выполняются в следующем порядке:

1) определить общую тепловую нагрузку и тепловую нагрузку для зоны №1, исходя из максимального расчетного количества обрабатываемой проволоки (кг/ч);
2) по результатам расчета нагрузки для зоны №1 определить расход топлива, требуемого для передачи указанного количества тепла на нити проволоки;
3) определить скорость подачи воздуха в зону №1, которая требуется для полного сжигания топлива (с учетом 5-10 % избытка воздуха для компенсации неоднородности смешения и погрешности оборудования для регулирования расхода);
4) с учетом скорости подачи проволоки и количества нитей проволоки определить длину и ширину зоны;
5) выбрать такой размер частиц песка, чтобы скорость воздушного потока в зоне обеспечивала адекватную скорость псевдоожижения – преимущественно в диапазоне значений 3-5 x U_{mf}. Обычно размер частиц выбирается в диапазоне №№ 60-70 (200-250 мкм).

В типичном случае конструктивное решение, которое мы получили на основе вышесказанного, обеспечивает постоянное горение в зоне №1 в режиме полной загрузки печи, при дросселировании или поочередном включении и отключении подачи газа в последующие зоны и при идентичном притоке воздуха в каждой зоне.

Для того чтобы стандартная проволока из низкоуглеродистой стали достигла температуры отжига 710 °C в нагретом до 730 °C псевдоожиженном слое, общее количество тепла, поглощенного проволокой, должно составлять около 446,8 кДж/кг. В трехзонной печи приблизительно 65,8 % этого количества тепла будет поглощаться в зоне №1, 25 % – в зоне №2, а остальные 9,2 % – в зоне №3. При полной нагрузке печь будет работать в следующем режиме.

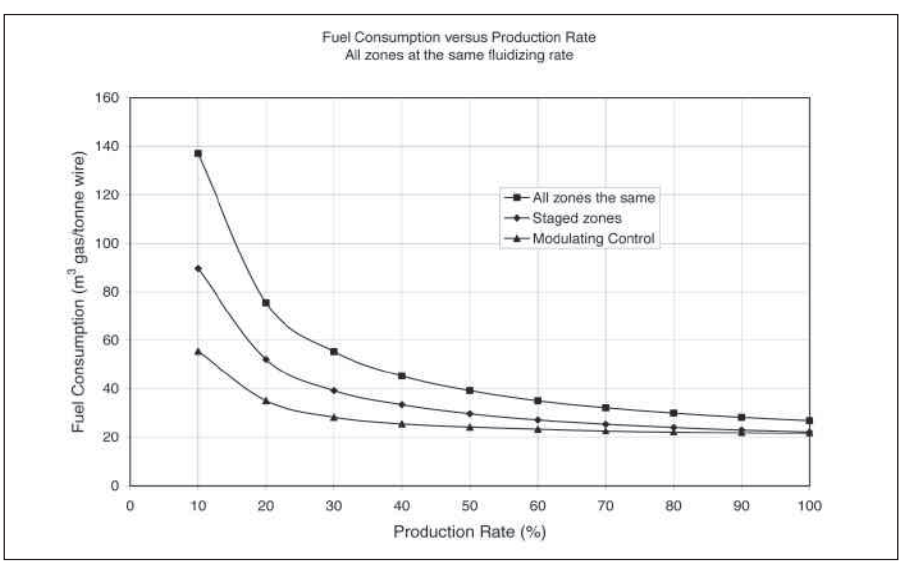
Следует отметить, что не существует эффективной разности в том, какая система регулирования подачи газа используется – дросселирование или включение и отключение подачи. Оба способа дают идентичные результаты с точки зрения расхода топлива. Как можно увидеть из таблицы 1, в то время, как зона №1 работает при 5 % избыточного воздуха (согласно расчетам) в режиме 100 % нагрузки, зоны №2 и №3 работают при высоком уровне избыточного воздуха.

В результате выделяемая топливом тепловая энергия не только идет на нагревание обрабатываемой детали, но она также должна обеспечить энергию для нагрева не используемого при горении избыточного воздуха до температуры печи, составляющей 730 °C.

Фактически эта энергия расходуется на тепловые потери, поскольку она не используется для нагрева обрабатываемых деталей. Ситуация еще больше осложняется, если печь эксплуатируется не при полной нагрузке. К примеру, если бы описанная выше печь должна была работать при 50 % максимальной нагрузки, результирующие значения времени включения подачи газа и коэффициента избыточного воздуха имели бы вид, представленный в нижеприведенной таблице 2.

В результате удельный расход топлива возрастает с приблизительно 26,9 куб. м газа на тонну продукции до 39,2 куб. м газа на тонну продукции, т.е. увеличение расхода топлива составляет 45 %. Очевидно, что псевдоожиженный слой с конфигурацией параметров для работы во всех зонах, настроенных на одинаковую скорость псевдоожижения, не может эффективно поддерживаться при малых нагрузках.

▼ **Рис. 2.** *Сравнительный анализ расхода топлива в зависимости от тепловой нагрузки печи с использованием трех разных схем регулирования*



Тем не менее, с учетом того факта, что скорость псевдоожижения не оказывает существенного влияния на интенсивность теплопередачи (по крайней мере, при скоростях псевдоожижения свыше 2 x U_{mf}), существует возможность изменить параметры псевдоожиженного слоя для улучшения его тепловых характеристик.

Например, при конструкции печи, обеспечивающей настройку зоны №1 для работы при 6 x U_{mf} и 5 % избыточного воздуха в режиме полной нагрузки, настройку зоны №2 для работы при притоке воздуха вдвое меньше, чем в зоне №1 (т.е. 3 x U_{mf}), а зоны №3 – при притоке воздуха, составляющем $^1/_3$ притока воздуха в зоне №1 (т.е. 2 x U_{mf}), во всех зонах создавалась бы аналогичная интенсивность теплопередачи, однако в зонах №2 и №3 скорость подачи воздуха была бы значительно ниже, чем в зоне №1. Результирующие параметры режима работы печи при 100 % и 50 % производительности суммированы в нижеприведенных таблицах 3 и 4.

Сравнительный анализ таблиц 3, 4 и таблиц 1, 2 наглядно свидетельствует о том, что ступенчатое изменение притока воздуха в зоны значительно сокращает объем нагреваемого избыточного воздуха, увеличивая тепловой к.п.д.

В результате при ступенчатом регулировании притока воздуха удельный расход газа теперь составляет 22,2 куб. м газа на тонну продукции при 100 % производительности и 29,7 куб. м газа на тонну продукции при 50 % производительности, т.е. расход снижается соответственно на 17,6 % и 24,0 % по сравнению с вышеприведенным вариантом одинаковой настройки всех зон.

Еще большего увеличения эффективности энергопотребления можно добиться, если во всех зонах обеспечить дросселирование подачи как газа, так и воздуха в пределах предложенных выше значений 2 x U_{mf} и 6 x U_{mf}. Настройка системы дросселирования должна обеспечивать подачу 5-10 % избыточного воздуха в пределах значений диапазона дросселирования.

Если в той или иной зоне требуется меньше тепла, чем подается при 2 x U_{mf} и 5 % избыточного воздуха, приток воздуха должен устанавливаться на значении 2 x U_{mf}, после чего в зоне будет дросселироваться только подача газа, либо осуществляется переход на двухпозиционное регулирование подачи газа для недопущения дефлюидизации и перегрева зоны. В результате удельный расход топлива должен составить 21,7 куб. м газа на тонну продукции при 100 % производительности и 24,3 куб. м газа на тонну продукции при 50 % производительности, т.е. уменьшение расхода составит соответственно 19 % и 38 % по сравнению с вариантом одинаковой настройки всех зон. На рис. 2 представлены данные расхода топлива на тонну проволоки в зависимости от производительности для всех трех рассмотренных выше схем регулирования.

	Зона №1	Зона №2	Зона №3
Время включения подачи газа (%)	100%	56.3%	39.4%
Избыточный воздух (%)	5%	87%	167%

▲ **Таблица 1.** *Тепловая нагрузка печи при настройке всех зон на одинаковую скорость псевдоожижения (100 % производительности)*

	Зона №1	Зона №2	Зона №3
Время включения подачи газа (%)	64.8%	40.8%	32.8%
Избыточный воздух (%)	62.4%	145%	205%

▲ **Таблица 2.** *Тепловая нагрузка печи при настройке всех зон на одинаковую скорость псевдоожижения (50 % производительности)*

	Зона №1	Зона №2	Зона №3
Время включения подачи газа (%)	100%	82.9%	59%
Избыточный воздух (%)	5%	27%	78%

▲ **Таблица 3.** *Тепловая нагрузка печи при настройке зоны №1 на 6 x U_{mf}, зоны №2 – на 3 x U_{mf} и зоны №3 – на 2 x U_{mf}, в режиме 100 % загрузки*

	Зона №1	Зона №2	Зона №3
Время включения подачи газа (%)	64.8%	56.2%	42.1%
Избыточный воздух (%)	62.4%	87.3%	137%

▲ **Таблица 4.** *Тепловая нагрузка печи при настройке зоны №1 на 6 x U_{mf}, зоны №2 – на 3 x U_{mf} и зоны №3 – на 2 x U_{mf}, в режиме 50 % загрузки*

Несмотря на то что все схемы регулирования ведут к увеличению расхода топлива ввиду снижения тепловой нагрузки печи, представляется очевидным, что во всех режимах работы можно добиться значительной экономии топлива за счет использования метода ступенчатого регулирования по зонам или дросселирования (бесступенчатого регулирования).

Применение

Новые печи могут конструироваться с самого начала для эксплуатации в одном из двух указанных рабочих режимов.

