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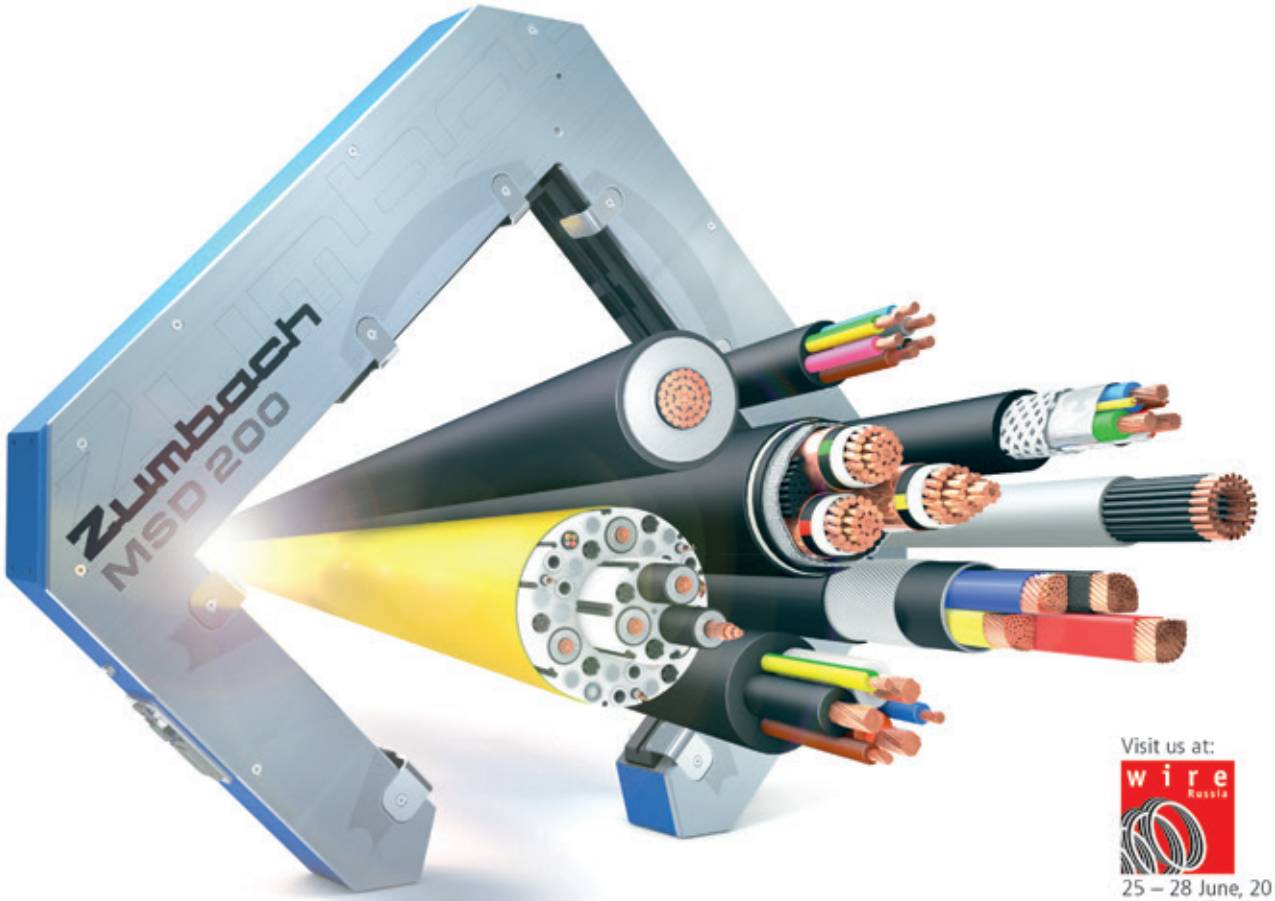

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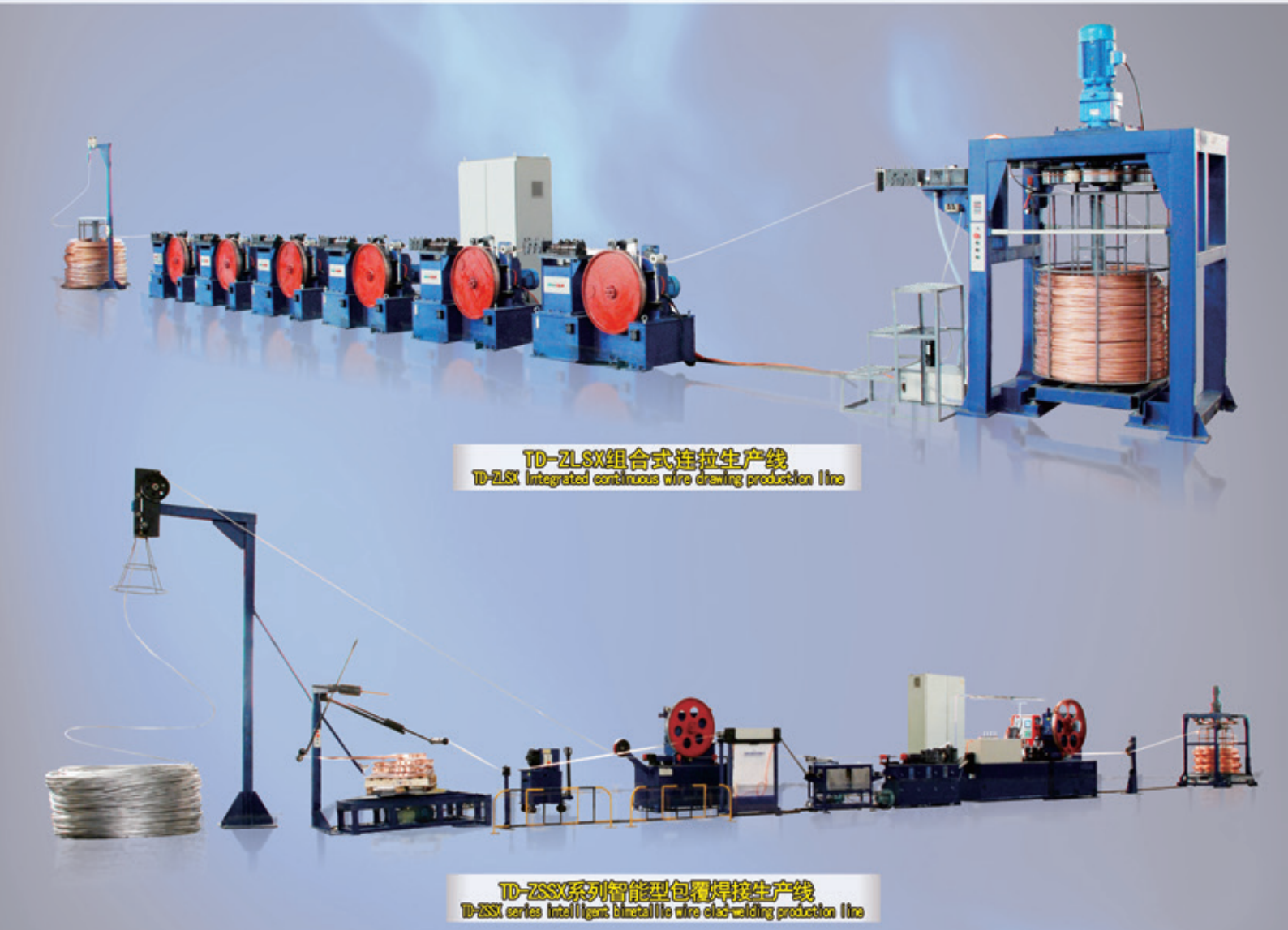

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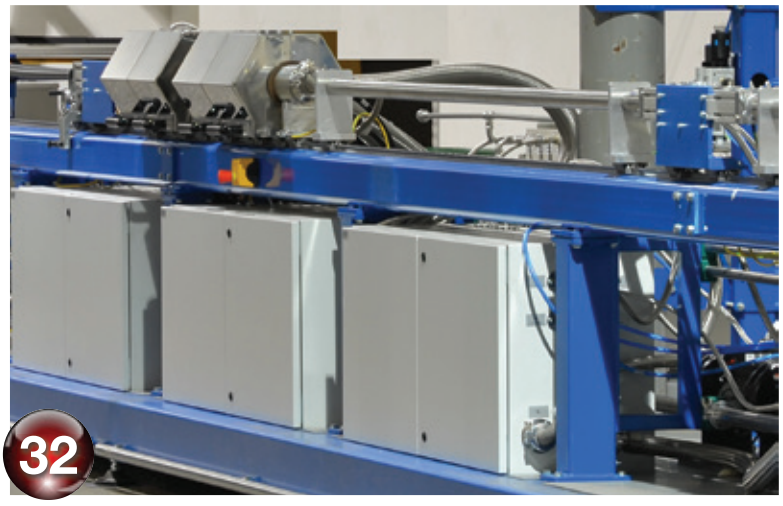

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Technical Articles

Next Issue

Feature On

- Treatment of wires, (heat treatment, furnaces, descaling, pickling, acid tanks & chemicals)

Getting Technical

From optical cable to optical wire – an evolutionary approach
By Wayne Kachmar, Fellow, Electro-Optical Engineering, TE Connectivity, North Bennington, Vermont

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Speed a priority

Speed, it seems, plays heavily on the mind when countries or continents are being connected by cables.

In this issue of Wire & Cable ASIA there are three stories that make the headlines, all for very different reasons.

Firstly, there is the Asia Submarine-cable Express (ASE), a high-bandwith optical submarine cable system that links Japan with the Philippines, Hong Kong, Malaysia and Singapore.

This 7,800km long cable now connects the major cities in east and south-east Asia with a high capacity (40Gbps per wave) submarine cable system. You can find the full story on page 8.

Whilst that no doubt provides the speed the giant telecoms companies of those countries needed, the opposite can be said of our second featured story, the ACE or Africa Coast to Europe submarine cable.

After a multi-million dollar launch in December, it appears the cable is still not in operation in Gambia, with one cyber cafe user lamenting: "I have not seen any visible improvement."

That will change, according to a government official at the ministry of information. "The system being operational doesn't mean it has started operation immediately in all member countries," said Mr Lamin Camara. Turn to page 15 for the full story.

After a seven-year delay a fibre optic cable has also gone live, linking China to Tajikistan. The full story is on page 19.

• A final note is that wire Russia is now just around the corner – our coverage starts on page 68.

Please feel free to stop by Stand 7-6 B05 to collect your free magazine and say hello to staff from Wire & Cable ASIA and sister publication EuroWire.

David Bell

Editor

when and where

'Zhujiang river and fianancial district, Guangzhou, China' www.bigstockphoto Photographer – Yuanyuan Xie

June 2013

16–18 June: **Guangzhou Wire & Tube show –** trade exhibition **–** Guangzhou, China
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Email: meiwan@julang.com.cn
Website: www.julang.com.cn

June 2013

25–28 June: **wire Russia –** trade exhibition **–** Moscow, Russia
Organisers: Messe Düsseldorf GmbH
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Email: info@wire-russia.com
Website: www.wire-russia.com

September 2013

17–19 Sept: **wire/Tube SE Asia –** trade exhibition **–** Bangkok, Thailand
Organisers: Messe Düsseldorf Asia Pte Ltd
Email: wire@mda.com.sg
Website: www.wire-southeastasia.com

October 2013

1–3 Oct: **wire South America –** trade exhibition **–** São Paulo
Organisers: Messe Düsseldorf/Grupo Cipa
Fax: +49 211 456 0668
Email: infoservice@messe-duesseldorf.de
Website: www.wiresa.com.br

Gateway Bridge from BigStockPhoto.com Photographer: Mouisha

❍ *The Gateway Bridge, Brisbane, upgrade is the largest bridge and road project in Queensland's history*

Lighting up the Gateway

MOXA'S ioLogik E1212 Ethernet remote I/O is being used for the upgrade project of Brisbane's Gateway Bridge in Australia.

The $1.88 billion upgrade is the largest bridge and road project in Queensland's history, comprising the refurbishment of the existing Gateway Bridge, along with the construction of a second Gateway Bridge.

The city agency overseeing the bridge chose an Ethernet-based architecture for the bridge's lighting control system.

The total length of the bridge is 1.2 miles, it stands 250 feet off the ground, and its height is equivalent to a 20-storey building. The lighting system uses 2,500 customised LED strips – 90,000 individual LEDs – and over 45,000 metres of cable.

With Moxa's V462 embedded computer and ioLogik E1212 Ethernet remote I/O server, network managers are able to manage the bridge's complex lighting system with local control capability and an attractive cost-to-performance ratio.

Moxa's ioLogik E1212 Ethernet remote I/O unit has a two-port embedded Ethernet switch with 8 DIs and 8 DIOs in a compact package.

Moxa Asia Pacific – Taiwan
Website: www.moxa.com

7,800km submarine cable Express

NEC Corporation and Fujitsu Limited have completed construction of all initially planned segments of the Asia Submarine-cable Express (ASE) system, a high-bandwidth optical submarine cable system that extends approximately 7,800km to link Japan with the Philippines, Hong Kong, Malaysia and Singapore.

NTT Communications, Philippine Long Distance Telephone Company, Telekom Malaysia Berhad and StarHub Limited placed an order for the new system in January 2011.

The connection of Hong Kong to the system, in addition to Japan, the Philippines, Singapore and Malaysia, for which construction was completed last August and service has already begun, means that ASE now connects major cities in east and south-east Asia with a high-capacity (40Gbps per wave, maximum capacity 15Tbps) submarine cable system.

NEC – Japan **Website**: www.nec.com

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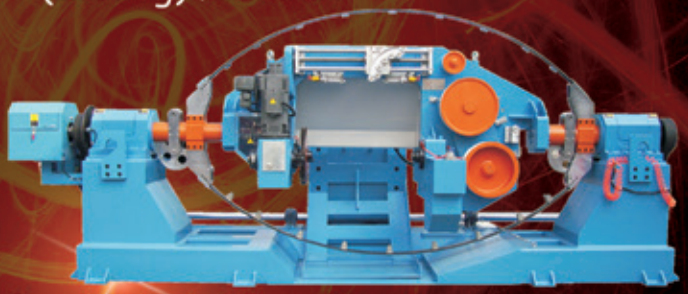
Three layers co-extrusion extruder

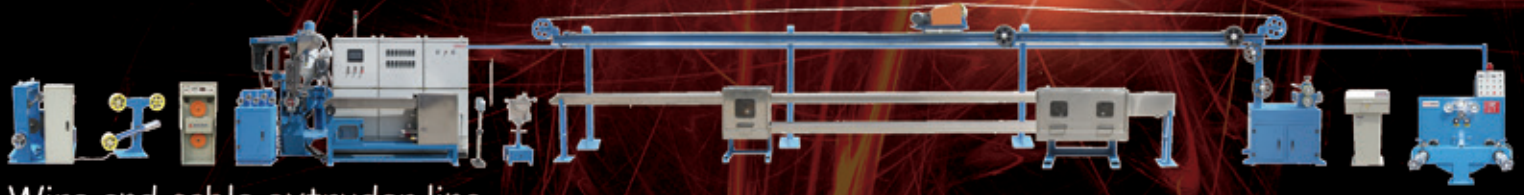
High speed rotate frame single twisting (cabling)machine

High speed cantilever single twisting (cabling)machine

Taping machine(mica tape)



Double twist bunching machine
Output value more than"tube-type wire-twisting machine"4.5 times



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Final kilometre fracas for Australian broadband

AUSTRALIA'S communications minister, Stephen Conroy, says that, under a coalition plan, Australians will have to pay up to $3,000 for the final kilometre of fibre cable to their premises.

Opposition communication spokesman Malcolm Turnbull told an information technology conference that he backed a plan where consumers on a fibre-to-the-node (FTTN) network could pay to upgrade their home or business for a full-fibre cable link.