Ступенчатое регулирование по зонам легко обеспечивается путем внесения небольших изменений или без внесения каких-либо изменений в конструкцию системы управления, а для бесступенчатого регулирования потребуется относительно простая и недорогая доработка систем подачи топлива и воздуха. Также легко модифицируются и существующие печи. Действующая печь, в которой используется двухпозиционные регуляторы подачи газа, может быть модернизирована за счет простой замены размерности частиц песка таким образом, чтобы обеспечить работу зоны №1 в режиме 6 x U_{mf}, после чего производится настройка зон №2 и №3 под требуемые значения скорости псевдоожижения.

Может потребоваться модификация выводных труб печей для предотвращения выноса песка при увеличении скорости псевдоожижения или уменьшении размерности частиц, хотя предполагается, что в большинстве печей выводные трубы имеют соответствующую конструкцию. Выполнение таких модификаций необходимо согласовывать с производителем печных агрегатов.

Модификация существующих печей для работы в режиме бесступенчатого регулирования наверняка сопряжена с несколько большими трудностями, так как потребуется модификация пульта управления и систем регулирования притока топлива и воздуха. Однако при этом обеспечивается более

Схема регулирования	Одинаковая настройка всех зон	Ступенчатое регулирование по зонам	Бесступенчатое регулирование
Годовой расход топлива (куб. м)	600 000	482 000	443 600
Годовые затраты на топливо (долл. США)	240 000 долл. США	192 800 долл. США	177 440 долл. США
Годовая экономия (по сравнению со схемой регулирования при одинаковой настройке всех зон) (долл. США)	0 долл. США	47 200 долл. США	62 560 долл. США

▲ **Таблица 5.** *Потенциальная экономия топлива для предприятия, выпускающего 20 000 т продукции в год, при средней тепловой нагрузке печи 80 %*

значительная экономия топлива. Вопрос целесообразности проведения такой модификации зависит от конкретной области применения и конструкции печи.

Кроме того, здесь также необходимо связаться с производителем печных агрегатов для обсуждения вносимых изменений и тех преимуществ, которые это даст для вашей конкретной задачи.

С точки зрения возможной экономии, следует рассмотреть стандартную печь с расчетным временем эксплуатации 6000 ч/год при максимальной производительности 4 т продукции в час (24 000 т/год).

Признавая, что конструкция большинства печей излишне усложнена и что для производителя практически невозможно обеспечить постоянный выпуск товарной номенклатуры с максимальной производительностью, предположим, что фактический объем производства составляет 20 000 т/год, а стандартная тепловая нагрузка печи – 80 % от ее максимального значения.

С учетом вышесказанного в таблице 5 представлены сводные данные по расходу и стоимости топлива из расчета базисной цены на топливо в 0,40 долл. США/куб. м согласно текущим стандартным расценкам на газ на канадском рынке.

Как можно увидеть, существует возможность значительного сокращения расхода топлива и объема затрат на него даже на предприятии, на котором печи эксплуатируются в режиме, близком к максимальному. Предприятия, на которых мощности печей используются меньше, экономия топлива будет пропорционально больше.

Предполагается, что на многих предприятиях все затраты, понесенные при замене схем регулирования действующих печей, могут окупиться в течение менее одного года.

Выводы

Недавние исследования интенсивности теплопередачи на нити проволоки в псевдоожиженном слое показали, что бесступенчатое или ступенчатое регулирование псевдоожиженного слоя, используемого при термической обработке проволоки, практически возможно.

В числе преимуществ использования этих схем регулирования – значительное сокращение расхода топлива и соответствующее снижение вредных выбросов.

Для работы с использованием указанных схем регулирования при минимальных затратах могут строиться новые печи, при этом во многих случаях можно легко модифицировать существующие печи. ■

Выражение признательности

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Посвящение

Настоящая статья посвящается памяти Филиппа Коуи (1962-2006 гг.), настоящего друга и энергичного сторонника непрерывного развития технологии псевдоожиженного слоя и проволочной промышленности.

Условные обозначения

d_w – диаметр проволоки (м)
h – коэффициент конвективной теплоотдачи (Вт/(м²·К))
k – коэффициент теплопроводности ожижающего газа (Вт/(м·К))
Nu – число Нуссельта ($Nu = hd_w / k$)
U – скорость потока ожижающего газа (м/с)
U_{mf} – минимальная скорость потока ожижающего газа, необходимая для образования псевдоожиженного слоя (м/с)

Справочная литература

1 Saxena, S C: 'Heat Transfer between Immersed Surfaces and Gas-Fluidized Beds', Advances in Heat Transfer V.19, 1989
2 Friedman, J, Koundakjian, P, Naylor, D, Rosero, D: 'Heat Transfer to Small Cylinders Immersed in a Fluidized Bed', Journal of Heat Transfer V.128, 2006

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Amélioration de l'efficacité du combustible d'un four de recuit à bain fluidisé

Par J Friedman, Ryerson University, Toronto, Canada, et G Lundy, The ICE Group Ltd, Quebec, Canada

Introduction

Les fours de recuit à bain fluidisé sont de plus en plus demandés dans l'industrie du fil d'acier car ils représentent l'alternative la plus viable aux recuiseurs à plomb, dont l'installation est désormais difficile ou impossible dans plusieurs pays du fait des règlements environnementaux stricts.

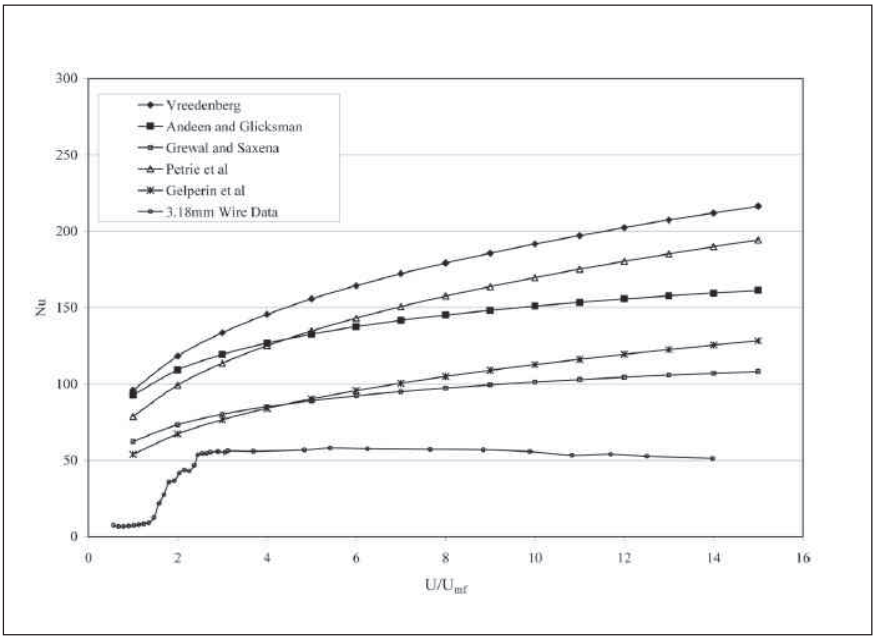
Bien que le lit fluidisé constitue une alternative attrayante quant au plomb, il présente des limitations intrinsèques, en particulier en ce qui concerne la consommation de combustible dans le cas de charges réduites.

Cette limitation dérive de la conviction que le lit fluidisé doit fonctionner à une vitesse de fluidisation fixe afin d'assurer des conditions de transfert thermique uniformes. On croyait qu'une vitesse de fluidisation variable aurait influencé la vitesse de transfert thermique des fils immergés, avec pour résultat une variation de la qualité du produit.

Cette conviction est issue de la recherche sur le transfert thermique à des cylindres immergés, menée au cours de ces dernières décennies. Ce travail, résumé par Saxena [1], démontre clairement que la vitesse de transfert de chaleur à un cylindre immergé augmente au rythme de l'accroissement de la vitesse de fluidisation.

Toutefois, cette recherche était basée sur des expériences entraînant le transfert de chaleur à des tubes d'un diamètre de 12,7mm ou de dimensions supérieures, utilisés comme des tubes chaudière immergés dans des lits fluidisés de charbon pour la production d'énergie. Pratiquement aucune étude n'a été reportée concernant des cylindres de dimensions inférieures.

Des expériences récentes effectuées à l'Université de Ryerson[2] ont démontré que cette tendance diminue au-dessous de 10mm de diamètre dans les lits fluidisés à oxyde d'aluminium dans la gamme de grosseur de grain de 50-90 (145-330µm).



▲ **Figure 1**: *Comparaison des corrélations standard avec les données pour le transfert thermique à un fil de 3,18mm dans un lit fluidisé (de [2])*

En effet il a été démontré que la vitesse de transfert thermique aux fils immergés dans un lit fluidisé est essentiellement constante lorsque la vitesse de fluidisation est $U/U_{mf} > 2$.

Cela est clairement illustré à la *Figure 1*, qui présente les données réelles référées à un fil de 3,18mm (1/8") immergé dans un lit fluidisé avec un grain de 60 (250µm). La figure montre également des prévisions de corrélation pour un fil des mêmes dimensions dans les mêmes conditions.

Clairement ces corrélations[1], toutes dérivées de données relatives au transfert de chaleur à des tubes immergés dans un diamètre compris entre 25 et 50mm ne peuvent être utilisées pour prévoir avec précision la vitesse de transfert thermique aux cylindres des mêmes dimensions du fil. Une nouvelle corrélation indiquée pour l'utilisation avec des fils est développée et illustrée en [2].

L'une des principales implications de ces résultats réside dans le fait que la vitesse de fluidisation dans un lit de fluidisation peut être variée sur une gamme suffisamment vaste sans influencer la vitesse de transfert thermique et donc la qualité du produit.

Discussion

La majorité des lits fluidisés utilisés pour le traitement thermique des fils sont installés en utilisant trois ou plusieurs zones de contrôle.

	Zone 1:	Zone 2:	Zone 3:
Gaz divisé par le temps (%)	100%	56,3%	39,4%
Surplus d'air (%)	5%	87%	167%

▲ **Tableau 1**: *Charge du four avec la totalité des zones affichées en fonction de la même vitesse de fluidisation, à 100% de sa capacité*

	Zone 1:	Zone 2:	Zone 3:
Gaz divisé par le temps (%)	64,8%	40,8%	32,8%
Surplus d'air (%)	62,4%	145%	205%

▲ **Tableau 2**: *Charge du four avec la totalité des zones affichées en fonction de la même vitesse de fluidisation, à 50% de sa capacité*

	Zone 1:	Zone 2:	Zone 3:
Gaz divisé par le temps (%)	100%	82,9%	59%
Surplus d'air (%)	5%	27%	78%

▲ **Tableau 3**: *Charge du four avec la Zone 1 affichée à 6 x U_{mf}, Zone 2 affichée à 3 x U_{mf} et Zone 3 affichée à 2 x U_{mf}, à 100% de sa capacité*

	Zone 1:	Zone 2:	Zone 3:
Gaz divisé par le temps (%)	64,8%	56,2%	42,1%
Surplus d'air (%)	62,4%	87,3%	137%

▲ **Tableau 4**: *Charge du four avec la Zone 1 configurée à 6 x U_{mf}, Zone 2 configurée à 3 x U_{mf} et Zone 3 configurée à 2 x U_{mf}, à 50% de sa capacité*

Chaque zone est caractérisée son système de contrôle de la température, mais généralement la totalité des zones présentent la même longueur et sont réglées selon les mêmes (ou presque les mêmes) valeurs de température et de vitesse de fluidisation.

Le fil froid est introduit dans le four dans la Zone 1, où des quantités élevées de chaleur sont absorbées puisque la différence de température entre le fil et le lit est considérable.

Le fil passe ensuite à la Zone 2 où une quantité de chaleur relativement inférieure est transférée au fil puisque la différence de température entre le lit et le fil est inférieure et entre enfin dans la Zone 3 où une quantité de chaleur même inférieure est absorbée.

Si le four a été conçu correctement, le fil atteindra la température de recuit dans la Zone 3 et ensuite sortira du four pour procéder à la phase de trempe et au traitement successif.

Généralement, il y a le même débit d'air de fluidisation vers chaque zone et la température est contrôlée en modulant le gaz ou en utilisant une commande de marche/arrêt du gaz, tout en maintenant un débit d'air continu.

Normalement la procédure utilisée pour dimensionner le lit de fluidisation et déterminer le débit de l'air à chaque zone est la suivante:

1. Détermination de la charge calorifique globale et de la charge calorifique pour la Zone 1 en fonction du rendement maximal prévu pour le du fil (kg/h);
2. Sur la base de la charge de la Zone 1, détermination de la vitesse de combustible requise pour la fourniture de cette quantité de chaleur aux fils;
3. Détermination du débit d'air à la Zone 1 requis pour brûler complètement le combustible (avec 5-10% de surplus d'air pour compenser la non-uniformité du mélange et les éventuelles inexactitudes des systèmes de commande du flux);
4. Détermination de la longueur et de la largeur de la zone en fonction de la vitesse et du nombre des fils;
5. Sélection d'une grosseur de grain du sable de manière à ce que la vitesse de l'air dans la zone présente une vitesse de fluidisation adéquate, généralement dans la gamme de 3-5 x U_{mf}. Généralement la grosseur de grain sélectionnée rentre dans la gamme de 60-70 (200-250µm).

En général, la configuration basée sur les données mentionnées ci-dessus aura pour résultat l'allumage de la Zone 1 chaque fois que le four est à pleine charge, au moyen de la modulation du gaz ou du cyclage marche/arrêt dans les zones successives, avec des débits d'air identiques dans chaque zone.

Dans le cas d'un fil d'acier conventionnel, à faible teneur en carbone, atteignant une température de recuit de 710°C dans un lit fluidisé à 730°C, la chaleur totale absorbée est d'environ 446,8 kJ/kg. Environ 65,8% de cette chaleur sera absorbée dans la Zone 1; 25% dans la Zone 2 et le reste de 9,2% dans la Zone 3 dans un four à trois zones. À pleine charge, le four fonctionne comme suit:

Il faut remarquer qu'il n'y a aucune différence réelle si l'on utilise le système de réglage du gaz par modulation ou du type marche/arrêt. Les deux méthodes fournissent des résultats identiques en ce qui concerne la consommation du combustible.

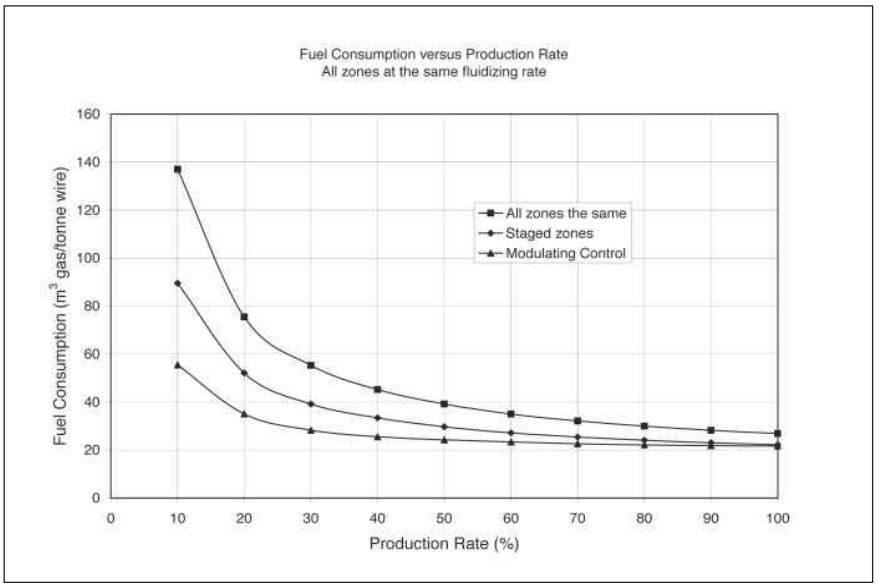
Comme l'on peut déduire du *Tableau 1*, tandis que la Zone 1 fonctionne avec un surplus d'air de 5% (sur dessin) à 100% de sa capacité, les zones 2 et 3 fonctionnent à des niveaux de surplus d'air élevés.

Par conséquent, l'énergie thermique fournie par le combustible non seulement est utilisée pour le chauffage du produit, mais fournit également l'énergie pour réchauffer jusqu'à une température du four de 730°C le surplus d'air non utilisé pour la combustion.

Cette énergie consiste essentiellement en énergie gaspillée n'étant pas utilisée pour le chauffage du produit. La situation s'aggrave davantage si le four ne fonctionne pas à pleine charge.

Par exemple, au cas où le four décrit plus haut fonctionnerait à 50% de la capacité maximale, les valeurs du gaz divisé par le temps et les débits du surplus d'air en résultant seraient ceux indiqués dans le *Tableau 2* ci-dessous:

Il s'ensuit que le combustible utilisé par tonne de produit augmente d'environ 26,9m^3 gaz/tonne à 39,2m^3 gaz/tonne, ce qui correspond à une augmentation de 45%. Clairement, le lit fluidisé configuré pour une exploitation avec la totalité



▲ **Figure 2**: *Comparaison de l'utilisation du combustible en fonction du changement du four en utilisant trois différents schémas de régulation*

des zones réglées à la même vitesse de fluidisation, ne peut fonctionner efficacement à des charges réduites.

Toutefois, en considérant le fait que la vitesse de fluidisation n'influence pas significativement la vitesse de transfert thermique (au moins aux vitesses de fluidisation supérieures à 2 x U_{mf}), il existe la possibilité de modifier la configuration d'un lit de fluidisation pour en améliorer la performance thermique.

Par exemple, si le four est conçu de manière à ce que la Zone 1 soit configurée pour une exploitation à 6 x U_{mf} avec un surplus d'air de 5% à pleine charge, la Zone 2 est réglée à un débit d'air égal à la moitié de la Zone 1 (c'est-à-dire 3 x U_{mf}) et la Zone 3 affichée à $^1/_3$ du débit d'air de la Zone 1 (c'est-à-dire 2 x U_{mf}), alors la totalité des zones devraient présenter des débits d'air similaires, mais les Zones 2 et 3 présenteraient des débits d'air bien inférieurs par rapport à la Zone 1.

Les conditions d'exploitation du four en résultant avec une capacité de 100% et de 50% sont résumées aux *Tableaux 3* et *4* ci-dessous.

La comparaison des *Tableaux 3* et *4* avec les *Tableaux 1* et 2 illustre clairement que la distribution séquentielle du débit d'air dans les zones réduit considérablement la quantité du surplus d'air à chauffer, en augmentant le rendement thermique.

L'utilisation du gaz par tonne de produit en résultant dans le cas de l'air à distribution par zones séquentielle est actuellement de 22,2m³ de gaz/tonne à 100% de sa capacité et 29,7m³ de gaz/tonne à 50% de sa capacité, ce qui représente une amélioration respectivement de 17,6% et 24,0% par rapport au cas où la totalité des zones serait maintenue à la même valeur («toutes les zones égales"), ainsi que le démontre l'illustration ci-dessus.

Des améliorations additionnelles de l'efficacité énergétique peuvent être obtenues à condition qu'il y ait la possibilité de moduler le gaz et l'air dans la même gamme de 2 x U_{mf} et 6 x U_{mf} comme indiqué pour la totalité des zones.