The FTTN rollout would involve the fibre broadband cable rolled to a cabinet on the corner (or node), with the last kilometre or so using the fixed copper line to the property: "...if you've got a customer that wants fibre, for whatever reason, then there's no reason, technically, why you shouldn't make it available," Mr Turnbull told reporters.

Senator Conroy said Australians would have to pay extra to connect to super fast broadband: "I have seen estimates that if this approach was adopted in Australia it could cost as much as $3,000 to get connected."

He said Labour's NBN would deliver high speed broadband optic fibre cable to 93 per cent of homes and businesses across Australia by June 2021, yet: "Under the coalition, fibre-to-the-home for most Australians would only be available if you could afford it," he said.

The coalition is yet to release its broadband policy.

Conference call for papers

The leading international wire and cable industry associations are collaborating again to hold the 6th CabWire World Conference at the Palazzo Turati in Milan, Italy, on Monday, 4th November 2013.

This year's theme will be "Innovations driving worldwide wire and cable markets" and will feature a panel of both ferrous and non-ferrous expert speakers, presenting papers on the latest technological developments within the industry.

The conference, organised by ACIMAF, CET, IWCEA, IWMA and WAI, will also have table-top exhibits on display and there will be the opportunity to attend a gala dinner at the Royal Palace, which overlooks the historic Duomo Piazza. There will also be a guided factory visit on Tuesday, 5th November.

To be considered for presenting a paper or to book your place as a delegate, visit www.cabwire.com

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Sale is complete

Royal DSM, the global life sciences and materials sciences company, has completed the sale of its participation in DEXPlastomers VoF, a 50/50 joint venture of DSM with an affiliate of ExxonMobil Chemical, to Borealis.

DSM also sold its LldPE Compact Solution Technology to Borealis.

The transaction was announced in November 2012.

Established in 1996, DEXPlastomers is a 50/50 joint venture between DSM and Exxon Chemical Holland Ventures BV, producing C8 plastomers and linear low-density polyethylene. In the scope of the transaction are approximately 100 employees who have transferred to the new owner upon closing.

DSM's LldPE Compact Solution Technology was first developed in the 1960s to produce polyethylenes in a certain density range and is instrumental to the operations of DEXPlastomers.

Engineering a university partnership

THE Hamburg, Germany-based software company Simufact Engineering and the Malaysian university UiTM (Universiti Teknologi MARA) in Shah Alam have started to cooperate in research and education of students and software users from the industry.

The focus of the cooperation is on modern software-aided simulation methods that are employed in the production of metal-based industrial goods such as automobiles and engines.

Represenatives of both the university and Simufact signed a cooperation paper and a certificate of incorporation for the 'Research & Training Centre for Virtual Manufacturing Technology and Process'. Industry representatives from Malaysia and Indonesia also attended the signing of the contract.

In terms of organisation, the newly established Research & Training Centre for Virtual Manufacturing Technology and Process is affiliated with the Advance Manufacturing Technology Excellence Center (AMTEx).

AMTEx is a research and development centre at the UiTM faculty of mechanical engineering, which is supposed to deepen the cooperation of research, production and industrial practice concerning the development of new manufacturing technologies. Computer-based production processes play a major role in this context.

"We are pleased to be the first research and training centre in South East Asia," said Assoc Prof Dr-Ing Yupiter HP Manurung, director of AMTEx.

"I am very optimistic with this cooperation since we position ourselves as a resource centre for solving industrial problems, for producing technical publications and for educating engineering students as well as practitioners using this sophisticated simulation software.

Assoc Prof Dr-Ing Yupiter HP Manurung, left, and Dr Hendrik Schafstall shake hands on the deal

"Simufact software is not only user-friendly which is very important for industrial applications to achieve fast and precise results; the software also provides an open structure for conducting high level research investigation which is very essential for academician use."

Dr Hendrik Schafstall, managing director and CTO of Simufact, said: "The cooperation with UiTM is a significant component of our 'Scientific Initiative', with which we promote the knowledge transfer between industry and science.

"Cooperations of this kind, on the one hand, strengthen the competitiveness of companies; on the other hand, they ensure the practical relevance of research and education as well as the profitable application of research results."

Simufact Engineering GmbH – Germany
Website: www.simufact.com

Steel imports down in 2012

In December 2012 South Africa's primary carbon and steel product imports, including semi-finished steel and drawn wire, were down by 32.5 per cent compared with November.

The South African Iron and Steel Institute (SAISI) puts the figure at 58,367 metric tons.

The same source reports that throughout 2012 the country's primary carbon and alloy steel product imports totalled 839,980 metric tons, representing a decrease of 8.8 per cent compared with 2011.

South African Iron and Steel Institute – South Africa
Website: www.saisi.co.za

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Delay after multi-million dollar cable launch

GAMBIA'S Foroyaa newspaper reports that the multi-million dollar Africa Coast to Europe (ACE) submarine fibre cable project, launched by the Gambia government last December, is still not in operation in the Gambia.

"I have not seen any visible improvement," asserted a cyber cafe operator, lamenting the unstable condition of the Internet network, and adding that he did not know if the cable was connected or not. Users complain about the slow and unstable nature of the Internet network, and also complain of a recent 50 per cent increase in telephone charges.

Many of the stakeholders of the ACE cable project are not prepared to discuss the problem. One senior official expressed fear of reprimand if he spoke to the press, asserting: "Yes, we are stakeholders to the project, but I cannot talk to you. If I should speak to you, then the next minute the members of the national intelligence agency (NIA) may come and arrest me."

However, Mr Lamin Camara, a deputy permanent secretary at the ministry of information, did give a statement, explaining that: "People need to understand the difference between the ACE cable project and changing the Gambia's Internet landscape. We inaugurated ACE as a system from France to São Tomé, the system being operational doesn't mean it has started operation immediately in all member countries."

Optical fibre joint venture

Jiangsu Sterlite Tongguang Fibre Co Ltd (JSTFCL), the joint venture between Sterlite Technologies Limited (Sterlite) and JiangsuTongguang Communication Co Ltd (TGCI), has begun production of optical fibre at its new facility in Jiangsu Province, China.

The factory has been established with an investment of around $25 million.

China has a total annual demand for optical fibre of more than 100 million kilometres and is an important market for Sterlite Technologies.

The company brings its optical fibre technology expertise to the joint venture, while TGCI brings significant fibre cable manufacturing knowledge and its market reach in China.

The first phase of the project has an installed annual capacity of 5 million kilometres of optical fibre and employs over 90 people.

Jiangsu Sterlite Tongguang Fibre Co Ltd – China
Website: www.sterlitetechnologies.com

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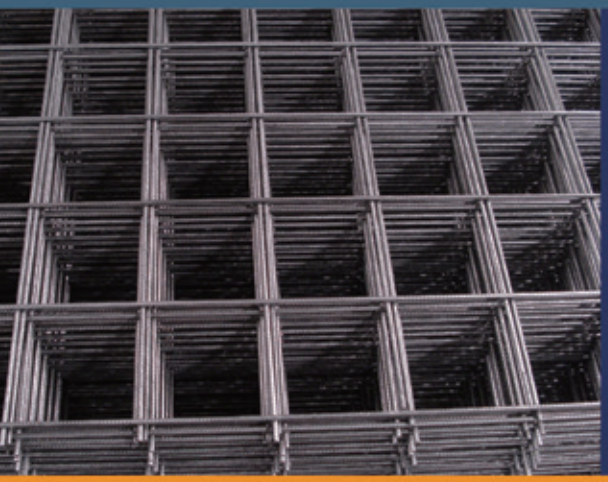
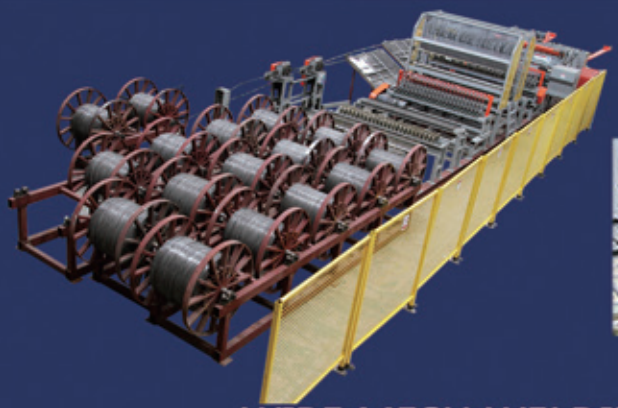
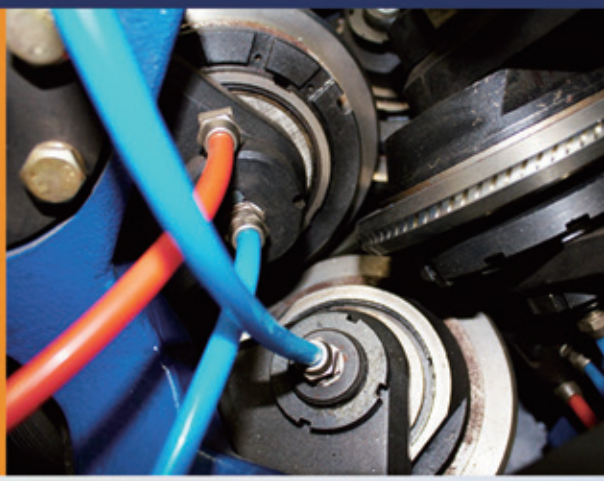




WIRE MESH WELDING MACHINE

WIRE COLD ROLLING MACHINE



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Japan plans grid development

Japan is set to triple its wind power generation capacity to 7.5 million kW by developing power transmission grids in the Hokkaido and the Tohoku regions.

The country aims to have 50GW of wind-generated electricity by 2050, accounting for more than 10 per cent of the nation's demand, according to the Japan Wind Power Association (JWPA).

The regions of Hokkaido, Tohoku, Hokuriku, Sanin and Kyushu are believed to be suitable areas for wind energy generation, and electric utilities Hokkaido Electric Power and Tohoku Electric Power have already constructed power lines to connect wind generation sites with existing transmission lines.

The Japanese government will cover the costs of constructing power transmission grids under a ten-year project, scheduled for launch in April.

Japan Wind Power Association – Japan
Website: www.jwpa.jp

Extending China sales team

BETA LaserMike has extended its China sales team with the addition of Hans Liu as southern China sales manager and Martin Wang as China regional sales manager.

Mr Liu will be based in the Spectris Guangzhou office (Beta LaserMike is a Spectris company) and Mr Wang will be based in the Spectris Shanghai office.

"China is one of the fastest growing markets in the Asia-Pacific region and a priority market for us," said Stuart Manser, Beta LaserMike's director of Asia sales. "Hans [Liu] will play a key role in developing industrial accounts in southern China.

"This is an extremely active area and home to many key international companies. The addition of Hans expands our presence in China which allows us to better serve our customers."

Mr Liu received his Bachelor of Science degree in mechanical design and manufacturing automation from South China Agricultural University, and holds a master's degree in electronics and automation.

Of Martin Wang, Mr Manser said: "With his solid technical and sales background in optical measurement systems, Mr Wang has the key tools and experience to help us develop our gauging and controls business in China.

"His appointment is a key part of Beta LaserMike's strategy to expand our footprint around the globe and to focus on the potential represented in China."

Mr Wang holds a bachelor's degree from Liaoning (NE China) University of Science and Technology in mechanical design and manufacturing automation, and a master's degree in electronic engineering.

BetaLaser Mike – USA
Website: www.betalasermike.com

❍ *Hans Liu, southern China sales manager*

❍ *Martin Wang, China regional sales manager*

Connections risk injury

The Okahandja municipality in Namibia is among the local authorities having to deal with the problem of illegal power connections in informal settlements.

An investigation of the Five Rand settlement by New Era found hundreds of illegal electricity connections, concluding that the entire settlement is so wired that the slightest mishap could lead to a disaster.

Hundreds of illegal wire connections cross the pathways from one dwelling to another, and electrical cables "of all shapes and sizes" stretch hundreds of metres from one corrugated iron dwelling to the next.

Residents have urged the municipality to provide them with safer electricity, because their lives are at risk as a result of the many illegal power connections, which could lead to a serious and widespread fire.

"We do these illegal connections because we have applied for power since 2003, but until now we do not have any electricity yet," lamented Fenny Mwahangeshapwa, a resident of the Five Rand informal settlement.

Mwahangeshapwa said that money was deposited for the erection of an electrical power sub-station five years ago, but nothing has yet materialised.

"We know this practice is very dangerous for all of us, but the situation has forced us to do this. We need power. We are tired of lighting candles that are likely to cause shack fires."

Right place, right time. . .

Zumbach Service provides the right solution in the right place at the right time. Since November 2012, the company has been offering customers in Turkey local support from the newly opened customer service centre in Istanbul.

The rapid growth in the customer base in Turkey prompted Zumbach to open the new office, managed by Okür Abdullah. With this additional service centre, the company's network now spans more than 20 service centres around the world.

Okür Abdullah – manager of Zumbach Service in Istanbul, Turkey

Zumbach Electronic AG – Switzerland
Website: www.zumbach.com

Southern Power submarine cable

THE energy and water consultancy services (formerly Metoc) of Intertek has been awarded a contract for the supervision of testing and installation of the Ha Tien-Phu Quoc 110kV submarine power cable.

The cable is a project of the Vietnamese utility Southern Power Corporation under Vietnam Electricity (EVNSPC), which will provide Vietnam's first high-voltage submarine link.

The new cable project will provide power to support tourism to Phu Quoc, an island approximately 50km offshore, which recently opened an international airport.

Intertek will oversee factory acceptance tests in Italy, and supervise site tests, construction, installation and operation of the submarine power cable linking Ha Tien in south west Vietnam with Phu Quoc.

Frank Beiboer, MD of Intertek's energy and water consultancy services, said: "We are proud to support SPC in expanding their electricity supply in the region and look forward to working with them.

"Having already established expertise in the offshore oil and gas sector within Vietnam [this will be] our first power cable project in the region."

Intertek – USA
Website: www.intertek.com

New executive board member

THE International Wire & Machinery Association has welcomed Willibert Dautzenberg, of Queins Machinery GmbH, to the executive board.

Mr Dautzenberg has been a director of Queins, based in Monschaue, Germany, since 2011 and has a special focus on developing customised solutions for the wire, steel rope and umbilical industry, with a responsibility for the project management and integration of the latest technological developments for the complete range of Queins products.

A certified engineer, Mr Dautzenberg entered the wire and cable industry in 1993 when he joined Queins to work on the development of hardware and software for machine controls.

In 2008, he moved into the company's technical sales department where the expertise he had amassed during his 15 years working in worldwide commissioning and customer services enabled him to benefit many major projects.

On the subject of his recent election to the executive board Mr Dautzenberg said: "I am very much looking forward to working with the executive board in supporting the IWMA membership network and providing input on wire industry technical developments and production trends that may benefit the association members."

Mr Dautzenberg

IWMA – UK
Website: www.iwma.org

Connecting China to Tajikistan

Internet provider ElCat has laid a transit fibre optic cable through Kyrgyzstan, connecting China and Tajikistan.

ElCat sales director Ulan Tolubaev said in an interview with Tazabek that the 220km cable, originally planned for 2006, will provide communication for remote villages and border troops of Kyrgyzstan.

Several Internet providers in Kyrgyzstan have access to external Internet, including Kyrgyztelecom, Saima Telecom, Megaline, Aknet and ElCat, but ElCat is the only provider with a direct Bishkek–Moscow channel.

ElCat – Kyrgyzstan
Website: www.elcat.kg

New company for India

HAMBURG, Germany-based software company Simufact Engineering has founded the Indian subsidiary Simufact India Private Limited.

Dr Gabriel McBain has been appointed as director of Simufact India. The registered office of the new company is in the city of Bangalore, in which leading component suppliers and aerospace companies are based.

Dr Gabriel McBain, new director at Simufact India

With its software solutions, Simufact primarily aims at metalworking and processing companies, among these the automotive and aerospace industry, but also at plant and mechanical engineering companies and sector-related suppliers.

This software simulates forming, welding and mechanical joining processes and supports companies to design and optimise their production processes quicker. By virtual testing, companies save valuable production resources and simultaneously reduce the time needed to release innovative production processes for serial production.

For several years, Simufact has been successfully operating on the Indian market. In close cooperation with its reseller partner, Kadkraft Systems Pvt Ltd, based in the north-western city of Chandigarh, Simufact has already been able to acquire a number of renowned Indian customers for its software applications. The customer base includes, among others, L&T Special Steels and Heavy Forgings, Shivam Autotech and Ramsays Corporation.

“The metalworking industry in India expands very dynamically,” said Michael Wohlmuth, managing director and CEO of Simufact Engineering GmbH.

“This is why the Indian Machine Tool Manufacturers’ Association anticipates double-digit growth rates in the next years, mostly by the benefits of the booming automotive industry in India. In these premises, we will continue to expand our activities in India beyond the foundation of an own subsidiary.”

Gabriel McBain added: “The primary task of Simufact India is currently to offer our customers a comprehensive technical service; we do not only help to introduce our software on-site, we also provide engineering support and train the users far beyond the application of our software products in questions of production technology. Our reseller partner Kadkraft will further cooperate with us in Indian sales activities.”

Simufact Engineering GmbH – Germany
Website: www.simufact.de

Helping to get Iraq online with first 4G network

ALCATEL-LUCENT and Regional Telecom, a communications service provider in Northern Iraq, are to launch the nation's first 4G LTE network, providing the region with lightning-fast wireless broadband services including high-definition video streaming, high-speed Internet access and a range of business services.

The new network will be the first in Iraq to offer large-scale wireless broadband services, helping in the restoration of the nation's communication infrastructure impacted by the tough times of political unrest.

The network will provide significant support to on-going efforts to revive the Iraqi economy, bringing levels of connectivity needed for business, public sector and consumer applications.

Kawa Junad, chairman of Regional Telecom, said: "Broadband services are the lifeblood of the modern digital economy, but Iraq has been without widely available broadband for more than a decade, in effect cutting off the country, our businesses and our citizens from the rest of the world.

"The introduction of 4G LTE services in Northern Iraq promises to change that, making a significant contribution to the country's efforts to rejoin the global community."

For the project, Alcatel-Lucent is providing its industry-leading end-to-end 4G LTE solution, including base stations, IP mobile backhaul for 4G LTE and existing 3G CDMA traffic, Evolved Packet Core (EPC) and elements of its platforms, which will allow Regional Telecom to introduce a rich portfolio of advanced IP-based services.

Amr K El-Leithy, head of Middle East Africa, Turkey and Azerbaijan in Alcatel-Lucent, said: "As a world leader in the innovation and delivery of 4G LTE networks, Alcatel-Lucent has the experience and expertise to support service providers in addressing the unique demands and expectations in the communities they serve.

"And this project with Regional Telecom is a perfect example.

"Our 4G LTE technology is helping meet customers' data needs in some of the world's busiest mobile broadband networks.

"At the same time we are also bringing broadband services to underserved regions to help promote economic growth and drive new business opportunities."

As global demand for Internet services continues to rise, Alcatel-Lucent is providing operators such as Regional Telecom with a clear, efficient broadband evolution path.

Alcatel-Lucent's innovative light-Radio™ portfolio is designed with this in mind, and provides a framework for wireless networks that offer lightning fast data speeds while reducing operating costs and power consumption.

Alcatel-Lucent – France
Website: www.alcatel-lucent.com

French pledge to Vietnam's power grid

The French government is to provide credit of $100.21 million for a project to build a 500kV electricity transmission line in Vietnam. The loan will be provided through the French development agency under an agreement signed by Yamina Benguigui, minister delegate for Francophonie, and Vietnamese deputy finance minister Truong Chi Trung.

Dang Phan Tuong, board chairman of National Power Transmission Corporation, has said that the line will transmit power from the central region, where many hydropower plants are located, to meet the high demand in the southern region. It is planned to begin operations at the end of 2013, and will also facilitate the import of electricity from Laos and Cambodia.

The line, officially known as the 500kV Pleiku-My Phuoc-Cau Bong line, is 437 kilometres long and crosses five provinces and Ho Chi Minh City.

❍ *The new headquarters, complete with roof-top photovoltaic power plant*

New headquarters for FUHR

WIRE rolling machine manufacturer FUHR has just moved into new headquarters, where an additional 70 per cent production capacity caters to the continuously rising demand for its wire rolling technology.

Within a construction period of only seven months, a modern office building and two functional production facilities with a total floor space of 40,000ft^2 have been built on a total area of 100,000ft^2.

Integrated into the manufacturing process is a state-of-the-art paint shop, as well as a separately air-conditioned grinding facility, which both guarantee workmanship of the highest quality levels.

With an assembly hall that allows the parallel erection of three rolling mills of up to 200ft each, FUHR now has the capacity to significantly shorten delivery times and reliably serve its customers in a timely manner and on a reduced cost basis.

Furthermore, most of the company's yearly energy consumption is now being provided by a roof-top photovoltaic power plant, which has a total capacity of 207 kWp.

Founded in 1946, FUHR develops and produces rolling mills mainly for cold forming applications, eg the automotive, electrical, food, textile and building industry, as well as the renewable energy sector.

The scope of delivery encompasses the entire range from stand-alone units to turnkey solutions for shaped, flat and round profiles made of ferrous and non-ferrous wires, as well as stainless steels.

FUHR rolling mills combine latest technologies with state-of-the-art CNC controls, recipes and process visualisation and minimise set-up times so that both small and large batches can be produced efficiently.

Integrated measurement systems ensure consistent product qualities and high-precision rolling processes.

FUHR GmbH & Co KG
Website: www.fuhr-wire.com

100 per cent satisfaction

Madem Gulf has come out glowing from a recent customer satisfaction survey, with 100 per cent of responses putting the company into the good or very good category.

The Brazil, South America-headquartered company asked 57 wire and cable manufacturing customers in the Middle East, Asia and African countries for their responses on claim response, quantities shipped x received, documentation, deliveries, quality inspections, performance and packing.

"We are proud that Madem Gulf has achieved 100 per cent satisfaction in the customer survey," said Cristian Outeiral, operations manager.

Adel Abdullah Mohammed, general manager, added: "We are so happy that we got the good percentage result of this survey and we will continue to improve our quality to serve the best products for our customers."

Madem Gulf – Brazil
Website: www.madem.com.br

Gateway Bridge from BigStockPhoto.com Photographer: Mouskie

布里斯班大桥扩建是昆士兰历史上最大的路桥扩建工程

Moxa降低布线成本

Moxa公司的ioLogik E1212以太网远程I/O应用于升级布里斯班的盖特威大桥项目。价值18.8亿美元的升级工程是昆士兰州历史以来规模最大的路桥项目，包括翻新现有的大桥和建设第二座盖特威大桥。城市桥梁监督机构为桥梁照明控制系统选择了基于以太网体系的结构。桥总长度为1.2英里，距离地面250英尺，其高度相当于20层楼那么高。照明系统使用了2,500个定制的LED灯条 – 90,000个单个的LEDs – 以及超过45,000米的电缆。

采用Moxa公司的V462嵌入式计算机和ioLogik E1212以太网远程I/O服务器，网络管理员能够管理桥梁复杂的照明系统，并具有本地控制能力和具吸引力的性价比。Moxa提供的ioLogik E1212以太网远程I/O装备有一个双端口嵌入式以太网交换机，8 Dis和8 DIOs在一个紧凑的封装内。

Moxa Asia Pacific – 台湾
网址: www.moxa.com

日本认证风力发电机

Evance的5kW风力发电机已完成了所有的测试，并在日本获得完整的认证。该认证是正式承认Evance小型风力发电机的可靠性、安全性和整体性能，让客户放心购买发电机，以及被授权上网电价。Evance发电机Zephyr9000在日本由Zephyr公司提供。

“我们非常高兴，能成为第一家海外发电机在日本获得认证。这是对我们产品的重要证明，产品的设计和生产团队在英国，”Evance风力发电机首席执行官Kevin Parslow说。“与我们的日本合作伙伴紧密合作，以确保Zephyr公司进展与计划顺利运行。

“去年，日本政府表示，希望增加可再生能源的使用，并降低核电与化石燃料的使用。为了支持这项工作，他们推出了上网电价 – 当今世界最高 – 支持新兴的可再生能源行业。我们的涡轮机适用于该上网电价，”他继续说。Zephyr公司首席执行官Tomoya Endo补充说：“这对日本来说是个好消息。Zephyr9000是一个高品质、可靠又高效的小型涡轮机，这使得许多农民、业主和企业利用可再生能源。我们已经看到了浓厚的兴趣，我敢肯定 – 随着涡轮机获得了认证 – 这种兴趣会进一步增加。”

涡轮机由日本船级社认证，它符合所有JSWTA0001标准(由日本小型风力发电机协会发布)的规定。

Evance Wind Turbines – 英国
网址: www.evancewind.com

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上海南洋电工器材有限公司主要从事于电线电缆机械的设计和制造，现主要产品为编织机，绕包机，印字机。其中，编织机按编织线径由小到大分为：轻型、标准型、重型。

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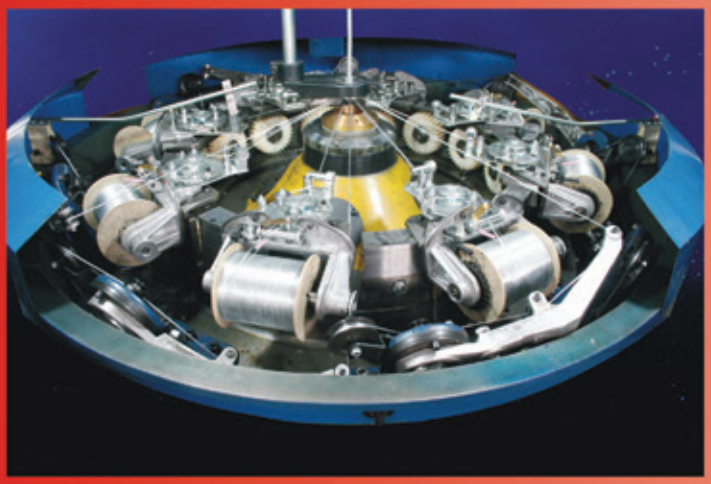

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线材轧机制造商富尔(FUHR)刚搬进新的总部，其产能增加了70%，满足线材轧制技术持续上升的需求。

建设周期只有7个月，一幢现代化的大楼和两个功能生产设施占地面积达40,000平方英尺就在总占地面积100,000平方英尺的土地上拔地而起。

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此外，公司每年的能源消耗由屋顶光伏电站提供，总容量为207千瓦。

富尔成立于1946年，开发和生产的轧机主要应用于冷成型，比如汽车、电气、食品、纺织和建筑行业，以及可再生能源领域。

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FUHR GmbH & Co KG – 德国
网址: www.fuhr-wire.com

新的执行委员会成员

国际线材机械协会欢迎Queins机械制造公司Willibert Dautzenberg先生加入到执行委员会。

Dautzenberg先生自2011年以来在德国Monschaue Queins公司任董事，为线材、钢丝绳和地面缆线工业重点发展定制的解决方案，为完整系列的Queins产品担任项目管理和集成最新技术发展成果。

经过认证的工程师Dautzenberg先生，1993年就进入电线电缆行业，在Queins公司为机械控制开发软硬件。

2008年，他转到公司的技术销售部门，15年间积累的全球范围内的调试和客户服务专业知识使他受益于许多重要的项目。

Dautzenberg先生

最近Dautzenberg先生当选为执行委员会的成员，他说："我非常期待与执行委员会一起努力，为国际线材机械协会的会员网络提供支持，为线材行业的技术发展和生产趋势的研究作出贡献，希望为协会会员带来受益。"

IWMA – 英国
网址: www.iwma.org

非法电源连接导致受伤风险

纳米比亚的奥卡汉贾市地方当局正处理非正式居点进行非法电源连接的问题。

根据新时代的调查，五兰特(Five Rand)居住点有数百个非法电源连接，得出的结论是，线路如此连接，以至于稍有闪失就会酿成大祸。数以百计的非法电线连接相互交叉，从一户居民家中到另一户家中，电缆形状大小各异，连接一家又一家的波纹铁住宅，绵延几百米。

居民们呼吁市政府为他们提供更安全的用电，因为非法的电源连接，使他们的生命处于危险之中，有可能会导致严重和大范围的火灾。"我们之所以非法连接电源，是因为我们自2003年以来就开始申请用电，但是到现在，我们还没有任何电力，"五兰特非正式居点的一位居民Fenny Mwahangeshapwa哀叹道。

Mwahangeshapwa说，5年前就让我们筹款建立一个电力分站，但一切都没有兑现。

"我们知道，这种做法对我们所有人来说都是非常危险的，但这样的情况迫使我们这么做。我们需要电。我们已经厌倦了点蜡烛的照明生活，那样也可能会导致窝棚火灾。"

伊拉克重获通信

阿尔卡特-朗讯和伊拉克北部通信服务提供商Regional Telecom，率先共同推出全国4G LTE网络，为该地区提供闪电般快速的无线宽带服务，包括高清晰视频流媒体、高速互联网接入和一系列商业服务。新网络是伊拉克首个提供大规模无线宽带服务的网络，帮助恢复那些在政治动荡的艰难时期受损的国家通信基础设施。

该网络将持续为伊拉克经济的恢复提供重要的支持，为企业、公共事业和消费电子应用带来所需水平的连接。Regional Telecom董事长说："宽带服务是现代数字经济的命脉，但伊拉克十多年来一直没有广泛应用，实际上切断了我们国家的企业和公民与世界的联系。""在伊拉克北部推出4G LTE服务有望改变这种状况，为国家重返国际社会做出重大贡献。"

在项目中，阿尔卡特-朗讯将提供业界领先的终端到终端4G LTE解决方案，包括基站、4G LTE IP移动回程和现有的3G CDMA通信、分组核心演进(EPC)和其平台的元素，这将使Regional Telecom引进先进的基于IP服务的丰富产品组合。阿尔卡特-朗讯在土耳其和阿塞拜疆的中东非洲负责人Amr K El-Leithy说："作为一家世界领先的4G LTE网络供应商，阿尔卡特-朗讯拥有丰富的经验和专业技术，支持服务供应商，应对通信领域内的各种独特需求和期望 - 与Regional Telecom的合作项目就是一个很好的例子。

"我们的4G LTE技术正在为世界上一些最繁忙的移动宽带网络，帮助满足客户的数据需求。同时，我们也将宽带服务延伸到服务欠缺的地区，以帮助促进经济增长和推动新的业务机会。"随着全球互联网服务的需求持续上升，阿尔卡特-朗讯正在为运营商，诸如Regional Telecom，提供清晰、高效的宽带演进路径。阿尔卡特-朗讯创新lightRadio™产品系列正根据这一设计理念，为无线网络提供一个框架，在降低运营成本和功耗损耗的同时提供闪电般快速的数据传输速度。

Alcatel-Lucent – 法国
网址: www.alcatel-lucent.com

沙特阿拉伯最大的太阳能发电场

沙特阿拉伯首都利雅得最大的地面安装太阳能发电场已完工。

凤凰太阳能公司制造的3.5MW系统，使用了12,684块尚德电力控股有限公司生产的太阳能电池板，逆变器由SMA Solar Technology AG公司提供。该设备由沙特阿美公司拥有，安装在阿卜杜拉国王石油研究与研究中心(KAPSARC)，该中心是世界最大的研究中心。