Le système de modulation devrait être configuré avec 5-10% de surplus d'air à travers la gamme de modulation. Si une zone exige une quantité de chaleur inférieure à la quantité prévue de 2 x U_{mf}, le flux d'air devrait être réglé à 2 x U_{mf} et la zone devrait moduler uniquement le gaz ou passer au contrôle on/off du gaz pour éviter la défluidisation et la surchauffe. L'utilisation de combustible par tonne de produit en résultant serait égale à 21,7m³ gaz/tonne à 100% de la capacité et 24,3m³ gaz/tonne à 50% de la capacité, c'est à dire une amélioration de 19% et 38% respectivement par rapport au cas où la totalité des zones est maintenue à la même valeur («toutes les zones égales»).

La *Figure 2* montre la consommation de combustible par tonne de fil en fonction de la capacité de production pour les trois schémas de contrôle traités plus haut. Bien que les schémas de contrôle entraînent une augmentation de l'utilisation de combustible au rythme de la réduction de la charge du four, il est clair qu'une quantité considérable de combustible peut être économisée dans toute condition d'exploitation en utilisant le contrôle par zone séquentielle ou le contrôle par modulation.

Réalisation

Les nouveaux fours peuvent être conçus dès le début pour l'exploitation dans deux modes de fonctionnement. La commande par zone séquentielle peut être aisément réalisée avec une modification partielle ou sans aucune modification de la conception du système de commande, tandis que la commande par modulation exige des modifications relativement simples et économiques des dispositifs de commande du combustible et de l'air.

Il est également possible de modifier des fours existant déjà. Un four qui fonctionne actuellement en utilisant la commande du gaz du type marche/arrêt peut être modifié en changeant simplement la grosseur de grain du sable de manière à ce que la Zone 1 puisse fonctionner à environ 6 x U_{mf}, et ensuite en réglant les Zones 2 et 3 pour obtenir les vitesses de fluidisation requises.

Il peut être nécessaire de modifier les cheminées du four pour éviter l'entraînement de sable à des vitesses de fluidisation trop élevées ou lorsque

▼ **Tableau 5**: *Économies de combustible annuelles pour une installation de 20 000 tonnes/an, avec une charge moyenne du four de 80%*

Schéma de commande	"Toutes les zones égales"	Zones séquentielles	Commande par modulation
Utilisation annuelle du combustible (m³)	600 000	482 000	443 600
Coût annuel du combustible (m³)	$240 000	$192 800	$177 440
Économies annuelles (avec commande "Toutes les zones égales") (US$)	$0	$47 200	$62 560

la grosseur de grain est inférieure, les cheminées dans la majorité des fours devant être adéquates. Il pourrait être nécessaire de collaborer avec le fabricant du four pour réaliser ces modifications.

La modification des fours existant déjà pour l'exploitation avec la commande par modulation peut être plus compliquée, puisque le panneau de commande et les systèmes de réglage du combustible/air pourraient exiger des modifications. Toutefois, il est prévu de réaliser des économies de combustible majeures.

La faisabilité des modifications dépendrait de l'application spécifique et de la conception du four. En outre, il est recommandé de contacter le fabricant du four pour discuter des modifications et des bénéfices pour chaque application spécifique.

En termes d'économies potentielles, il faut considérer un four conventionnel conçu pour fonctionner 6 000 heures par an avec une capacité maximale de 4 tonnes/heure (24 000 tonnes/an).

En considérant que la majorité des fours est légèrement surdimensionnée et qu'il est presque impossible pour un producteur de maintenir une gamme de produits permettant une maximisation constante du rendement, il est supposé que le rendement effectif soit égal à 20 000 tonnes/an et que la charge du four typique soit égale à 80% au maximum. Sur la base de ces données, le *Tableau 5* résume l'utilisation et les coûts du combustible en considérant un prix de base du combustible de $0,40 US/m^3, c'est-à-dire les coûts courants dans le marché canadien.

Comme l'on peut remarquer, il est possible d'obtenir des réductions substantielles dans l'utilisation du combustible et du coût, y compris dans une installation actionnant son four(s) proche de sa capacité.

Les installations qui n'utilisent pas la totalité de la capacité du four peuvent économiser proportionnellement plus de combustible.

Il est prévu que l'amortissement de tout coût supporté pour le changement du schéma de commande d'un four existant déjà peut être récupéré dans le délai d'un an ou moins pour plusieurs installations.

Conclusions

Des recherches récentes sur le coefficient de transmission de chaleur dans les fils dans un lit de fluidisation a démontré que la régulation modulante ou la régulation par zones séquentielle des lits de fluidisation utilisé pour le traitement thermique est faisable.

Les bénéfices offerts par l'utilisation de ces schémas de commande comprennent une réduction substantielle de l'utilisation du combustible et une réduction correspondante des émissions nocives.

Les nouveaux fours peuvent être réalisés pour fonctionner en utilisant ces schémas de commande avec un coût minimum, et les fours existant déjà peuvent être aisément modifiés dans la majorité des cas. ■

Remerciements

Nous remercions NSERC (Natural Sciences and Engineering Research Council of Canada) pour son support.

Dédicace

Cet article est dédié à la mémoire de Philip Cowie (1962-2006), un bon ami et supporter enthousiaste du développement continu du lit fluidisé et de l'industrie du fil.

Terminologie

d_w Diamètre du fil (m)
h Coefficient de convection (W/m^2-K)
k Conductivité thermique du gaz de fluidisation (W/m-K)
Nu Numéro de Nusselt ($Nu = hd_w / k$)
U Vitesse du gaz de fluidisation (m/s)
U_{mf} Vitesse minimale du gaz de fluidisation requise pour la fluidisation (m/s)

Références

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Miglioramento dell'efficienza del combustibile di un forno di ricottura a letto fluidizzato

A cura di J Friedman, Ryerson University, Toronto, Canada, e G Lundy, The ICE Group Ltd, Quebec, Canada

Introduzione

I forni di ricottura a letto fluidizzato sono sempre più richiesti nell'industria del filo d'acciaio, poiché rappresentano l'alternativa più praticabile ai forni di ricottura al piombo, la cui installazione è ormai difficile o impossibile in numerosi paesi a causa delle severe direttive ambientali.

Nonostante costituisca un'attraente alternativa al piombo, il letto fluidizzato presenta delle limitazioni intrinseche, soprattutto per quanto riguarda il consumo di combustibile nel caso di carichi ridotti.

Tale limitazione deriva dalla convinzione che il letto fluidizzato debba funzionare ad una velocità di fluidizzazione fissa al fine di assicurare condizioni di trasmissione del calore uniformi.

Si riteneva che una velocità di fluidizzazione variabile avrebbe influenzato la velocità di trasmissione del calore dei fili immersi variando conseguentemente la qualità del prodotto.

Tale convinzione è il risultato della ricerca sulla trasmissione del calore a cilindri immersi, condotta nel corso di questi ultimi decenni.

Questo lavoro, riassunto da Saxena [1], dimostra chiaramente che la velocità di trasmissione del calore ad un cilindro immerso aumenta con l'aumentare della velocità di fluidizzazione.

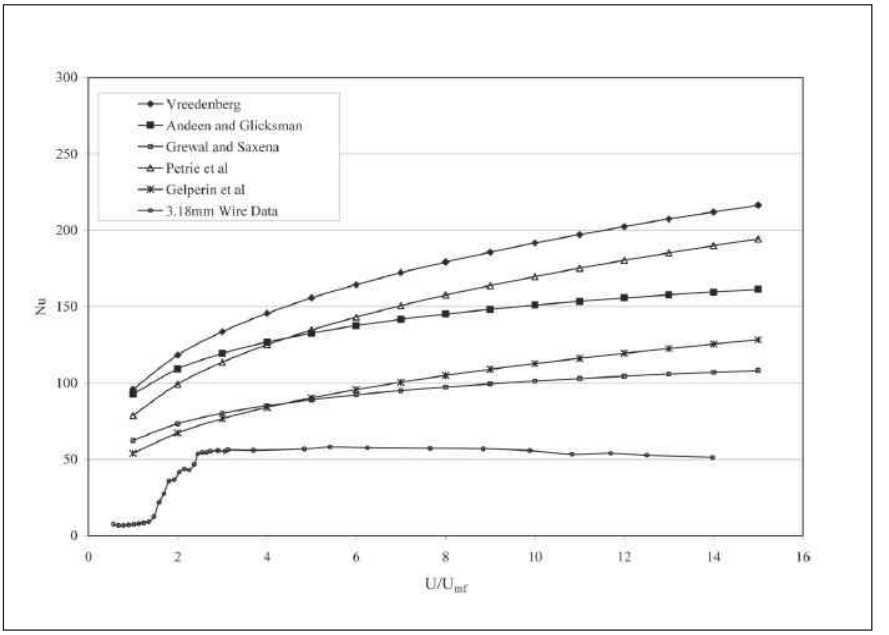
Tuttavia, tali ricerche si fondavano su esperienze basate sulla trasmissione del calore a tubi del diametro di 12,7mm o di dimensioni superiori, utilizzati come tubi di caldaia immersi in letti fluidizzati di carbone per la produzione di energia. Non è stato riportato alcuno studio riguardante cilindri di dimensioni inferiori.

Alcune recenti esperienze effettuate presso l'università di Ryerson[2] hanno dimostrato che tale tendenza diminuisce al di sopra di 10mm di diametro nei letti fluidizzati all'ossido di alluminio con grani di grossezza compresa nella gamma fra 50 e 90 (145-330μm). Infatti è stato dimostrato che la velocità di trasmissione di calore a fili immersi nel letto fluidizzato è essenzialmente costante quando la velocità di fluidizzazione è $U/U_{mf} > 2$.

Ciò è chiaramente illustrato nella *Figura 1*, che presenta i dati reali riferiti ad un filo di 3,18mm (1/8") immerso in un letto fluidizzato con un grano di grossezza pari a 60 (250μm). La figura mostra inoltre le previsioni di correlazione per fili delle stesse dimensioni nelle medesime condizioni. Chiaramente, tali correlazioni [1], tutte derivate da dati relativi alla trasmissione di calore a tubi immersi del diametro compreso tra 25 e 50mm non possono essere utilizzate per prevedere con precisione la velocità di trasmissione di calore ai cilindri delle stesse dimensioni del filo.