这一项目是沙特王国重要的里程碑，致力于到2032年三分之一的电力来自太阳能发电。国家也计划提高可再生能源的使用，以减少国内石油的使用，每年可望节约数十亿美元。

出口石油产生收入，国内发电成本又降低。阿卜杜拉国王原子与可再生能源顾问Maher al-Odan宣称，沙特阿拉伯的目标是在20年内拥有41,000MW的太阳能发电能力。

Phoenix Solar AG – 美国
网址: www.phoenixsolar-group.com

CabWire论文征集

国际领先的电线电缆行业协会再次合作，于2013年11月4日在意大利米兰Palazzo Turati共同举办第六届CabWire世界大会。

今年的主题将是“创新推动全球电线电缆市场”，将有一个小组的专家演讲团，针对有色与非有色金属，发表行业内最新的技术发展论文。

本次会议还将有桌面展品展出，并且有机会参加在大教堂附近举办的晚宴，在那里，你可以俯瞰历史悠久的皇家宫殿。此外，还将在11月5日(星期二)，带您参观工厂。

欢迎您提交一份文件，或预订您作为代表的席位，更多信息，请访问网站：www.cabwire.com。

本次会议由ACIMAF、CET、IWCEA、IWMA和WAI共同举办。

ACIMAF, CET, IWCEA, IWMA and WAI
网址: www.cabwire.com

2012年钢材进口下降

2012年12月，南非主要碳和钢产品进口，包括半成品钢与拉丝，与11月相比下降了32.5%。南非钢铁协会(SAISI)给出的数字是58,367吨。同一消息来源报道，整个2012年，该国主要的碳钢与合金钢产品的进口总量为839,980吨，与2011年相比，同比下降8.8%。

South African Iron and Steel Institute – 南非
网址: www.saisi.co.za

连接中国与塔吉克斯坦

互联网服务提供商ElCat穿过吉尔吉斯坦，铺设了过境光纤电缆，将中国与塔吉克斯坦相连。

ElCat销售总监Ulan Tolubaev在接受Tazabek采访时说，220千米长的电缆，原本计划于2006年就投入运营，为吉尔吉斯坦的偏远村庄和边境部队提供通信。吉尔吉斯坦的一些互联网服务供应商能够访问外部网络，包括Kyrgyztelecom、Saima Telecom、Megaline、Aknet和ElCat，其中ElCat是唯一直接与比什凯克-莫斯科通道相连的供应商。

最后的千米光缆存在分歧

澳大利亚通信部长斯蒂芬·康罗伊说道，根据联盟计划，澳大利亚将不得不为其处所的最终千米电缆支付高达3,000美元的费用。反对党通讯发言人马尔科姆·特恩布尔在信息技术发布会上说，他支持一项计划，光纤到节点(FTTN)的网络用户能够支付，为其家庭或企业网络升级，成为完整的光纤电缆连接。

FTTN转出器将牵涉到光纤宽带电缆滚落到角落或节点箱内，终端大约一千米电缆使用了固定铜线：“如果你的客户想要光纤，不管出于何种原因，从技术上讲，为什么不使其可用，”特恩布尔先生对记者说。参议员康罗伊表示，澳大利亚将不得不支付额外的费用，用于连接超高速宽带：“我估计，如果该计划在澳大利亚被采用，连接的成本将高达3,000美元。”

康罗伊还说，到2021年6月，工党NBN将为整个澳大利亚93%的家庭和企业提供高速宽带光纤电缆，然而，“该联盟使得只有负担得起的澳大利亚人才能使用上光纤到家”。

联盟尚未公布其宽带政策。

海底电缆高速系统圆满完成

海底电缆铺设

NEC和富士通已经圆满完成了亚洲海底电缆高速系统(ASE)初始计划阶段的建设，这一高带宽海底光纤系统延伸约7,800千米，连接日本与菲律宾、香港、马来西亚和新加坡。2011年1月，NTT通信、菲律宾长途电话公司、马来西亚电信和新加坡星和公司订购了该新系统。

新系统于去年8月建成，目前已投入运营，除了连接日本、菲律宾、新加坡和马来西亚以外，还与香港相连，这意味着ASE现已连接东亚和东南亚的主要城市，是高容量(40Gbps每波，最大容量15Tbps)海底电缆系统。

对于新系统，NEC负责提供海底电缆、海底中继和海底光分插复用器(OADM)分支装置、水下监控设备及供电设备。富士通则供应海底线路终端设备和网络管理系统。

采用了最新的40Gbps数字相干光传输技术，ASE计划确保的通信能力，能够满足亚洲国家迅猛发展的互联网数据流量要求，以及智能设备迅速蔓延带来的数据流量增长需求。

NEC – 日本
网址: www.nec.com

光纤合资企业

江苏斯特里特通光光纤有限公司(JSTFCL)是斯特科技有限公司(斯特里特)和江苏通光通信有限公司(TGCI)的合资企业，已在其中国江苏省的新工厂开始生产光纤。

该工厂成立初期投入约2,500万美元。中国年需求光纤总量超过1亿千米，对斯特里特来说，中国是很重要的市场。公司为合资企业带来了最新的光纤技术，TGCI则提供了关键的光纤电缆制造知识和在中国的市场覆盖范围。项目的第一阶段包括安装年产能达500万千米的光纤设备，员工超过90人。

Jiangsu Sterlite Tongguang Fibre Co Ltd – 中国
网址: www.sterlitetechnologies.com

DSM塑性体转让完成

全球生命科学和材料科学专业公司Royal DSM，今天宣布完成转让DEXPlastomers VoF，这是DSM与隶属北欧化工埃克森美孚化工公司的50/50合资公司。DSM还出售了其LldPE紧凑解决方案技术给北欧化工。该交易已于2012年11月公布。

DEXPlastomers成立于1996年，是DSM和Exxon Chemical Holland Ventures BV共同组建的50/50合资企业，生产C8塑性体和线性低密度聚乙烯。交易范围内的大约100名员工将转移到新老板的公司。

DSM的LldPE紧凑解决方案技术于20世纪60年代开发，用于生产一定密度的聚乙烯，有助于DEXPlastomers的操作。

对于DSM来说，出售DEXPlastomers符合其作为生命科学和材料科学专业公司的长期重点发展战略，未来将活跃于健康、营养和材料领域。在DSM账户中，根据企业活动的报告，DSM拥有DEXPlastomers 50%的股份。

Royal DSM – 荷兰 网址: www.dsm.com

电缆项目推出后搁浅

冈比亚FOROYAA报纸报道，从非洲海岸到欧洲(ACE)，价值几亿美元的海底光缆项目，于去年12月由冈比亚政府启动，但尚未在冈比亚落实运作。

“我还没有看到任何明显的改善，”一位网吧运营商感叹互联网网络的不稳定状态，并补充说，他不知道电缆是否已连接。用户抱怨互联网网络缓慢和不稳定性，也抱怨最近增加了50%的电话费。

许多ACE电缆项目的利益相关者都不准备讨论这一问题。一位高级官员表示，如果他向记者透露，担心会受到谴责，声称：“是的，我们是该项目的相关利益者，但我不可以向你透露任何情况。如果我对你说了什么，我随即就有可能被国家情报机构(NIA)的人抓走。”

然而，信息产业部副常任秘书拉明•卡马拉先生的确给出了一个说法，他解释说：“人们需要了解ACE电缆项目与改变冈比亚互联网状况的区别。我们推出ACE，作为一个系统连接法国到圣多美，系统启动并不意味着在所有成员国立即开始运作。”

法国承诺支援越南电网建设

法国政府提供总额1.0021亿美元的信贷，致力于在越南打造一条500kV的输电线。贷款将通过法国开发署签署的协议拨出，协议由法国部长级代表Yamina Benguigui和越南财政部 副部长Truong Chi Trung共同签署。

国家电力传输公司董事长Dang Phan Tuong曾表示，该线路将从拥有许多水电站的中部地区传输电力，从而满足南部地区的高要求。计划于2013年底开始运营，也将促进从老挝和柬埔寨进口电力。该线路正式命名为500kV Pleiku-My Phuoc-Cau Bong线路，全长437千米，跨越5个省和胡志明市。

企业与大学联手

副教授博士Yupiter HP Manurung（左边）和Hendrik Schafstal博士握手合作

德国汉堡软件公司Simufact Engineering和马来西亚大学 UiTM (Universiti Teknologi MARA)开始在莎阿南合作研究和教育学生及行业内的软件用户。

合作的重点是现代软件辅助模拟方法，将被应用于生产金属工业产品，如汽车和发动机。双方代表签署了合作文件和关于“虚拟制造技术和工艺研究与培训中心”的合作证书。来自马来西亚和印度尼西亚的代表也参加了该合同的签订。

在组织方面，新成立的“虚拟制造技术和工艺研究与培训中心”隶属于先进的制造技术卓越中心(AMTEx)。

AMTEx是UiTM大学机械工程系的研究开发中心，将在新的生产技术领域内深化合作研究、生产和产业化的实践。在以计算机为基础的生产过程中发挥重要作用。

“我们非常高兴，能成为东南亚第一个研究与培训中心，”AMTEx中心主任副教授博士Yupiter HP Manurung说。

“我非常看好此次合作，因为我们将自身定位为一个解决工业问题的资源中心，生产技术出版物和教育工程专业的学生和从业人员使用这种先进的仿真软件。”

“Simufact软件用户友好，在工业应用中实现快速精确的结果是非常重要的；该软件还提供了一个开放式的结构，进行高水平的研究调查，在院士应用方面也是至关重要的。”

Simufact 总经理兼 CTO Hendrik Schafstall 博士说：“与UiTM的合作，是我们“科学计划”的重要组成部分，将促进工业和科学之间的知识转化。这种合作方式，一方面，加强了企业的竞争力；另一方面，也保证了研究与教育的实际意义，以及研究成果的经济应用转化。”

Simufact Engineering GmbH – 德国
网址: www.simufact.com

100%满意度

Madem Gulf从最近的客户满意度调查中发现，客户100%反馈公司“好”与“非常好”。巴西，总部设在南美的公司，要求中东、亚洲和非洲的57家电线电缆制造商反馈以下信息：需求反应、出货与收到的数量、文件、交付、质量检验，以及性能和包装。“我们感到无比自豪，Madem Gulf达到了100%的客户满意度，”业务经理Cristian Outeiral先生说。

“我们在生产工艺中重视流程，始终贯彻和强化ISO 9001 与 14001质量体系认证的标准，这是我们取得成功的重要原因。这样的成绩将继续鼓励我们不断改进我们的系统和工艺流程。”总经理Adel Abdullah Mohammed补充说：“ISO 9001与14001的实施为我们改善生产质量和提高客户满意度带来了很大的影响。”“从我们的客户调查反馈的结果来看，我们制定相应的计划实施这一制度，以确保我们实现100%优质产品的目标。”

“为了取得更理想的效果，我们对员工进行适当的培训，让他们更加明白这一制度始终要贯彻执行。我们非常高兴，我们取得了良好的百分百调查结果，我们将继续提高我们的质量，以最好的产品，服务于我们的客户。”

Madem Gulf – 巴西
网址: www.madem.com.br

任命中国新员工

Beta LaserMike扩充其在中国的销售团队，任命汉斯•刘(音译)为中国南部销售经理，马丁•王(音译)为中国区域销售经理。刘先生将在思百吉广州办事处(Beta LaserMike隶属于思百吉集团)工作，王先生则在思百吉上海办事处。

“中国是亚太地区增长速度最快的市场，对于我们来说，属于优先级市场，”Beta LaserMike亚洲销售总监Stuart Manser先生说。

“汉斯•刘将在工业飞速发展的中国南部发挥关键作用。这是一个非常活跃的地区，拥有许多著名的国际公司。汉斯将扩大我们在中国的存在，使得我们能够更好地服务于我们的客户。”

刘先生毕业于中国农业大学机械设计制造及自动化专业，拥有理学学士学位，以及具有电子和自动化硕士学位。

Manser先生说：“马丁•王在光学测量系统领域拥有坚实的技术和销售背景，并且王先生拥有关键的技巧与经验，能够帮助我们在中国发展计量与控制业务。王先生的任命是Beta LaserMike扩大全球业务战略、专注于挖掘潜在中国市场的重要组成部分。”

王先生持有辽宁(中国东北)科技大学机械设计制造与自动化专业学士学位，以及电子工程硕士学位。

BetaLaser Mike – 美国
网址: www.betalasermike.com

汉斯•刘，中国南部销售经理

马丁•王，中国区域销售经理

Plasma annealer for high speed annealing of fine SS wire. Such an annealer can be used as a stand-alone annealing plant in a combination with a take up and pay-off or is installed in-line with a drawing machine or rolling mill

Second generation

PLASMAIT has introduced a second generation plasma annealer designed for wire, rope and tubes made of stainless steel and nickel alloys and with cross-sections from 20mm^2 down to the smallest fine wire sizes.

This new concept allows for a radical increase of continuous annealing speeds of stainless steels and nickel alloys. In the fine wire sizes it is possible to conduct annealing of austenitic stainless steel wire at speeds over 15m/s.

At such speeds annealing can be performed in-line with drawing or rolling, substituting multiple lines of a traditional tube furnace.

Efficient energy coupling in the plasma process allows for a compact design of the plasma chamber and results in high-energy conversion efficiency. Annealing power is controlled instantaneously and with a high degree of accuracy via power supply.

This gives the operator the ability to target mechanical properties with a great degree of accuracy and provides greater flexibility in new product development.

Rapid heating and reduced time of recrystallisation results in fine grain size with uniform crystal structure in the longitudinal and transversal direction. This improves the material's susceptibility to cold working and its resistance to surface cracking.

Ion bombardment or ion sputtering on the material surface results in fine dry surface cleaning and surface oxide removal, which has proved to be particularly beneficial to applications with demanding surface requirements in sectors such as medical, welding or aerospace.

Unlike the traditional tube furnace, the plasma annealer can cold start production in a few minutes and can be stopped immediately.

This avoids the lengthy heating-up and cooling-down times and associated energy costs that are symptomatic for a conventional furnace. The gas cooling section in the plasma annealer has a closed loop design to minimise purging gas consumption.

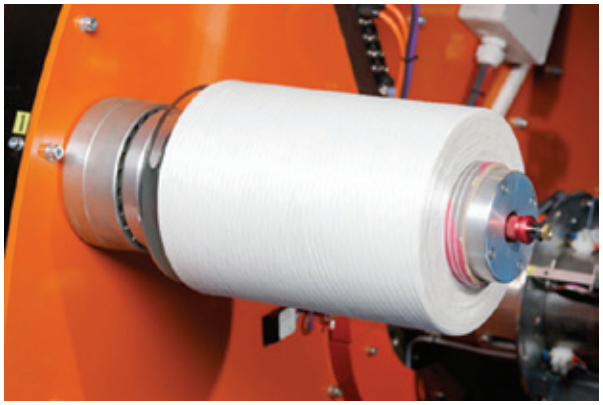
Plasmait GmbH – Austria
Website: www.plasmait.com

Avert downtime with quick release adapters

ROBLON continues to introduce equipment and yarns which help customers optimise production.

According to Roblon it is time to re-think many of the processes in the OFC production. Starting with the yarn server – one of its most known machines – Roblon is now offering a dramatic reduction of downtime related to exchange of spools.

Roblon introduces a new quick release adapter which, based on compressed air, makes it possible to exchange spools in only a few seconds. Using Roblon quick release adapters, the spools are fastened simply by pulling a small collar.



Helping customers with the introduction of quick release adapters

To remove the empty tube after finishing a production run, the adapter is released by compressed air. Again, this takes only a few seconds.

Additional benefit of using the adapters is increased production speed since they are able to better fasten the spools and minimise vibrations.

Combined with Roblon high-speed yarn spools, the maximum rpm of the yarn server can be increased by up to 50 per cent.

The adapters will be a standard option for new Roblon servers just as they will be available for upgrading of existing Roblon servers.

For fully integrated production, you need fully integrated resources.

Roblon is a total solution provider to the cable industry, focusing on cable-making machinery and industrial yarns for cables.

Roblon's extensive knowledge of industrial fibres and related machinery ensures a unique position in the OFC industry.

As the company can supply both product groups, Roblon's customers experience a strong technical support and reassurance of a smooth production.

Roblon Industry is ISO 9001 and 14001 certified and develops high-tech industrial fibres such as glass and aramid strength members, binder yarns and ripcords.

It also develops and manufactures serving, binding, take-up and payoff equipment.

Roblon A/S – Denmark
Website: www.roblon.com

New launch

The new MK300-3P

August Strecker has introduced its new development: Dual upset butt-welding machine MK300-3P. The machine is equipped with a three-phase DC transformer and welds copper wires as well as cables up to 2,500mm² (5,000 kcmil). Like all machines in the Strecker SS, MS, SMK and MK series, the MK300-3P conveniently deburrs the conductors automatically after welding.

August Strecker GmbH & Co KG – Germany
Website: www.strecker-limburg.de

The HTT Fireproof 1300

Keeping cool for 20 years

FOR more than 20 years, High Temperature Textiles has been specialising in high temperature resistant textiles and heat resistance hoses for the iron and steel, ceramic and glass, and furnace and plan construction industries.

The fire protection sleeving HTT Fireproof 1300 is a protective cover for hydraulic and pneumatic leads, electric cables and rubber cooling water hoses.

It also provides protection against high temperatures, hot sparks, direct flame and liquid metal splashes. The company also provides high temperature cloth and tapes.

High Temperature Textiles GmbH – Germany
Website: www.hightemperaturetextile.de

More than a century of experience in flat wire

Company founder F Theis started production of flat wire and profiles more than one hundred years ago – and Theis now rolls wire in thicknesses from 0.15 to 5mm at widths of 1-50mm in all customary grades and qualities.

The Germany-based company values itself on highly precise and varied flat wires, narrow steel strips and complete profiles.

Theis has stringent tolerances, seamless edge shapes, linear straightness and absolute flatness in its flat wires.

Sophisticated calibration ensures that the company can also provide a number of edges, natural edges, cut, rolled or chased and can also manufacture special edges in accordance with technical drawings.

Theis – Germany
Website: www.theis.de

OUR COVERAGE OF WIRE RUSSIA STARTS ON PAGE 68

Quality monitoring to help business

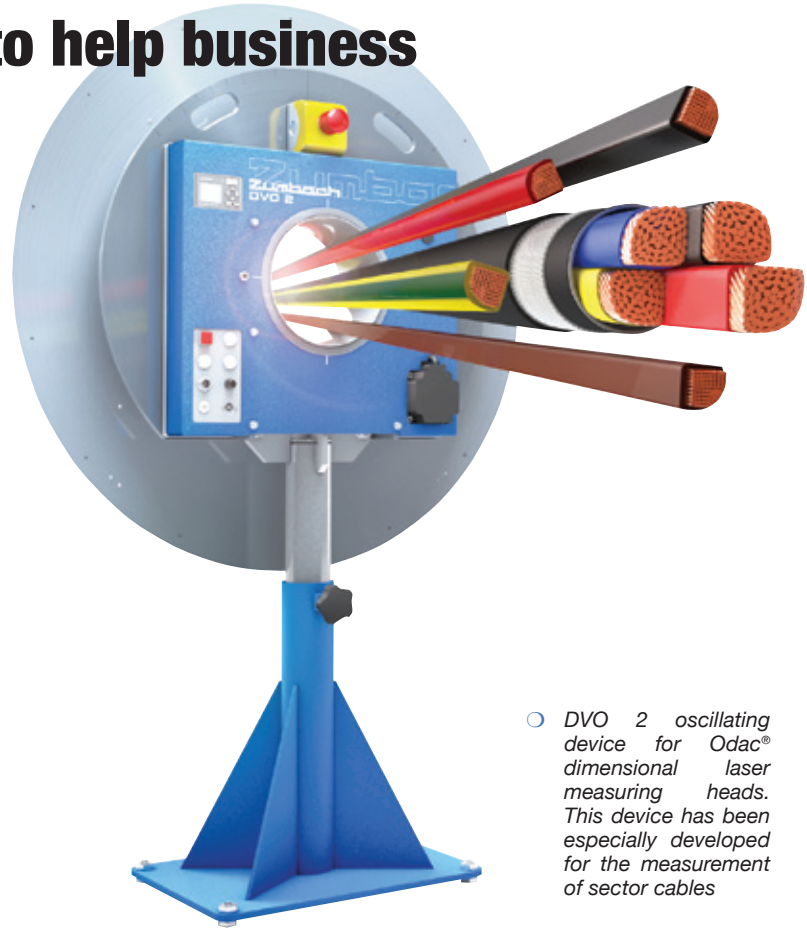
CABLE manufacturers are increasingly venturing into global markets in the search for opportunities to sell more and make better use of their production capacities. At the same time, the competitive pressure among manufacturers is fierce. Success or failure in the marketplace is increasingly being dictated by quality and price.

As such, the goals are clearly defined:

- Establish stable production processes
- Assure the highest quality level
- Save raw material

In order to meet these challenges, quality monitoring systems need to be installed at critical points in the production line. Ensuring the dimensional stability of heights and widths (ie average wall thickness in terms of height and width) is of the utmost importance.

State-of-the-art measurement systems, integrated into the production process, perform this monitoring task and the statistical evaluation of the measured data. This data indicates how steady the production line is, and where processes could potentially be optimised.



❍ *DVO 2 oscillating device for Odac® dimensional laser measuring heads. This device has been especially developed for the measurement of sector cables*

Problems such as irregular melts, inconsistent production speeds or conductor faults do not go undetected, and can be remedied immediately. For example, unacceptable scrap caused by irregularly melted granular material can be detected and sorted during the manufacturing process.

How can the price to performance ratio be optimised? By saving even more material. One thing is clear: Based on just a few available data measurements, production must be tailored to a maximum certainty, and the insulation manufactured with thicker walls than is really necessary.

However, if a perfect insulation layer can be guaranteed and the wall thickness rigorously tested right after the extruder, Zumbach can aim to manufacture the wall thickness at the lower end of the specified tolerance range. This can save between two and five per cent of total material cost every year.

DVO 2 systems from Zumbach, combined with a USYS data acquisition, processing and display system embedded with Jacketmaster software, can capture and process all critical parameters, such as height, width, minimum and maximum dimensions – easily, regardless of cable shape or profile, and at all angle variations.

Each Odac® measuring head mounted on the oscillating device DVO 2, oscillates continuously around the product within an angle of ±50° and at cyclical speeds of between 2.6 and 45 seconds. Thanks to the oscillation of the measuring head, it is not necessary to keep the sector cable in a fixed position.

This unique advantage means that any and all types of sector cable (straight and pre-spiralled) can be measured reliably and accurately in any position. The DVO 2 units are installed before and after the extruder to calculate the wall thickness of an extruded, resp coated sector cable.

Zumbach measuring solutions include:
Jacketmaster software
USYS data acquisition, processing and display systems
DVW 1 & DVO 2 oscillating units
Odac® laser dimensional measuring heads

Zumbach Electronic AG – Switzerland **Website**: www.zumbach.com

Rosendahl's new FOC multi-pass cooling trough

THE current trends in fibre optic cable manufacturing are all connected with the general optimisation of each step of the production process.

In order to improve the performance of the cable, to reduce the costs of the final product, many technologies and devices have been invented to reduce optical loss, increase production speed and allow more flexibility in the manufacturing process.

In the buffer tube process new technological developments in equipment have been made:

• Improved high speed fibre payoff design with reduced footprint for space saving
• Special feeding section of the ROEX extruder was designed to optimise the process ability of the typical material used for loose tube production
• New development of the crosshead series RX for optimised material flow in the melt distributer in conjunction with a linear jelly needle guiding system for easier handling
• Multi-pass cooling through with integrated midspan- and exit capstan

Multi-pass cooling trough from Rosendahl

• New generation of pulley clenching capstan SCC100 for accurate post shrinkage and EFL control especially for dry tubes.

Telescopic section: The distance from the crosshead to the cooling trough is adjustable. Additionally, the water in the first section is heated to allow an optimised temperature profile for different materials.

Straight section: The water temperature in the second section can be adjusted independently from the first section. The shrinkage control capstan SCC100 is mounted on a rail system in this section of the cooling trough. Therefore the position of the SCC100 is easily adaptable for different product sizes or materials.

Multi-pass section: When the loose tube is entering the multi-pass cooling trough the product is wound around the driven single wheel capstan (mid-span capstan) several times. After that the product is repeatedly wrapped around the free-running deflection pulleys in the spray cooled multi-pass section. At the exit of the multi-pass cooling trough the loose tube is wound around an integrated, tension controlled single wheel capstan (exit capstan).

This new design concept allows a reduction of the total line length of approximately 7.5m with the advantage of no limitation in cooling capacity at higher production speeds.

Rosendahl Maschinen GmbH – Austria
Website: www.rosendahlaustria.com

HOSN

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Http: //www.hosnglobe.com E-mail: frank@hosnglobe.com

Copper Rod Breakdown Machine with Continuous Annealer (One Head/Two Heads)

Aluminum and Alloy Rod Breakdown Machine (One Head/Two Heads)

Rigid Strander by Shaft

Rigid Strander by Separate Motor

Tubular Strander

Drum Twister

VISIT US AT

25 Jun 13 to 28 Jun 13
wire Russia

7-5A23

Flux bath filtration

Flux bath in hot-dip galvanising industries must be filtered to improve quality. The iron concentration has to be maintained at a low level to avoid any problem in the treatment.

❍ *Filtered to improve quality*

Siebec, with more than 50 years' experience in the plating industry, has developed a filter system for flux filtration: P51 filter fitted with exclusive high load L-TECH pleated cartridges.

This filter system will provide better filtration than a filter press. It can also be installed in series after a filter press to clean the residual sludge and work continuously with a clean flux bath.

Siebec GmbH – Germany
Website: www.siebec.com

Filtration of high viscosity lubricants

FILTRATION systems are built to keep the operating fluid as clean as possible, ie they have to remove the particles loosened during the drawing operation. Pure filtration of coolants and lubricants will give the effect of higher productivity due to fewer wire breaks, less down time, lower wear of the dies and much better surface quality of the wires.

To achieve these goals, RESY developed and introduced the compact-band-filter (KBF), which has gained acceptance all over the world for more than 30 years.

For high viscosity lubricants (larger than 120 cSt), which are mostly used for aluminium, band filters are not suitable. In these cases, the separation of the particles occurs by sedimentation in the system tank. This has to be cleaned on a regular basis. The sludge on the bottom is discharged together with a big part of the lubricant.

Another effect of the fine aluminium filters is that the viscosity of the media increases. This higher concentration affects the whole supply and cooling system.

RESY's filtration and delivery system is especially developed for this application. The unit consists of a centrifuge, a delivery pump, a heater, cooling system and electrical control. It is modular to suit customers' needs and can be easily integrated in existing systems.

The lubricant is cleaned and cooled continuously during operation. The concentration of the particle in the lubricant stays on an acceptable level and ensures high quality of the wire and a consistent drawing process.

Reber Systematic GmbH + Co KG – Germany
Website: www.resy-filtration.com

Wire tension monitoring in stranding machines

ANYONE who is familiar with the Indian cable industry understands the significance of high performance capability in a user-friendly package.

Products that include useless features, that are difficult to handle, and complicated to apply have a difficult position in this market. With that in mind, FMS has launched a new wire tension monitoring series for stranding machines.

A company that values high productivity while counting on advanced production facilities is the Indian Usha Martin group.

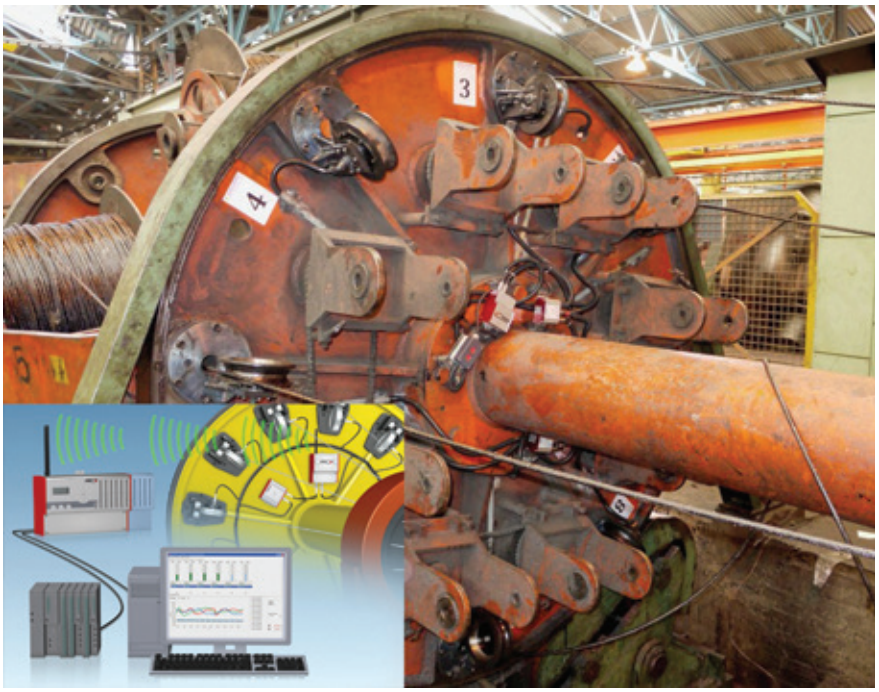
The enterprise manufactures all styles of cables. Usha Martin's wire rope division has begun to modernise major production lines and modify its equipment to state-of-the-art levels.

Ease of retrofitting and operational simplicity was at the top of the requirements list for the RTMX42.

The RTMX42 series utilises force sensors to measure the tension of individual wires or strands, and then transmits the data wirelessly from the rotating to the static part of the machine.

On the receiver side the system provides a sophisticated range of interface options for controlling or tension monitoring applications.

It can be efficiently integrated into the existing communication infrastructure of the machine. RTMX42 is offered in five different sub versions:



A multi-stage planetary strander that was upgraded with FMS tension monitoring system RTMX42

- RTMX42.IOs for tension monitoring with up to 42 channels and analogue outputs to provide controlling capability
- RTMX42.PC: Tension monitoring with data processing and analysis capability (data logging, quality reports)
- RTMX42.PC/IOs combines the features of the PC and IOs versions
- RTMX42.MODBUS makes the system very appealing for machine builders because of its fast bus interfaces. It allows real time control of breaks or drives in the machine
- RTMX42.PC/MODBUS combines all advanced features of the MODBUS and PC version.

FMS Force Measuring Systems AG – Switzerland
Website: www.fms-technology.com

Easy-to-use operation of mixing stations

PLASTICOLOR volumetric and gravimetric mixing stations, in combination with extruder regulation and/or length/weight regulation, are being controlled by the tried and tested PPM II modules. New software has been developed to work on an industrial PC with touch screen.

A good number of mixing stations with this new touch screen control have been supplied to the market and the feedback from the customers is very positive.

On screen, the mixing stations and the components are displayed in a graphic presentation. The complete operation is done via the touch screen, without mouse and keyboard.

Based on the graphic display the functions are self-explanatory and all functions of the mixing stations can be used intuitively.

In order to handle larger extrusion lines (co-extrusion lines), the industrial panel PC is available with 10", 15" and 19" displays.

❍ *Be in control with the PPM II Smart Control from Woywod*

The panel PCs with touch screen display are being mounted in cabinets and in conformity with VDE and/or UL regulations.

In the same cabinet a main power switch, as well as short key push buttons for the functions mixing station start/stop and/or extruder regulation on/off can be mounted.