Una nuova correlazione adatta all'uso dei fili è stata sviluppata e illustrata in [2]. Una delle principali implicazioni di questi risultati consiste nel fatto che la velocità di fluidizzazione in un letto di fluidizzazione può variare su un campo sufficientemente vasto senza influenzare la velocità di trasmissione del calore e quindi la qualità del prodotto.

▼ **Figura 1**: *Comparazione delle correlazioni standard con i dati per il trasferimento termico ad un filo di 3,18mm in un letto fluiidizzato (da [2])*



	Zona 1:	Zona 2:	Zona 3:
Gas fratto tempo (%)	100%	56,3%	39,4%
Eccesso d'aria (%)	5%	87%	167%

▲ **Tabella 1**: *Carica del forno con tutte le zone impostate alla stessa velocità di fluidizzazione, al 100% della capacità*

	Zona 1:	Zona 2:	Zona 3:
Gas fratto tempo (%)	64,8%	40,8%	32,8%
Eccesso d'aria (%)	62,4%	145%	205%

▲ **Tabella 2**: *Carica del forno con tutte le zone impostate alla stessa velocità di fluidizzazione, al 50% della capacità*

	Zona 1:	Zona 2:	Zona 3:
Gas fratto tempo (%)	100%	82,9%	59%
Eccesso d'aria (%)	5%	27%	78%

▲ **Tabella 3**: *Carica del forno con la Zona 1 impostata a 6 x U_{mf}, Zona 2 impostata a 3 x U_{mf} e Zona 3 impostata a 2 x U_{mf}, al 100% della capacità*

	Zona 1:	Zona 2:	Zona 3:
Gas fratto tempo (%)	64,8%	56,2%	42,1%
Eccesso d'aria (%)	62,4%	87,3%	137%

▲ **Tabella 4**: *Carica del forno con la Zona 1 impostata a 6 x U_{mf}, Zona 2 impostata a 3 x U_{mf} e Zona 3 impostata a 2 x U_{mf}, al 50% della capacità*

Discussione

La maggior parte dei letti fluidizzati utilizzati per il trattamento termico dei fili viene installata utilizzando tre o più zone di controllo. Ciascuna zona è caratterizzata dal proprio sistema di controllo della temperatura, ma generalmente tutte le zone presentano la stessa lunghezza e sono impostate secondo gli stessi (o quasi gli stessi) valori di temperatura e velocità di fluidizzazione.

Il filo freddo entra nel forno alla Zona 1, dove vengono assorbite grandi quantità di calore essendo notevole la differenza di temperatura fra il filo ed il letto. Quindi il filo passa attraverso la Zona 2 dove una quantità di calore relativamente inferiore viene trasferita al filo essendo inferiore la differenza di temperatura fra il letto ed il filo.

Alla fine il filo entra nella Zona 3 dove viene assorbita una quantità di calore ancora inferiore. Se il forno è stato progettato correttamente, il filo raggiungerà la temperatura di ricottura nella Zona 3 e quindi uscirà dal forno per procedere alla fase di tempra ed al successivo trattamento. Generalmente, si ha lo stesso flusso dell'aria di fluidizzazione verso ciascuna zona e la temperatura è controllata modulando il gas o utilizzando un comando del tipo on/off, mantenendo un flusso d'aria continuo. Di solito la procedura utilizzata per dimensionare il letto di fluidizzazione e determinare il flusso d'aria a ciascuna zona è la seguente:

1) Si determina il carico termico globale e il carico termico per la Zona 1 in funzione del rendimento massimo previsto per il filo (kg/h);
2) Sulla base del carico della Zona 1, si determina la portata del combustibile richiesta per la fornitura di tale quantità di calore ai fili;
3) Si determina il flusso d'aria alla Zona 1 richiesto per bruciare completamente il combustibile (con 5-10% di eccesso d'aria per compensare l'eventuale non-uniformità e le imprecisioni dei sistemi di controllo del flusso);
4) Si determinano la lunghezza e la larghezza della zona in funzione della velocità e del numero di fili;
5) Si seleziona una grossezza del grano della sabbia in modo che la velocità dell'aria nella zona presenti una velocità di fluidizzazione adeguata, generalmente nel campo di 3-5 x U_{mf}. Di norma la grossezza del grano selezionata rientra nel campo da 60 a 70 (200-250µm).

Generalmente, la configurazione basata sui dati di cui sopra fa sì che la Zona 1 risulti accesa ogni volta che il forno è a pieno carico, mediante modulazione del gas o regolazione con cicli on/off nelle zone successive, con flussi d'aria identici in ciascuna zona.

Nel caso di un filo d'acciaio tradizionale a basso contenuto di carbonio, che raggiunge una temperatura di ricottura di 710°C in un letto fluidizzato a 730°C, il calore totale assorbito è di circa 446,8 kJ/kg. Circa il 65,8% di questo calore sarà assorbito nella Zona 1; il 25% nella Zona 2 e il restante 9,2% nella Zona 3 in un forno a tre zone. A pieno carico, il forno funziona come segue:

Va sottolineato che non vi è alcuna differenza reale sia che si utilizzi il sistema di regolazione del gas tramite modulazione o del tipo on/off. I due metodi forniscono risultati identici per quanto riguarda il consumo del combustibile.

Come si può rilevare dalla *Tabella 1*, la Zona 1 funziona con un eccesso d'aria del 5% (a progetto) al 100% della sua capacità, mentre la Zona 2 e la Zona 3 funzionano ad alti livelli di eccesso d'aria.

Di conseguenza, l'energia termica fornita dal combustibile non solo viene utilizzata per riscaldare il prodotto, ma fornisce anche l'energia per riscaldare l'eccesso d'aria non utilizzato per la combustione alla temperatura del forno corrispondente a 730°C.

Questa energia consiste essenzialmente in energia sprecata non essendo utilizzata per riscaldare il prodotto. La situazione si aggrava ulteriormente nel caso in cui il forno non funzioni a pieno carico. Ad esempio, qualora il forno sopra descritto dovesse funzionare al 50% della massima capacità, i valori del gas fratto tempo e dell'eccesso d'aria risultanti sarebbero quelli indicati nella *Tabella 2* seguente:

Ne consegue che il combustibile utilizzato per tonnellata di prodotto aumenta circa da 26,9m^3 gas/t a 39,2m^3 gas/t, corrispondente ad un aumento del 45%. Chiaramente, il letto fluidizzato configurato per un funzionamento con tutte le zone regolate alla medesima velocità di fluidizzazione, non può funzionare efficacemente a carichi ridotti.

Tuttavia, considerando il fatto che la velocità di fluidizzazione non influenza in modo significativo la velocità di trasmissione del calore (almeno a velocità di fluidizzazione superiori a 2 x U_{mf}), esiste la possibilità di modificare la configurazione di un letto di fluidizzazione per migliorarne le prestazioni termiche.

Ad esempio, se il forno è progettato in modo che la Zona 1 sia configurata per funzionare a 6 x U_{mf} con un eccesso d'aria del 5% a pieno carico, la Zona 2 è regolata ad un flusso d'aria pari alla metà di quello della Zona 1, (cioè 3 x U_{mf}) e la Zona 3 impostata a $^1/_3$ del flusso d'aria della Zona 1 (cioè 2 x U_{mf}), allora tutte le zone dovrebbero presentare dei flussi d'aria simili, ma le Zone 2 e 3 avrebbero dei flussi d'aria notevolmente inferiori rispetto alla Zona 1.

Le risultanti condizioni operative del forno al 100% e al 50% della sua capacità sono riassunte nelle *Tabelle 3* e *4* qui di seguito.

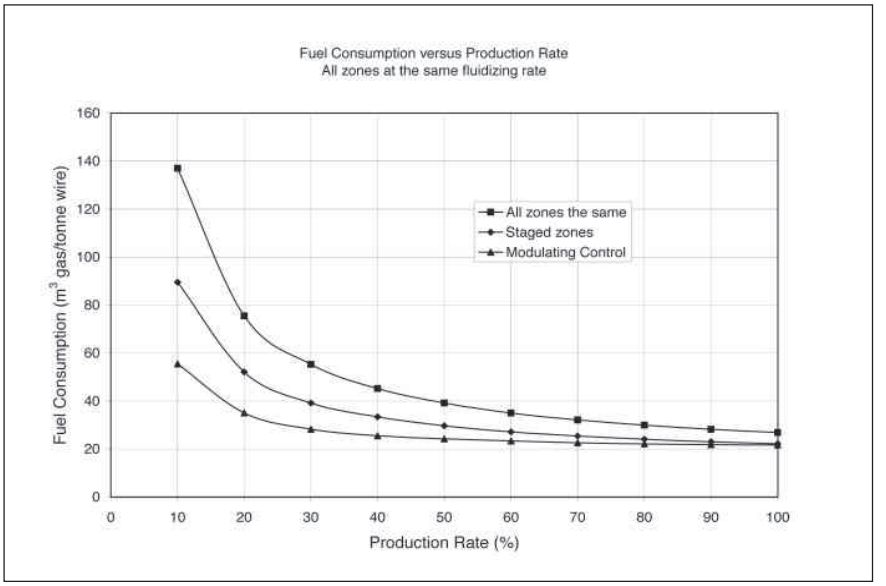
La comparazione delle *Tabelle 3* e *4* con le *Tabelle 1* e 2 illustra chiaramente che la distribuzione sequenziale del flusso d'aria nelle zone riduce considerevolmente la quantità di eccesso d'aria da riscaldare aumentando il rendimento termico.