The LEDs of the push buttons will give the actual status. For the panel PC a separate power switch and two USB ports are mounted.

The cabinet can be supplied in various versions (for mounting at a wall or swivel arm), as per the requirements of the customer.

It is also possible that already existing PPM II controls can be upgraded with this operation through a touch screen.

Woywod Kunststoffmaschinen GmbH & Co Vertriebs-KG – Germany
Website: www.plasticolor.de

Tried, tested and available for secure clamping

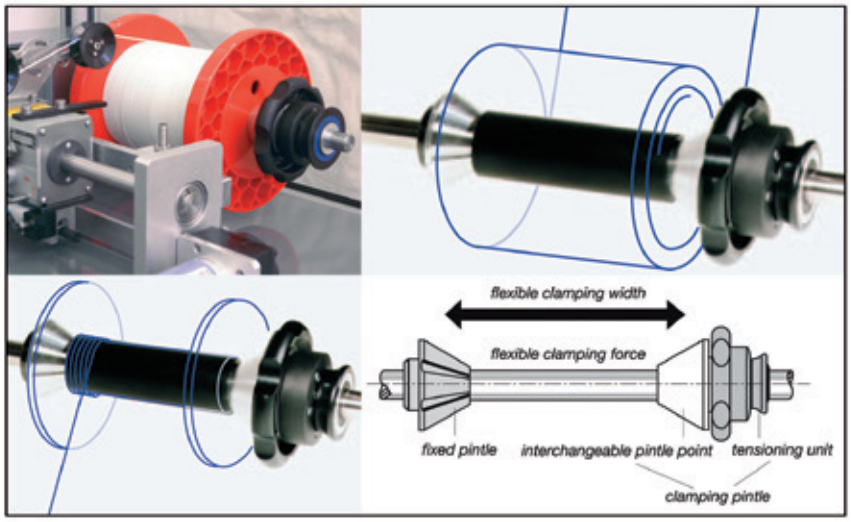
The Uhing-Easylock®, available from Techna International, provides a tried and tested system for the secure clamping of items (spools, reels, etc) onto rotating shafts, in a range of sizes for shaft diameters of 10, 15, 20, 22, 25, 30, 35 and 40mm, with tension from 400N on the smallest unit up to 5,000N on the largest unit.

The units comprise a fixed cone, an interchangeable cone point and a tensioning clamping ring, which is increasingly offset to the shaft with which it engages, in response to axial or tensioning forces, so creating an increasing friction contact. The greater the tensioning force, the greater the clamping effect of the ring.

As the item is held firmly between the fixed cone and the clamping cone, braking moments are able to be transmitted from the shaft to the item being clamped, allowing fast stopping of the machine if a fault occurs.

These units provide several advantages including:

- Single-handed operation for assembly and disassembly
- Shortest possible changeover times
- No tools required
- High tensioning forces on a plain, round, greaseless shaft



❍ *The shaft clamping system from Techna*

- Suitable for use with driven shafts
- Emergency stop secure
- Maintenance-free
- Suitable for static applications
- Resistant to vibration

For less arduous clamping operations, Techna provides two ranges of spool clamping collars both with single-handed, quick release operation, without the need for tooling.

The Uhing 'U-Clip', in a range of shaft diameter sizes of 8, 10, 12, 15, 16, 20 and 22mm, utilises a clamping ring which is offset to the shaft to provide clamping forces from 200N to 320N depending on size.

The Fastlock range is available in 15 metric shaft diameter sizes from 10mm to 56mm and in 14 imperial sizes from 0.375 (3/8") to 2 inches.

Techna International Ltd – UK
Website: www.techna.eu

MEERdrive®: THE REVOLUTION IN WIRE ROD PRODUCTION

With MEERdrive®, SMS Meer has developed a new drive technology that redefines the standards in wire rod production. The basic idea is to replace the wear-prone, maintenance-intensive gearboxes of wire rod blocks with intelligent individual drives for each stand. These allow the rolling process to be made far more flexible and the defined metallurgical properties of the finished product to be precisely achieved. The energy consumption is significantly reduced and roll ring management greatly simplified. That is why MEERdrive® has been awarded the ecoplants mark – the sign of an ecologically and economically advantageous solution from SMS Meer.

Quality unites – a fact that our customers and we discover time and again with every new project. Together we develop solutions that give our partners the competitive edge in their business. Thanks to this good cooperation, SMS Meer is a leading international company in heavy machinery and plant engineering.

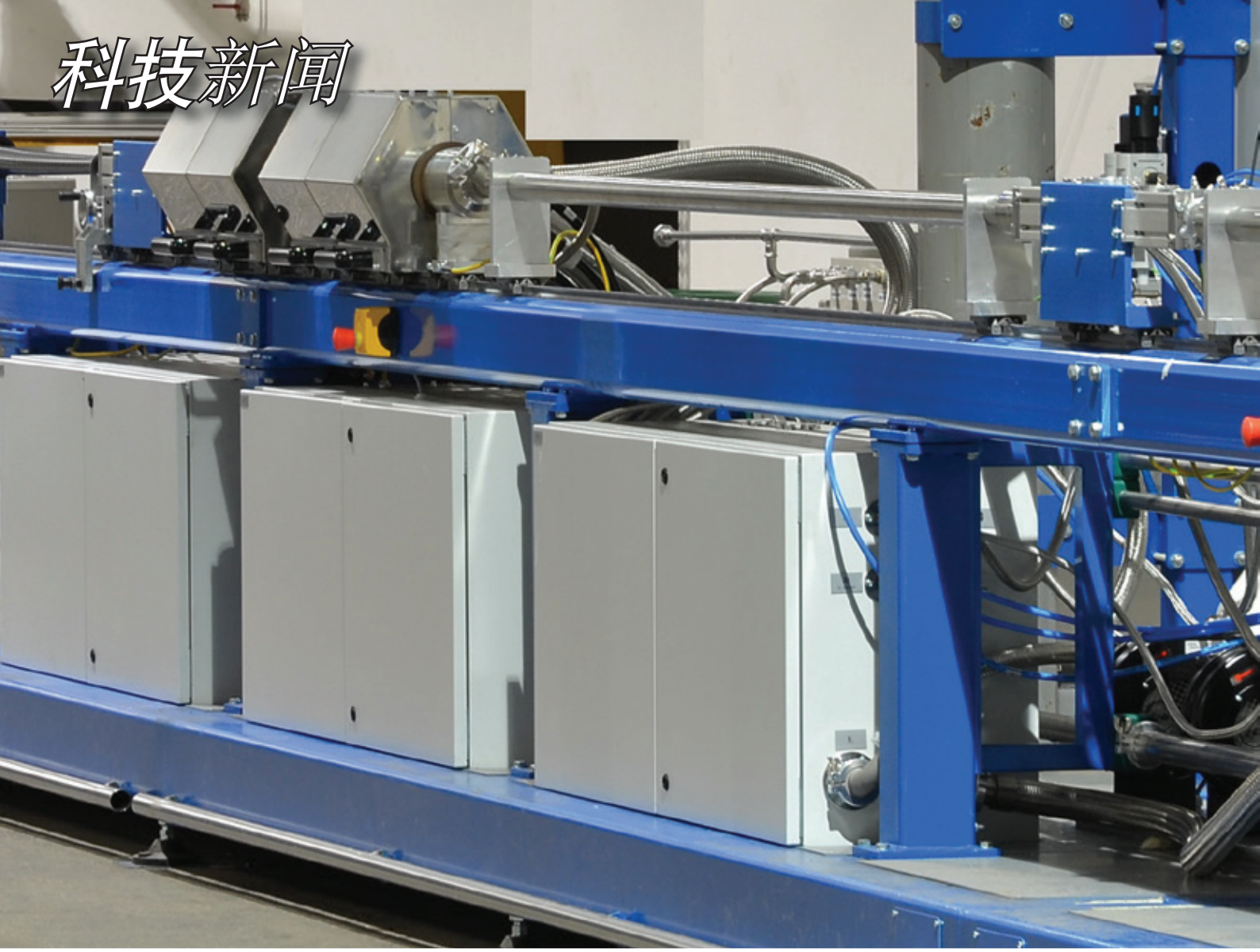
MEETING your **EXPECTATIONS**

SMS MEER
SMS group

www.sms-meer.com

MEERdrive® technology

Maximum productivity



用高速等离子退火炉对精细不锈钢丝进行快速退火。这种退火炉既可以用作结合了收线和放线功能的独立退火设备，亦可与拉丝机或轧机联机使用

来自普拉斯迈特公司的第二代

普拉斯迈特公司推出了一种由不锈钢和镍合金生产的、横截面积从20平方毫米到最细小的金属丝大小的电线、缆绳和管道设计的二代等离子退火炉。

这种新概念使得不锈钢和镍合金的持续退火速度获得大幅提升。在细金属丝中，奥氏体不锈钢导线的退火速度有可能达到15米/秒。以这样的退火速度，拉延和轧制可一并进行，取代了传统管式炉的多行线路。

等离子进程的高效能量耦合允许等离子体的紧凑设计，并可产生高能量转换效率。退火功率可通过电源随时进行高精度调节。

这赋予了操作人员较为精准地设定机械性能的能力，在新产品研发方面也提供了更强的灵活性。

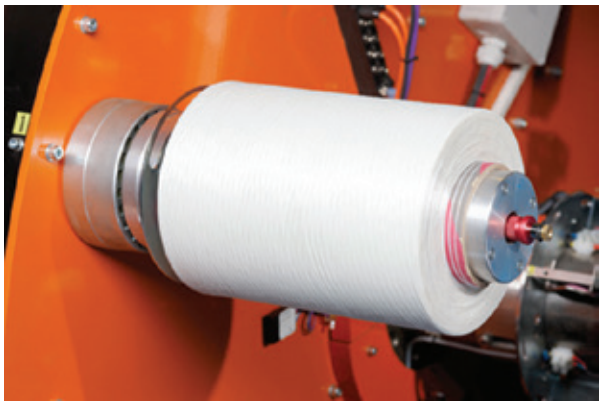
快速加热和再结晶的时间缩短产生了在纵向和横向上拥有均匀晶体结构的细晶粒规格。这提升了材料的冷加工易感性及抗表面开裂能力。

在材料表面上用离子轰击或离子溅射法创造了干燥表面精细清洁和表面氧化皮清除方法，这种方法已被证实对医疗、焊接、航空航天等对表面要求苛刻的行业应用非常有用。与传统管式炉不同的是，等离子退火炉可以在几分钟内冷却启动生产并可以立即关闭。这避免了冗长的预热和冷凝时间，并且压缩了能源成本，解决了传统炉的这一大难题。

等离子退火炉的气体冷却部分设计有一个封闭的环路，可尽量减少净化天然气消费量。

Plasmait GmbH – 奥地利
网址: www.plasmait.com

用快速释放适配器避免停机时间



帮助客户引进快速释放适配器

罗博伦（Roblon）持续推出帮助顾客优化生产的设备和纱线。

据罗博伦公司称，现在是时候重新考虑OFC生产过程中的许多工艺。从纱线服务器——该公司最知名的机器之一——开始，罗博伦公司现在提供的产品显著减少了与交换线轴有关的停机时间。

罗博伦公司推出了一款新型快速释放适配器，该机器利用压缩空气，交换一次线轴只需要两秒钟。使用罗博伦快速释放适配器，简单拉动一个小套管就可以固定线轴。一个生产周期之后适配器由压缩空气释放，从而去掉空线管。再次强调，这一过程只需要两秒钟。

运用该适配器的其他好处是，由于适配器能够更好地固定线轴，尽可能减少振动，从而提高了生产效率。结合罗博伦高速纱线卷轴，纱线服务器的最大每分钟转数可以增加高达50%。该适配器能够用于升级现有的罗博伦服务器，亦将成为新罗博伦服务器的标准配置。

为了进行高度集成化生产，您需要充分整合资源。

罗博伦是电缆行业的一家整体解决方案提供商，专注于电缆制造机械和电缆用工业丝的制造。罗博伦拥有丰富的工业纤维和相关机械知识，确保了它在光缆行业中的独特地位。由于罗博伦可以提供两种产品组合，为该公司的顾客提供了强大的技术支持和顺利生产的保障。

罗博伦工业企业通过了ISO 9001和14001认证，研发玻璃和芳纶纤维强度部件、粘结剂纱线和撕裂绳等高新技术产业纤维。它也开发和制造服务、捆绑、收线和放线设备。

Roblon A/S – 丹麦
网址: www.roblon.com

久经考验的系统

泰克纳国际（Techna International）公司的Uhing-Easylock®提供了一个把部件（线轴、卷轴等）夹紧固定到旋转轴上的久经考验的系统，旋转轴的直径尺寸位于10、15、20、22、25、30、35和40mm的范围内，张力在最小400N到最高5000牛范围内。该部件包括一个固定锥、一个可更换的圆锥点和一个张力夹紧环，这个夹紧环越来越多地偏向于与它作用的轴，以回应轴向或张紧力，从而创造了一种不断增强的接触摩擦。张力越大，环的夹紧作用越大。

随着部件被紧紧夹在固定锥和夹持锥之间，制动时刻能够从轴传导到被夹住的部件上，一旦发生故障时就可以使机器快速停止。这些部件产生的优点包括：

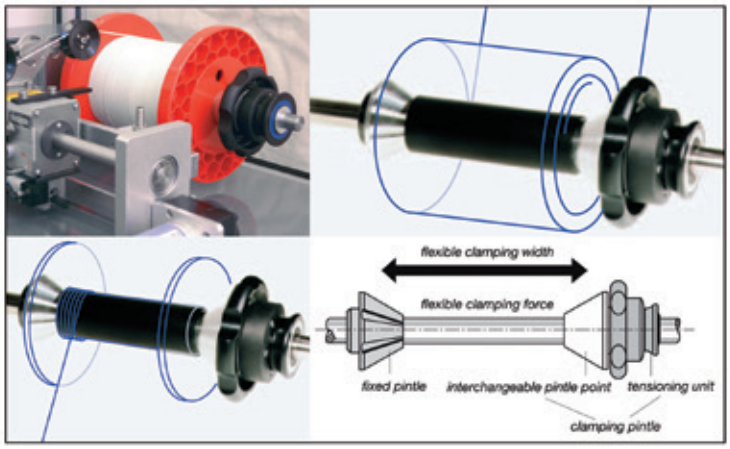
- 装配和拆卸的单手操作
- 最短转换时间
- 无需工具
- 扁平轴、圆轴和无油轴上的强张紧力
- 适合与从动轴一起使用
- 紧急制动安全性
- 无需保养
- 适用于静态应用
- 抗震动

对于不太繁重的夹紧操作，泰克纳提供了两套线轴夹紧套管，均可单手、快速释放操作，不需用工具。

Uhing “U形夹”可用于直径尺寸范围为8、10、12、15、16、20和22毫米的轴，充分利用了一个偏向于轴的夹紧环，该环可提供200N到320N的夹紧力，取决于环的尺寸。快速锁定范围可用于15公吨、直径大小从10毫米到56毫米（14英制尺寸为从0.375（3/8″）的2英寸）的轴。

Techna International Ltd – 英国
网址: www.techna.eu

泰克纳的转轴夹紧系统



斯特雷克尔公司(Strecker)的新发明

奥古斯特•斯特雷克尔推出了新产品：型号为MK300-3P 的双对焊焊接机。

这种机器配有一台三相直流变压器，能焊接铜导线和面积达2500平方毫米的电缆（即5000千圆密尔）。同斯特雷克尔公司SS、MS、SMK和MK系列的所有机器一样，MK300-3P机器在焊接之后能方便地将导线去毛刺。

August Strecker GmbH & Co KG – 德国
网址: www.strecker-limburg.de

新型MK300-3P

欧森丹尔公司用于松套管线的新型FOC多通道冷却槽

光纤电缆制造业的当前趋势都与生产过程中每个步骤的整体优化有关。为了提升电缆的性能，降低最终产品的成本，业内已经发明了许多技术和设备来减少光学损耗、提高生产速度、增加生产进程中的灵活性。

缓冲管流程中与设备有关的新型技术发明有：

- 改进的高速光纤放线设计可减少占地面积、节省空间
- ROEX挤出机设计有特殊送料装置，可优化松套管生产用的典型材料的处理能力
- 为实现熔体分流器中的最优物料流，且为方便处理，与线性胶状针引导系统结合产生了RX十字头系列的新发展
- 运用集成的中跨设备和退出绞盘的多通道冷却槽
- 为精确后收缩和特别适合干性管的EFL控制设计的新一代滑轮紧咬绞盘SCC100

伸缩部分：从十字头到冷却槽之间的距离是可调节的。此外，第一部分中的水可加热，且可针对不同的材料形成最优温度分布。

直线部分：第二部分的水温可独立于第一部分的水温进行调节。

该部分冷却槽的轨道系统里装有收缩控制绞盘SCC100。因此SCC100的位置很容易根据不同的产品尺寸或材料进行调整。

来自欧森丹尔的多通道冷却槽

多通道部分：当松套管即将进入多通道冷却槽时，产品被多次缠绕在驱动单轮绞盘上（中跨绞盘）。之后产品被反复缠绕在喷雾冷却多通道部分的自由运行偏转带轮上。在多通道冷却槽的出口处，松套管被缠绕在一个集成的、由张力控制的单轮绞盘（出口绞盘）上。

这种新设计理念使得整个线长下降了将近7.5米，优点是在更高的生产速度下不会制约冷却能力。

Rosendahl Maschinen GmbH – 奥地利
网址: www.rosendahlaustria.com

高粘度润滑油的过滤

企业利用过滤系统保持操作液体尽量清洁，即他们必须去除拉延操作过程中脱落的颗粒。用冷却剂和润滑剂进行纯过滤可减少断线、缩短停机时间、减少模具磨损并可提升电缆的表面质量，因此取得提高生产率的效果。为实现这些目标，RESY设计并推出了紧凑型带状过滤器（KBF），已在世界各地获得超过30年的认可。

它不适用于大部分用作铝材和带通滤波器的高粘度润滑油(超过120厘斯)。在这些情形下，系统罐内通过沉降实现粒子分离。这要求必须定期清洗。底部的污泥与大部分润滑剂一起排出。精密铝制过滤器的另一个效应是增大了介质的粘性。这种高浓度对整个供给和冷却系统都产生了影响。

RESY的过滤和分送系统是专门为这种应用设计的。该部件包含一个离心分离机、一个输送泵、一个加热器、一个冷却系统和电气控制系统。它是一个满足消费者需求的成型的模块，且能够很容易地整合到现有的系统中。这种润滑剂在操作过程中不断被清洁和冷却。润滑剂中的颗粒浓度保持在一个可接受的水平，并可保证电线的高质量和稳定的拉延工艺。这种新系统将减少维护工作和排放成本，提高生产率。

Reber Systematic GmbH + Co KG – 德国
网址: www.resy-filtration.com

绞线机的线张力监测

熟悉印度电缆行业的任何一个人都明白用户友好产品组合的良好操作性能的重要性。

包含无用功能、难以操作、应用复杂的产品在这个市场中地位尴尬。FMS牢记这一点，为绞线机发明了一种新型线张力监控系统。

印度乌莎•马丁集团（Indian Usha Martin group）是一家依靠先进生产设备、重视高效生产的企业。该公司生产各种类型的电缆。

由FMS张力监控系统RTMX42升级而来的多阶段星式绞线机

乌莎•马丁钢丝绳分部已经开始对主要生产线进行现代化改造，把它们的设备改良到最先进的水平。

易于改造和操作简便性被列在RTMX42需求清单的最前面。

RTMX42系列采用力传感器测量单条线材或股线的张力，然后将数据通过无线电方式从机器旋转的部分传输到静态部分。在接收方，该系统为控制或张力监控应用提供了一个复杂的选择界面。

RTMX42可以有效地集成到机器现有的通信基础设施上。它提供了5个不同的子版本：

- RTMX42.IOs：有42条用于张力监测的控制途径和提供控制能力的模拟输出
- RTMX42.PC：有数据处理和分析能力（数据记录和质量报告）的张力监测
- RTMX42.PC/IOs集成了PC和IOs版本的功能
- RTMX.MODBUS拥有快速的总成界面，使得系统对机器制造商来说很有吸引力，允许对机器的休息和启动进行实时控制。
- RTMX42.PC/MODBUS集成了MODBUS和PC 版本的所有优点

FMS Force Measuring Systems AG – 瑞士
网址: www.fms-technology.com

品质监管助力经营

电缆制造商们越来越多地冒险进入全球市场，以便寻求扩大销售和更好地利用产能的机遇。同时，生产企业之间的竞争压力巨大。在这个市场中的成功和失败越来越多地由质量和价格主导。

因此，我们明确地把目标界定为：

1. 建立稳定的生产工艺
2. 保证最高的质量水平
3. 节省原材料

为了满足这些挑战，在生产线的关键环节需要配置品质监管体系。保证高度和宽度尺寸的维度稳定性（即高度和宽度方面的平均壁厚）至关重要。

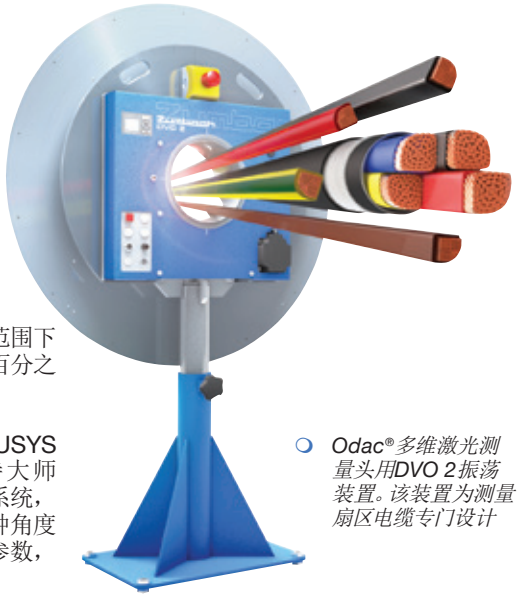
将最高水平的测量系统融入生产流程中，以执行此项监测任务和所测得数据的统计评价。测得的这些数据显示生产线的稳定性有多高，以及哪些流程仍有优化的潜能。

诸如不规则融化、生产速度不一致或导线故障之类的问题不但能被发现，而且能被立即纠正。例如，由不规则融化的颗粒材料产生的不可接受的废料可以在生产过程中被发现和分类。

如何优化性价比?通过节省更多的材料。有一件事情很清楚：基于几个可用的测量数据，我们得到，必须使生产达到最大限度精准化，绝缘层的管壁要比实际需求更厚一些。然而，如果能够保证完美的绝缘层，在挤出机之后严格测试管壁厚度，仲巴赫就可以把目标设定为生产的管壁厚度在规定的公差范围下限。这能够节省每年总材料费用的百分之二至百分之五。

仲巴赫的 DVO 2 系统包含一个USYS数据采集系统、一个嵌有杰克特大师(Jacketmaster)软件的处理和显示系统，无论电缆形状或轮廓，无论在哪一种角度均能够轻易采集和处理的所有关键参数，例如高度、宽度、最大最小维度等。

每个Odac®测量头安装在DVO 2振荡装置上面，以2.6秒到45秒的循环速度在产品周围±50°范围内不停摆动。幸亏测量头可摆动，再没有必要将扇区电缆保持在一个固定的位置。这种独特的优势意味着在任何一个位置均可以可靠且准确地测量任何及所有的扇区电缆(直链和预螺旋状)。挤出机前后均安装有DVO 2部件，以分别测量挤出后的和有涂层的扇区电缆的壁厚。



Odac®多维激光测量头用DVO 2振荡装置。该装置为测量扇区电缆专门设计

仲巴赫测量方法：
杰克特大师（Jacketmaster）软件
USYS数据采集、处理和显示系统
DVW 1 和 DVO 2震荡部件
Odac®激光多维测量头

Zumbach Electronic AG – 瑞士
网址: www.zumbach.com

独领风骚20年

20多年来，耐高温纺织品公司（High Temperature Textiles）一直专注于为钢铁、陶瓷、玻璃、炉具和规划建设行业提供耐高温纺织品和耐热软管。

型号为HTT防火1300的防火软套管是液压和气动导线、电力电缆和橡胶冷却水软管理想的防护罩。

它还能提供高温、热火花、明火和液态金属飞溅防护。该公司也供应高温布和胶带。

High Temperature Textiles GmbH – 德国
网址: www.hightemperaturetextile.de

HTT防火1300

易于操作的搅拌站

Plasticolor体积和重量搅拌站，与挤出机调节和/或长度/重量调节一道，由久经考验的PPM II模块控制。现已研发出一套触屏工业计算机上工作的新软件。

这种新型触摸屏控制的搅拌站已经大量投放市场，来自客户的反馈信息非常积极。

搅拌站及其部件在屏幕上以一个图形显示。整个操作都通过触屏进行，没有鼠标和键盘。有了图形显示，对功能不需要加以说明，搅拌站的所有功能可直观地实现。

为了操作大型挤压生产线（联合挤压生产线），可以用带有10″、15″和19″显示屏的工业平板电脑。

触摸屏平板电脑被安装在机柜中，且符合VDE和/或UL的规定。

在同一个机柜中还装有一个主电源开关和多个短键按钮，可实现搅拌站开始/停止和/或挤出机开/关调节功能。

按钮的LED灯将显示实际状态。平板电脑上还安装了一个独立的电源开关和两个USB接口。

根据客户的需求，机柜可以有多种不同的版本（用于安装在墙上或旋臂上）。

也可以通过触屏对现有的PPM II控制器进行这种操作升级。

Woywod Kunststoffmaschinen GmbH & Co Vertriebs-KG – 德国
网址: www.plasticolor.de

操控沃伊沃德公司的PPM II智能控制系统

India Insight

Energy project gets forest clearance

JSW Energy has been given forest clearance for a 240MW hydropower project in Himachal Pradesh, allowing the company to begin construction.

The project was awarded to the company in 2007, but delayed due to lack of clearance. This will be the first hydropower venture of the Sajjan Jindal-led company, which has an operational capacity of 2,600MW and plans to increase capacity to 11,770MW.

Sanjay Sagar, joint managing director and chief executive officer of JSW Energy, confirmed: "We understand that stage 2 forest clearance has been granted to the project. Now we hope to start work...and complete it over the next four years."

JSW Energy depends heavily on imported coal from short-term markets to fuel its projects, so diversification into hydropower would help the company reduce its exposure to fossil fuel.

The "run of the river" project will be established on the river Ravi in the district of Chamba in Himachal Pradesh. According to the agreement with the state of Himachal Pradesh, JSW Energy will supply a proportion of the generated power to the state's electricity distribution company as a royalty for setting up the project.

According to expert estimates, projects totaling almost 42,000MW have been allotted by states, but are yet to begin construction due to delays in environmental approvals, land acquisitions problems and water rights.

JSW Energy – India
Website: www.jsw.in

‘Major switch’ with solar plant in Lucknow

Telecom operator Bharti Airtel has installed a 100kW solar power plant in Lucknow, powering its major routing centre and saving around 26,000 litres of diesel per year.

“Bharti Airtel has installed a solar power plant at Gangaganj, Lucknow. This location is [a] major switching and routing centre, which processes the voice and data traffic for the telecom operator,” the company said in a statement.

“The 100kW photovoltaic rooftop solar power plant will save close to 26,000 litres of diesel per year,” the statement said. The company would have otherwise consumed diesel to generate electricity at the office.

The statement added that the company is planning similar power plants in six other locations, generating close to 300kW of solar energy.

Bharti Airtel – India
Website: www.airtel.in

Delhi gets its own grid sub-station

Power minister for Delhi, Haroon Yusuf, has inaugurated BSES Rajdhani Power Limited’s (BRPL) 66/11kV–50mVA grid sub-station in West Delhi.

The sub-station will increase the distribution capacity in the area by 34 per cent to around 195mVA, meeting the present and future power needs of the area.

Dedicating the grid station, Yusuf said: “Delhi’s power demand is increasing by 8 to 10 per cent year-on-year. This year, it is expected to cross 6,000MW. Electricity distribution infrastructure has to keep pace with this ever-increasing power demand.”

BRPL CEO Gopal Saxena added: “The commissioning of this grid sub-station has fulfilled a long-standing demand [from] the residents and commercial establishments of this area, and I am confident that this grid will further improve the power situation in the area.”

BSES Rajdhani Power Limited – India
Website: www.bsesdelhi.com

Finolex goes solar

A captive 5MW solar power plant is under installation at the Finolex Cables manufacturing facility at Urse near Pune.

The plant, to be commissioned within six months, will provide electricity for consumption at the Urse facility, but will be pooled with additional state electricity board (MSEDCL) supply for night time operations. “[Using] this in-house experience (setting up of captive solar power plant) we can...set up larger projects in future,” the company’s MD Deepak Chhabria said, after a recent Finolex Cables board meeting.

Referring to the company’s future plans, Chhabria said there was good scope for growth in the fibre optic business as new government initiated projects spur demand in the sector. “There are bright prospects for the segment growth in view of the government projects which envisage laying down of total underground network to be installed and handed over to the defence services,” he said.

“Tenders are already floated for these projects,” Chhabria added. While noting that the fibre optic sector was poised for significant growth, he said that as a country “we need to spend more on infrastructure to expand industry.”

Finolex Cables – India
Website: www.finolex.com

Coal supply boosts power production

The Indian Electrical and Electronics Manufacturers’ Association website reports that increased availability of coal helped power producers across the country generate over target during the year ended January 2013, compared with a shortfall of 8,000MW in the previous year.

Power plants are also, apparently, sufficiently stocked for eight days of generation on full capacity, compared with only five days in November 2012, when coal production was affected by a cyclone.

“With a dry winter and the chill gradually dying away, coal production has improved, leading to greater supply,” said a senior Coal India Ltd (CIL) official, explaining that this helped power producers exceed their target for April 2012 to January 2013 by 124MW.

Increased generation is reflected in data from the Indian Energy Exchange, which handles about 90 per cent of the national trade in power. Spot prices of power have declined over the past month due to the increased availability of coal.

Indian Electrical and Electronics Manufacturers’ Association – India
Website: www.ieema.org

Second wind plant in Jaisalmer district

National Aluminum Company (Nalco) is developing its second wind power plant at Ludarva, in the Jaisalmer district of Rajasthan, with a capacity of 47.6MW.

The project will be executed through Gamesa Wind Turbines

Private Ltd and will use 56 wind turbines, each rated at 850kW. The project will be completed before the end of the year.

The development is part of the diversification plans of Nalco, a Navratna public sector undertaking, which has been foraying into other metals and energy sectors. This is the company's second green initiative towards promoting sustainable development by harnessing renewable energy sources. The move is also likely to attract incentives from the government.

The company commissioned its first wind power plant of 50.4MW capacity at Gandikota in Kadapa district of Andhra Pradesh, on 30th December 2012.

Nalco – India
Website: www.nalco.com

2,300MW hydropower plans in three years

The public sector utility North Eastern Electric Power Corporation Limited (NEEPCO) plans to add 2,300MW of hydropower to its capacity, and plans to go public within the next three years.

The corporation presently has an installed capacity of 1,130MW, 60 per cent of the total installed capacity of Northeast India. Over the next three years the corporation is looking to complete five projects to generate around 917MW of power.