L'utilizzo del gas per tonnellata di prodotto risultante nel caso dell'aria distribuita per zone sequenzialmente equivale a 22,2m³ di gas/t al 100% della sua capacità e 29,7m³ di gas/t al 50% della sua capacità, che rappresenta rispettivamente un miglioramento del 17,6% e del 24,0% rispetto al caso in cui tutte le zone sono regolate secondo gli stessi valori ("tutte le zone uguali") come sopra illustrato.

Ulteriori miglioramenti del rendimento energetico possono essere ottenuti a condizione che via sia la possibilità di modulare il gas e l'aria nella stessa gamma di 2 x U_{mf} e 6 x U_{mf} per tutte le zone come sopra indicato.

Il sistema di modulazione dovrebbe essere configurato con il 5-10% di eccesso d'aria mediante la gamma di modulazione.

Nel caso in cui una zona richieda una quantità di calore inferiore alla quantità prevista di 2 x U_{mf}, il flusso d'aria dovrebbe essere regolato a 2 x U_{mf} e la zona dovrebbe modulare unicamente il gas o passare al controllo on/off del gas per evitare la defluidizzazione e il surriscaldamento. L'utilizzo di combustibile per tonnellata di prodotto sarebbe pari a 21,7m³ gas/t al 100% della capacità e 24,3m³ gas/t al 50% della capacità, che si traduce in un miglioramento rispettivamente del 19% e del 38% rispetto al caso in cui tutte le zone sono regolate secondo gli stessi valori ("tutte le zone uguali").



▲ **Figura 2**: *Comparazione dell'utilizzo del combustibile rispetto alla carica del forno utilizzando tre diversi schemi di controllo*

La *Figura 2* indica il consumo di combustibile per tonnellata di filo in funzione della capacità di produzione per tutti tre gli schemi di controllo discussi precedentemente.

Sebbene gli schemi di controllo prevedano un aumento dell'utilizzo di combustibile con la riduzione del carico del forno, può essere chiaramente risparmiata una quantità notevole di combustibile in qualsiasi condizione di funzionamento utilizzando il controllo per zona sequenziale o il controllo mediante modulazione.

Realizzazione

I nuovi forni possono essere progettati sin dall'inizio per funzionare in entrambe le due modalità.

Il controllo per zona sequenziale può essere facilmente realizzato modificando parzialmente o senza modificare affatto la configurazione del sistema di controllo, mentre il comando tramite modulazione esige delle modifiche relativamente semplici ed economiche dei dispositivi di controllo del combustibile e dell'aria. E' inoltre possibile modernizzare forni già esistenti.

Un forno che attualmente funziona utilizzando il controllo del gas del tipo on/off può essere modificato cambiando semplicemente la grossezza del grano della sabbia in modo che la Zona 1 possa funzionare a circa 6 x U_{mf}, e quindi regolando le Zone 2 e 3 per ottenere le velocità di fluidizzazione richieste.

▼ **Tabella 5**: *Risparmi annuali di combustibile per un impianto di 20.000 t/anno, con una carica media del forno dell' 80%*

Schema di controllo	"Tutte le zone uguali"	Zone sequenziali	Controllo mediante modulazione
Utilizzo annuale del combustibile (m³)	600.000	482.000	443.600
Costo annuale del combustibile (m³)	$240.000	$192.800	$177.440
Risparmi annuali (con controllo "tutte le zone uguali") (US$)	$0	$47.200	$62.560

Può essere necessario modificare i camini del forno per evitare il trascinamento di sabbia a velocità di fluidizzazione superiori o quando la grossezza del grano è inferiore, sebbene nella maggioranza dei casi i camini dovrebbero essere adeguati. Potrebbe essere necessario collaborare con il fabbricante del forno per realizzare tali modifiche.

La modifica dei forni esistenti per il funzionamento con il controllo tramite modulazione può essere complicato, poiché il pannello di controllo ed i sistemi di regolazione del combustibile/aria potrebbero richiedere delle modifiche. Tuttavia sarebbero realizzati risparmi di combustibile maggiori.

La fattibilità delle modifiche dipende dall'applicazione e dalla concezione del forno. Inoltre, si raccomanda di contattare il fabbricante del forno per discutere delle modifiche e dei benefici per ciascuna applicazione specifica.

In termini di potenziali risparmi, bisogna considerare un forno convenzionale progettato per funzionare 6.000 ore l'anno con una capacità massima di 4 t/h (24.000 t/anno).

Considerando che la maggior parte dei forni è leggermente sovradimensionata e che è quasi impossibile per un produttore mantenere una gamma di prodotti che consenta una massimizzazione costante del rendimento, si suppone che il rendimento effettivo sia pari a 20.000 t/anno e che la carica del forno tipica sia pari al 80% al massimo.

Sulla base di questi dati, la *Tabella 5* riassume l'utilizzo ed i costi del combustibile considerando un prezzo di base del combustibile di $0,40 US/m^3, cioè i costi correnti nel mercato canadese. Come si può notare, è possibile ottenere delle riduzioni sostanziali nell'utilizzo del combustibile e del costo, anche in un impianto che attiva il rispettivo forno(i) quasi alla sua capacità.

Gli impianti che non utilizzano tutta la capacità del forno possono risparmiare in proporzione più combustibile.

Si prevede di ammortizzare qualsiasi costo sostenuto per eventuali modifiche dello schema di controllo di un forno nello spazio di un anno o meno per numerosi impianti.

Conclusioni

Recenti ricerche sul coefficiente di trasferimento termico a fili in un letto di fluidizzazione hanno dimostrato che il controllo tramite modulazione o il controllo per zone sequenziali dei letti di fluidizzazione utilizzato per il trattamento termico è fattibile.

I benefici offerti dall'utilizzo di tali schemi di controllo comprendono una riduzione sostanziale dell'utilizzo del combustibile ed una corrispondente riduzione delle emissioni nocive.

I nuovi forni possono essere realizzati per funzionare utilizzando tali schemi di controllo con un costo minimo ed i forni esistenti possono essere facilmente modificati nella maggior parte dei casi. ■

Ringraziamenti

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Dedica

Questo articolo è dedicato alla memoria di Philip Cowie (1962-2006), buon amico ed entusiasta sostenitore del continuo sviluppo del letto fluidizzato e dell'industria del filo.

Terminologia

d_w Diametro del filo (m)
h Coefficiente di convezione (W/m^2-K)
k Conduttività termica del gas di fluidizzazione (W/m-K)
Nu Numero di Nusselt ($Nu = hd_w / k$)
U Velocità del gas di fluidizzazione (m/s)
U_{mf} Velocità minima del gas di fluidizzazione richiesta per la fluidizzazione (m/s)

Referenze

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Mejora de la eficiencia del combustible de un horno de recocido de lecho fluidizado

Por J Friedman, Universidad de Ryerson, Toronto, Canadá, y G Lundy, The ICE Group Ltd, Québec, Canadá

Introducción

Los hornos de recocido de lecho fluidizado se van difundiendo cada vez más en la industria del alambre de acero porque representan la alternativa más factible a los sistemas de recocido con plomo, cuya instalación es difícil o imposible en muchos países debido a la rigidez de las normas de protección ambiental.

Aunque el lecho fluidizado sea una buena alternativa al plomo, presenta algunas limitaciones, en particular por lo que se refiere al consumo de combustible en caso de cargas reducidas.

Esta limitación se debe a la convicción que el lecho fluidizado debe funcionar a una velocidad de fluidización fija para poder asegurar condiciones de transferencia de calor uniformes. El concepto es que variando la velocidad de fluidización se influencia la tasa de transferencia de calor a los alambres sumergidos y se obtiene, por consiguiente, un producto de calidad variable. Esta convicción es el resultado de investigaciones sobre transferencia de calor a cilindros sumergidos realizadas en las últimas décadas.

Estos estudios, resumidos por Saxena [1], muestran claramente que la tasa de transferencia de calor a un cilindro sumergido aumenta al disminuir la velocidad de fluidización. Sin embargo, todas estas investigaciones se basan en experimentos de transferencia de calor a tubos de 12,7mm de diámetro o más grandes, utilizados como tubos de calderas sumergidos en lechos fluidizados de carbón para generar energía. Prácticamente no se conocen resultados de investigaciones sobre cilindros de dimensiones más pequeñas.

En experimentos recientes, realizados en la Universidad de Ryerson [2], se ha demostrado que esta tendencia se rompe aproximadamente con valores por debajo de 10mm de diámetro en lechos fluidizados de óxido de aluminio con granos de tamaño comprendido entre 50 y 90 (145-330μm). Efectivamente, se ha demostrado que la tasa de transferencia de calor a alambres sumergidos en lecho fluidizado es prácticamente constante cuando la velocidad de fluidización de U/U_{mf} es > 2.

Esto está claramente ilustrado en la Figura 1, que muestra los datos actuales de un alambre de 3,18mm (1/8") sumergido en un lecho fluidizado con grano de tamaño 60 (250μm). La figura muestra también las previsiones de las correlaciones para alambre de iguales dimensiones en las mismas condiciones.

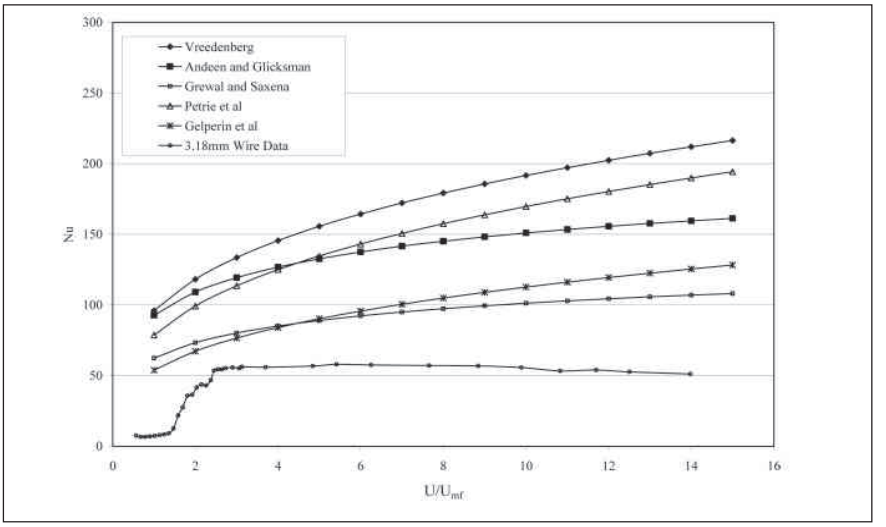
Claramente, estas correlaciones [1], todas derivadas de datos para la transferencia de calor a tubos sumergidos de diámetro comprendido entre 25 y 50mm, no pueden ser usadas para prever con precisión la tasa de transferencia de calor a cilindros de las mismas dimensiones del alambre.

Una nueva correlación, adecuada para alambres, ha sido desarrollada e ilustrada en [2]. Una de las implicaciones principales de estos resultados es que la velocidad de fluidización en un lecho fluidizado puede ser variada en un campo bastante amplio sin influenciar la tasa de transferencia de calor y, por consiguiente, la calidad del producto.

Argumentación

La mayor parte de los lechos fluidizados utilizados para tratar térmicamente los alambres están formados por tres o más zonas de control. Cada zona está equipada con su propio sistema de control de temperatura, pero normalmente todas las zonas tienen la misma longitud y están reguladas a las mismas o aproximadamente las mismas temperaturas y velocidades de fluidización. El alambre frío entra en el horno en la Zona 1, donde se absorben grandes

▼ **Figura 1**: *Comparación de correlaciones estándares con datos para transferencia de calor a un alambre de 3,18mm en un lecho fluidizado (de 2)*



	Zona 1	Zona 2	Zona 3
Gas sobre Tiempo (%)	100%	56,3%	39,4%
Aire en exceso (%)	5%	87%	167%

▲ **Tabla 1**: *Carga del horno con todas las zonas ajustadas a la misma velocidad de fluidización, al 100% de su capacidad*

	Zona 1	Zona 2	Zona 3
Gas sobre Tiempo (%)	64,8%	40,8%	32,8%
Aire en exceso (%)	62,4%	145%	205%

▲ **Tabla 2**: *Carga del horno con todas las zonas ajustadas a la misma velocidad de fluidización, al 50% de su capacidad*

	Zona 1	Zona 2	Zona 3
Gas sobre Tiempo (%)	100%	82,9%	59%
Aire en exceso (%)	5%	27%	78%

▲ **Tabla 3**: *Carga del horno con Zona 1 regulada a 6 x U_{mf}, Zona 2 regulada a 3 x Umf y Zona 3 regulada a 2 x U_{mf}, al 100% de su capacidad de carga*

	Zona 1	Zona 2	Zona 3
Gas sobre Tiempo (%)	64.8%	56.2%	42.1%
Aire en exceso (%)	62.4%	87.3%	137%

▲ **Tabla 4**: *Carga del horno con Zona 1 regulada a 6 x U_{mf}, Zona 2 regulada a 3 x U_{mf} y Zona 3 regulada a 2 x U_{mf}, al 50% de su capacidad de carga*

cantidades de calor porque hay una gran diferencia de temperatura entre el alambre y el lecho. Luego, el alambre pasa a la Zona 2, donde se transfiere proporcionalmente menos calor al alambre, porque la diferencia de temperatura entre el lecho y el alambre es menor y, por último, el alambre entra en la Zona 3, donde se absorbe una cantidad de calor incluso menor.

Si el horno ha sido diseñado correctamente, el alambre alcanzará la temperatura de recocido en la Zona 3, y luego saldrá del horno para el temple y otros procesos. Normalmente, hay el mismo flujo de aire de fluidización en cada zona y la temperatura es controlada modulando el gas o usando un control de gas de tipo on/off (apertura/cierre), manteniendo un flujo de aire continuo. Por lo general, el procedimiento usado para dimensionar el lecho fluidizado y determinar el caudal del aire en cada zona es el siguiente:

1. se determina la carga térmica total y la carga térmica para la Zona 1 en base al rendimiento esperado máximo (kg/h);
2. en base a la carga de la Zona 1, se determina el caudal del combustible requerido para suministrar esta cantidad de calor a los alambres;
3. se determina el caudal del aire para la Zona 1 requerido para quemar completamente el combustible (con un 5-10% de aire en exceso para compensar la posible falta de uniformidad de mezclado e imprecisiones del equipo de control del flujo);
4. en base a la velocidad del alambre y al número de alambres, se determina la longitud y la anchura de la zona;
5. se selecciona un tamaño de grano de arena con que la velocidad del aire en la zona pueda proveer una velocidad de fluidización adecuada, normalmente en el rango de 3-5 x U_{mf}. Por lo general, el tamaño de grano seleccionado está en el rango de 60-70 (200-250µm).

En base a los datos anteriores, se obtiene típicamente una Zona 1 che está encendida siempre cuando el horno está cargado completamente, mediante regulación del gas con modulación o ciclos on/off en las zonas siguientes y con flujos de aire idénticos en cada zona. Para un alambre de acero de bajo carbono convencional, que alcanza una temperatura de recocido de 710°C en un lecho fluidizado a 730°C, el calor total absorbido por el alambre será aproximadamente 446,8 KJ/Kg.

Cerca de un 65,8% de este calor será absorbido en la Zona 1, un 25% en la Zona 2 y el restante 9,2% en la Zona 3, en el caso de un horno de 3 zonas. A plena carga, el horno funcionará como se ilustra a continuación:

Se debe notar que no hay una diferencia efectiva si se usa el sistema de control del gas por modulación o de tipo on/off. Ambos métodos proporcionan resultados idénticos por lo que se refiere al consumo de combustible.

Como se puede ver en la *Tabla 1*, la Zona 1 funciona con un 5% de aire en exceso (de proyecto) al 100% de su capacidad de carga, mientras que la Zona 2 y la Zona 3 funcionan con altos niveles de aire en exceso.

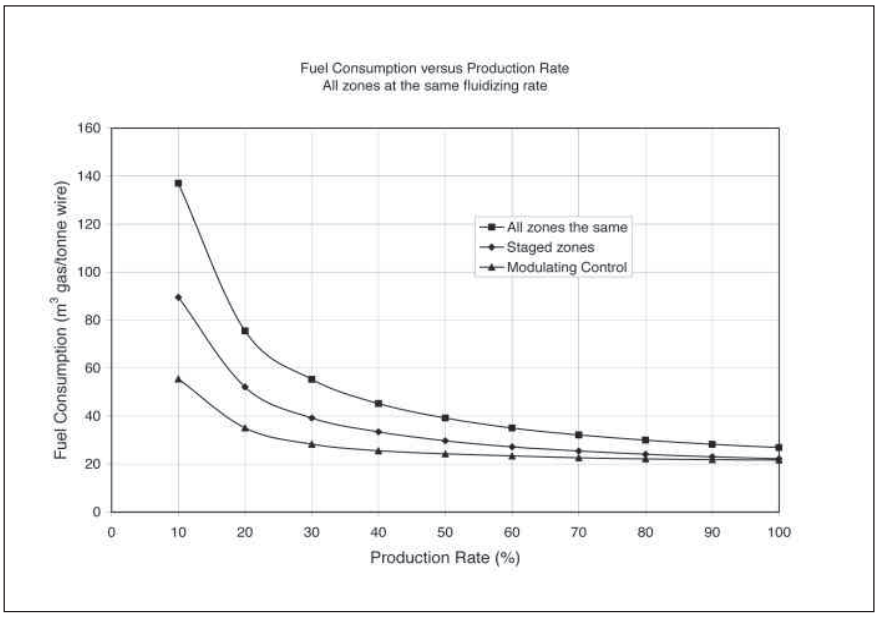
Por consiguiente, la energía térmica proporcionada por el combustible no es utilizada solamente para calentar el producto, sino que debe proveer también energía para calentar el aire en exceso no utilizado para la combustión a la temperatura del horno correspondiente a 730°C.

Esta energía es esencialmente energía derrochada, dado que no es usada para calentar el producto. La situación incluso empeora si el horno no funciona a plena carga. Por ejemplo, si el horno descrito antes tuviera que funcionar con una carga máxima del 50%, los valores de gas sobre tiempo y de aire en exceso serían los indicados en la *Tabla 2* ilustrada a continuación:

Como resultado, el combustible utilizado por tonelada de producto aumenta aproximadamente de 26,9m^3 gas/t a 39,2m^3 gas/t, que representa un aumento del 45%. Claramente, el lecho fluidizado configurado para funcionar con todas las zonas a la misma velocidad de fluidización no puede funcionar eficientemente con cargas reducidas.

Sin embargo, considerando que la velocidad de fluidización no influencia significativamente la tasa de transferencia de calor (por lo menos a velocidades de fluidización superiores a 2 x U_{mf}), es posible alterar la configuración de un lecho fluidizado para mejorar su rendimiento térmico.

Por ejemplo, si el horno está diseñado de manera que la Zona 1 está regulada para funcionar a 6 x U_{mf} con un 5% de aire en exceso a plena carga, la Zona 2 está ajustada para admitir la mitad de flujo de aire de la Zona 1 (es decir, 3 x U_{mf}), y la Zona 3 está preparada para funcionar con $^1/_3$ del flujo de aire de la Zona 1 (es decir, 2 x U_{mf}), entonces todas las zonas proporcionarán tasas de transferencia



▲ **Figura 2**: *Comparación del uso de combustible en función de la carga del horno usando tres esquemas de control diferentes*

de calor similares, pero las Zonas 2 y 3 tendrán caudales de aire mucho más bajos que la Zona 1. Las condiciones operativas resultantes del horno al 100% y 50% de su capacidad están resumidas en las *Tablas 3* y *4* de abajo:

La comparación de las *Tablas 3* y *4* con las *Tablas 1* y *2* muestra claramente que ajustando por zonas el flujo de aire, se reduce sustancialmente la cantidad de aire en exceso a calentar y se aumenta la eficiencia térmica.

El uso de gas por tonelada de producto resultante en caso de aire ajustado por zonas es ahora 22,2m^3 gas/t al 100% de la capacidad y 29,7m^3 gas/t al 50% de la capacidad, una mejora respectivamente del 17,6% y 24,0% respecto al caso de tener "todas las zonas ajustadas a los mismos valores" como se ha ilustrado antes.

Se puede mejorar incluso más la eficiencia energética, si existe la posibilidad de modular tanto el gas como el aire en el mismo rango de 2 x U_{mf} y 6 x U_{mf} sugerido antes en todas las zonas. El sistema de modulación debería ser configurado con un 5-10% de aire en exceso a través del rango de modulación.

Si una zona requiere una cantidad de calor inferior a la provista a 2 x U_{mf} y un 5% de aire en exceso, el flujo de aire debería ser ajustado a 2 x U_{mf} y en la zona se debería modular el gas solamente o pasar a un control on/off del gas para evitar la desfluidificación y el sobrecalentamiento.

El uso de combustible por tonelada de producto resultante sería 21,7m^3 gas/t al 100% de la capacidad y 24,3m^3 gas/t al 50% de la capacidad, una mejora del 19% y 38% respectivamente respecto al caso de tener "todas las zonas ajustadas a los mismos valores".

La *Figura 2* muestra el consumo de combustible por tonelada de alambre frente a la velocidad de producción para los tres esquemas de control descritos arriba. Aunque todos los esquemas de control experimenten un mayor uso de combustible al reducir la carga del horno, es evidente que puede ahorrarse una cantidad de combustible considerable en todas las condiciones de funcionamiento usando el control por zonas o el control por modulación.

Implementación

Los nuevos hornos pueden ser diseñados desde el inicio para funcionar en los dos modos operativos. El control por zona se puede obtener fácilmente modificando parcialmente o incluso sin modificar el diseño del sistema de control, mientras que el control por modulación requiere modificaciones relativamente simples y no costosas en los dispositivos de control del combustible y del aire.

Se pueden modificar también los hornos existentes. Un horno que actualmente funciona con control de gas de tipo on/off puede ser modificado simplemente cambiando el tamaño del grano de arena de manera que la Zona 1 pueda funcionar a aproximadamente 6 x U_{mf}, y luego ajustando las Zonas 2 y 3 para obtener las velocidades de fluidización deseadas.

Puede ser necesario modificar las chimeneas del horno para evitar el arrastre de arena a velocidades de fluidización más altas o bien cuando el tamaño del grano es más pequeño, aunque se espera que las chimeneas de la mayoría de los hornos sean adecuadas. Sería necesario contar con la colaboración del fabricante del horno para realizar estas modificaciones.

La modificación de hornos existentes para que puedan funcionar con control por modulación puede ser más complicada, porque el panel de control y los sistemas de control del combustible/aire podrían necesitar modificaciones. Sin embargo, se obtendrían ahorros de combustible mayores.

La viabilidad de las modificaciones depende de la aplicación específica y del diseño del horno.

▼ **Tabla 5**: *Ahorros potenciales de combustible para una planta de 20.000 t/año, con carga media del 80% de la capacidad del horno*

Esquema de control	Control "todas las zonas iguales"	Control por zonas	Control por modulación
Uso anual del combustible (m^3)	600.000	482.000	443.600
Coste anual del combustible (m^3)	$240.000	$192.800	$177.440
Ahorros anuales (con control "todas las zonas iguales") (US$)	$0	$47.200	$62.560

También en este caso es necesario contactar con el fabricante del horno para discutir las modificaciones y los beneficios de cada aplicación específica.

En términos de ahorros potenciales, se debe considerar un horno convencional diseñado para funcionar 6.000 horas al año a la capacidad máxima de 4 t/h (24.000 t/año).

Teniendo en cuenta que la mayoría de los hornos están un poco sobredimensionados y que es casi imposible para un productor mantener una mezcla de productos que permita maximizar el rendimiento en todas ocasiones, se considerará un rendimiento efectivo de 20.000 t/año y una carga de horno típica del 80% como máximo.

En base a estos datos, la *Tabla 5* resume el uso de combustible y su coste, utilizando un precio de base del combustible de \$0,40 US/m^3, que es el coste del gas típico corriente en el mercado canadiense.

Como se puede ver, se puede reducir sustancialmente el uso de combustible y el coste, incluso en una planta donde los horno(s) funcionan casi a su capacidad.

Las plantas donde los hornos no funcionan a plena capacidad pueden ahorrar proporcionalmente más combustible. Se prevé que el coste generado por el cambio de esquema de control del horno existente pueda ser amortizado en un año o menos en muchas plantas.

Conclusiones

Las investigaciones recientes sobre tasa de transferencia del calor en un lecho fluidizado han demostrado que el control por modulación o el control por zonas de los lechos fluidizados para el tratamiento térmico del alambre es factible. Los beneficios que proporcionan estos esquemas de control incluyen una sustancial reducción del uso de combustible y una correspondiente reducción de emisiones nocivas. Los hornos nuevos pueden ser construidos para funcionar usando estos esquemas de control con un coste mínimo, y los hornos existentes pueden ser fácilmente modificados en la mayoría de los casos. ■

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Dedicatoria

Este artículo está dedicado a la memoria de Philip Cowie (1962-2006), buen amigo y entusiasta sostenedor del desarrollo continuo del lecho fluidizado y de la industria del alambre.

Nomenclatura

d_w Diámetro del alambre (m)
h Coeficiente de convección (W/m^2-K)
k Conductividad térmica del gas de fluidización (W/m-K)
Nu Número de Nusselt ($Nu = hd_w / k$)
U Velocidad del gas de fluidización (m/s)
U_{mf} Velocidad mínima del gas de fluidización requerida para la fluidización (m/s)

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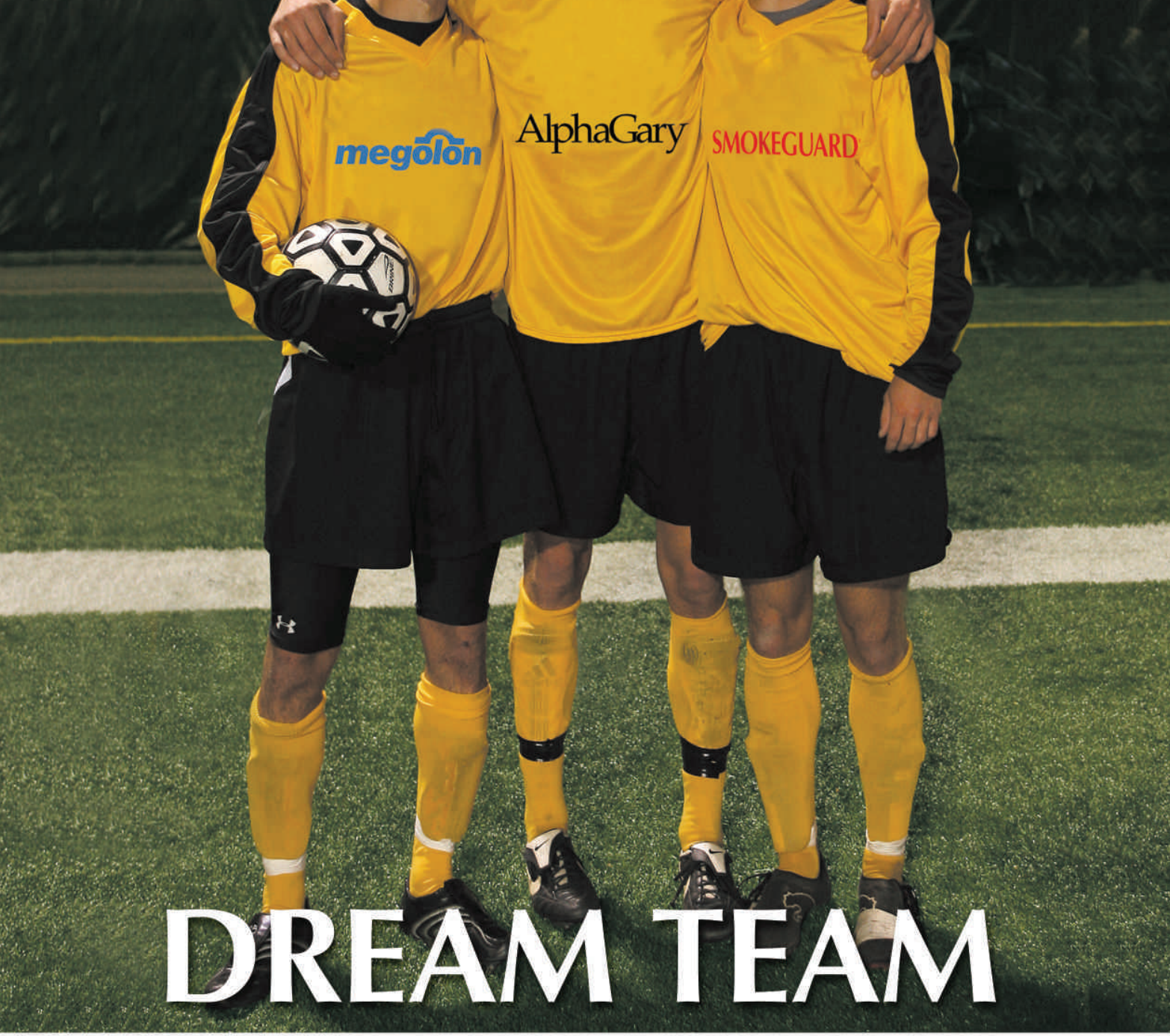

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