NEEPCO has floated global tenders inviting private participation for development of power projects. Chairman and MD of NEEPCO, PC Pankaj, is quoted as saying: "Around 12 companies have responded and we will jointly develop projects. NEEPCO has also made [a] foray in[to] consultancy."

The MD added that NEEPCO is also focusing on work with state governments. "Northeast India has huge hydropower potential, Arunchal Pradesh alone accounts for 59,000MW power potential."

Several big power projects are facing opposition from anti-dam groups. "If things are done properly there is no reason to be apprehensive. Countries like China and Brazil are building power projects with capacity of 20,000MW," he said.

North Eastern Electric Power Corporation Limited – India
Website: www.neepco.gov.in

Wire business license application

Power Grid Corporation of India Ltd (PGCIL) is proposing to acquire a wire business licence within the Odisha jurisdiction area of the Central Electricity Supply Utility (CESU) power distribution company. PGCIL will invest in new infrastructure within the CESU area.

"This is the first time we have proposed to acquire [a] wire business licence in [the] CESU area. Since we are currently preparing detailed project report, we cannot comment about the investment details and business plans," said an official of PGCIL.

CESU is one of four distribution operators in Odisha, currently managed by the Odisha Electricity Regulatory Commission (OERC) after its majority stakeholder, AES, abandoned the management a decade ago.

PGCIL's application to acquire the wire business licence has been sent to OERC for clearance. As per the business model proposed by PGCIL, apart from upgrading the existing network of CESU, it will set up power substations and 33kV cables lines. CESU currently has around 2,900 circuit kilometres of 33kV lines.

The state of Odisha is expected to generate around 40,000MW power from 29 independent power producers (IPP), and three ultra mega power projects (UMPP) are expected to be commissioned over the next ten years.

Power Grid Corporation of India Ltd – India
Website: www.powergridindia.com

In overdrive at Mobile World Congress 2013 Barcelona: the Samsung magnetism

"Samsung, which has been steadily creeping up on the industry leader, was forming an army in Barcelona, striking partnerships with companies big and small from all over the world, and proactively searching for even more to form alliances."

Brian X Chen, of the *New York Times*, was noting the ubiquitous presence of Samsung Electronics at Mobile World Congress (25th-28th February). Even though it had no new phone to show, the South Korean company had one of the biggest booths on the conference floor. Other companies – Visa, for one example – seemed to the "Bits" blogger to be largely interested in discussing their new partnerships with Samsung.

NTT Docomo, the Japanese phone carrier, gave a modest presentation about mobile wallets. After the briefing, a Samsung employee approached a Docomo executive and introduced himself. Another partnership in the works, the *Times* man asked himself?

Mr Chen inquired of an attendee who works at a small start-up in San Francisco what brought him to the show. The answer: "We have a collaboration with Samsung."

In contrast, Google's presence at Barcelona was minimal. There was no Google booth — only a small table at which journalists were welcome to sit down for a chat with company personnel, who had no news to share.

And what of the industry leader being crept up on, none too subtly, by Samsung? Apple stayed away from Barcelona altogether, apparently secure in the knowledge that the most successful technology company in the world need not exert itself to rope in other companies to work with it.

✆ But Mr Chen took note of something that Apple management might profitably ponder: the unavoidable presence of Samsung even outside the conference. The walls of Barcelona's metro stations were plastered with enormous posters displaying the company's Galaxy phones. Samsung even had a booth where people could try Galaxy devices at the exit of the metro stop near the convention centre.

"If you were No 1, wouldn't that make you feel a little nervous?" mused blogger Brian Chen.

Sweden's Ericsson readies itself for a twelvefold spurt in mobile data traffic over five years

Writing from Barcelona on the first day of Mobile World Congress 2013, Chris Forrester of the London-based broadband media information source *Advanced Television* previewed Ericsson's LTE broadcast solution for mobile network operators.

Data from Ericsson's own 2012 Mobility Report indicates that mobile data traffic can be expected to grow twelvefold over the next five or so years.

The Swedish mobile telecommunications equipment maker, the world's largest, is bringing together three key technologies (eMBMS, HEVC, MPEG-Dash) to prepare cellular players for an increase in video demand.

The advantage of its solution, says Ericsson, is that eMBMS (evolved multimedia broadcast multicast services) permits broadcast streams into well-defined broadcast areas where all cells contributing to a single frequency network are sending the same data. In other words, according to advanced-television.com, "a multicast wide-broadcasting footprint more akin to normal TV transmission to potentially a huge number of users."

Earlier eMBMS tests suggest likely deployment at a sports ground or racetrack where thousands of spectators might want to see a replay of a goal or other incident, or to view multiple camera angles at the event. ("Ericsson Predicts LTE Broadcast Revolution," 25th February).

Mr Forrester reported that Ericsson is working on its solution with Qualcomm, of the US. The American telecom Verizon has already announced that it will launch an eMBMS service, in 2014.

Faster off the mark than with its 3G, China Mobile is seen as dominating the Chinese 4G market

The global information company IHS predicts that China Mobile's aggressive early 4G investments will pay off, with the operator expected to capture the majority of the nation's 4G subscribers until 2017 at least.

According to IHS (Englewood, Colorado), the Chinese operator is expected to sign up a million subscribers to its 4G trial networks this year.

China Mobile first launched its LTE trials in March 2011 and is aiming to have 200,000 TD-LTE base stations deployed at the end of 2013.

IHS expects China Mobile to have 14 million LTE subscribers by then, compared to 4.3 million for China Unicom and 3.2 million for China Telecom.

Dylan Bushell-Embling of *telecomasia.net* reported (20th February) that IHS believes these early investments will allow China Mobile to build a "near insurmountable" subscriber lead by 2015, with 55.1 million 4G users: 34.2 million more than nearest competitor China Unicom.

By 2017, China Mobile is set to capture a projected 52 per cent of China's 4G market with 228.8 million subscribers, compared to 114.4 million for China Unicom and 96.8 million for China Telecom.

IHS said China Mobile's prompt, strong 4G efforts demonstrate that the operator is determined not to repeat the mistakes it made with 3G.

An early decision not to deploy 3G cellular infrastructure left it struggling to catch up to its rivals in terms of data usage by its mobile subscribers, thus sacrificing revenue-generating potential from 3G.

telecomasia.net noted that the Chinese government had not yet announced a date for the allocation of 4G licenses, but was rumoured to be considering awarding a pre-commercial operating licence to China Mobile ahead of its rivals.

Vodafone in the lead, five successful bidders emerge from Britain's per cent-round auction of 4G spectrum

The UK telecom regulator Ofcom has announced the names of successful bidders in the auction of two per cent mHz of fourth-generation (4G) spectrum across the two bands 800MHz and 2.6GHz.

The five companies that survived more than per cent rounds of bidding with new frequencies include all four of the country's existing mobile network operators: Vodafone, EE, Hutchison 3G UK, and O2 UK. The other winning bidder is BT subsidiary Niche Spectrum Ventures.

Vodafone will pay the most ($1.22 billion) for its new frequencies; EE, the largest British telecom by subscribers, $901 million; the market's smallest operator, Hutchison 3G UK (which operates as "Three"), $344.2 million; O2 UK, $841.2 million for 2X10mHz of 800mHz spectrum.

As noted by *TeleGeography* (20th February), "uniquely" Ofcom confirmed that it attached a coverage obligation to the O2 UK frequencies, requiring the company to provide indoor mobile broadband service to at least 98 per cent of the UK population by the end of 2017.

Finally, winning bidder Niche Spectrum Ventures will pay $285.1 million for its new spectrum.

On payment of licence fees the concessions will formally be awarded, with a view to allowing winners to use their spectrum to launch commercial service by summer.

Ofcom CEO Ed Richards observed that – on completion of the assignment stage of the sale, to determine where in the 800mHz and 2.6gHz bands each firm's new frequencies will be located – 4G coverage in the UK will extend far beyond that of existing 3G services. This, he said, "is good news for parts of the country currently underserved by mobile broadband."

BT extends 20Mbps 21CN broadband ISP services to cover 92 per cent of the United Kingdom

The BTWholesale unit of UK telecom operator BT has told ISPreview that the range of its up-to-20Mbps (ADSL2+) capable 21CN-based wholesale broadband connect (WBC) platform will be extended beyond current targets into more rural areas, to reach over 92 per cent of the country.

BT's WBC 21st Century Network, now gradually replacing its older 20CN platform that supports slower copper line ADSLMAX speeds only up to 8Mbps, is already available to over 85 per cent of UK premises.

At the end of last year, 2,549 sites/exchanges were live, and the company expects to bring that total to 22.5 million premises, or 90 per cent of the United Kingdom, this spring.

In fact, as reported by Mark Jackson on *ISPreview.co.uk* (18th February), recent information from BT indicates that WBC will reach 91 per cent of UK homes and businesses by spring. BT will then enable an additional 195 sites (locations yet to be decided), bringing total coverage to above 92 per cent over the summer.

At this stage, Mr Jackson observed, even a few percentage points can translate into a stronger geographic reach: ie, fewer customers over a bigger area.

Additionally, BT is investigating "further WBC expansion plans" for later in 2013 and into early 2014. A BT spokeswoman told *ISPreview.co.uk*: "We are constantly reviewing our plans to see if we can further extend our advanced copper broadband network. [But] there are no immediate plans to upgrade new exchanges beyond the 195 new sites."

Elsewhere in telecom . . .

- The Lebanese Ministry of Telecommunications (LMoT) and the Cyprus Telecommunications Authority (Cyta) have announced their agreement to cooperate in sharing capacity on Cyta's Alexandros cable subsystem.

  Its Cyprus–Egypt–France linkage is expected to open up reciprocal Eurasian and Eastern Mediterranean business opportunities.

  As reported in the Cyprus-based *Famagusta Gazette* (9th March), under the agreement LMoT will acquire multiple-capacity connectivity to France and Egypt, thus enhancing Lebanon's international access through physical diversity and a significant increase in bandwidth.

  At a signing ceremony in Beirut the two parties also ratified a memorandum of understanding for construction of the Europa system, a high-capacity undersea cable between Cyprus and Lebanon slated to enter service by 2015.

- Citing as its source Malaysian news site *thestar.com.my* (8th March), *TeleGeography* reported that Malaysia's Telecommunications is understood to be modernising its entire mobile network, comprising close to 6,000 sites across the country. The operator also expects to expand 3G coverage to 75 per cent of populated areas by the end of 2013.

  DiGi's chief technology officer, Ole Martin Gunhildsbu, was quoted as saying, "We have seen significant quality improvements over the last six months in all areas where we have completed network upgrades."

- For the second consecutive year, and the third time in four years, Verizon Communications Inc (New York) has received top ranking in the telecommunications sector of the Fortune list of the world's most admired companies, published in March.

  The magazine's selections are based on surveys of executives, directors and analysts who were asked to rate companies in their particular industries.

2013年巴塞罗那世界移动通信大会加速升温: 三星的魅力

“不知不觉中，三星已经稳稳地坐上了行业领导者的位置，它在巴塞罗那正在组建一支队伍，震撼了来自世界各地的大大小小的合作伙伴，并且还在积极寻求组建更多的联盟。”

《纽约时报》记者布莱恩·X·陈（Brian X Chen）一直在关注世界移动通信大会（2月25日－28日）上三星电子的无处不在。虽然这家韩国企业没有展示新手机，但它仍占据着会议现场最大的展位之一。其他公司——如维士卡（Visa）——在这位“比特”博主看来，大部分时间也在兴致勃勃地谈论他们与三星的新合作关系。

日本手机运营商，日本电报电话公司移动网络通信公司（NTT Docomo），对手机钱包做了一翻客观的介绍。发布会之后，一位三星的雇员找到移动网络通信公司的主管并做了自我介绍。时报记者猜测，这难道又是一个事业上的合作伙伴?

陈先生询问了一位在旧金山一家小型初创公司工作并带他去参展的一位参展人员。后者回答说：“我们也与三星有合作。”

相比之下，谷歌在巴塞罗那的身影微不足道。谷歌没有设展位——只摆了一张小桌子，欢迎记者落座，与公司员工聊天，该公司没有带来什么新消息。

那么，被三星用不太巧妙的手段不知不觉抢了风头的行业领袖去哪里了?苹果公司对巴塞罗那完全敬而远之，显然它很确信，世界上最成功的科技企业没有必要努力招揽其他企业共商合作。

✆ 但是陈先生注意到一些可能对苹果公司管理层来说有益的思考：会场之外也有三星无处不在的身影。巴塞罗那地铁站的墙壁上贴满了展示该公司Galaxy手机的巨幅海报。三星甚至在会展中心附近的地铁站出口处设了一个展台，供人们试用Galaxy手机。

“如果你是最好的，难道这不会让你感到一丝丝的紧张?” 博主布莱恩·陈若有所思地说。

瑞典爱立信公司已经为五年后移动数据十二倍井喷式增长做好了准备

来自总部设在伦敦的宽带媒体信息源“现代电视”的克里斯·弗雷斯特(Chris Forrester)于2013年世界移动通信大会举行的第一天，在巴塞罗那预览了爱立信为移动网络运营商设计的LTE播放解决方案。

爱立信公司自己发布的《2012年流量报告》显示，在未来五年左右，预计移动数据流量将增长十二倍。

这家全球最大的瑞典移动通信设备制造商准备将三大关键技术（eMBMS, HEVC, MPEG-Dash）整合，以便满足蜂窝式玩家视频需求的增长。

爱立信称，他们的解决方案的优势在于，演进的多媒体广播组播服务(eMBMS)允许广播流汇入预先设定的广播域中，那里贡献于同一个频率的所有终端发送相同的数据。换句话说，根据advanced-television.com的说法，“一个更接近传统电视传输、潜在用户数量巨大的广播组播技术。”

先前的eMBMS测试表明，以后可能要在运动场或跑道上安装eMBMS，因为成千上万的观众很可能想看球赛或其他事件的重播，或者从多个镜头角度看某个事件。(《爱立信预计LTE广播革命》，2月25日)

弗雷斯特先生报道称爱立信正在与美国高通公司(Qualcomm)合作研究它的解决方案。美国电讯商威瑞森(Verizon)已经宣布将于2014年推出一项eMBMS服务。

快速脱离3G阴影，业界认为中国移动主宰着中国4G市场

全球资讯公司IHS公司预测，中国移动早期积极投资于4G将获得成功，该运营商预计将最早在2017年吸引中国大部分的4G用户。根据IHS公司（美国科罗拉多州恩格尔伍德）的预测，今年可能有100万用户注册该中国运营商的4G试验网。中国移动的LTE试验网最早发布于2011年3月，其目标是在2013年底之前部署200,000个TD-LTE基站。IHS预计中国移动那时候将有1.4亿LTE用户，相比之下，中国联通和中国电信那时的LTE用户数分别为430万和320万。

telecomasia.net的迪伦·布舍尔－爱布林（Dylan Bushell-Embling）（2月20日）报道称，IHS相信这些早期投资使得中国移动到2015年将拥有5,510万4G用户，达到一个“几乎难以超越的”用户领先水平：比最接近的竞争对手中国电信多出3,420万人次。截止2017年，中国移动将占据中国52%的4G市场，拥有2.288亿用户，而中国联通和中国电信将分别只有1.144亿和9,680万人次。

IHS称中国移动迅猛强大的4G努力表明该运营商下定决心不重蹈3G的覆辙。早期中国移动决定不部署3G蜂窝基础设施，使它一直在移动用户的数据使用方面疲于追赶对手，因此牺牲了来源于3G的创收潜力。telecomasia.net注意到中国政府还没有发布分配4G牌照的日期，但是有传言称政府将向中国移动（先于竞争对手）颁发商业预运营牌照。

英国4G频谱百分比轮拍卖会产生以沃达丰(Vodafone)为首的五家成功中标企业

英国电信管理局Ofcom宣布了第四代(4G)频谱两个百分比频段(800MHz和2.6 GHz频段)成功中标企业的名称。在超过50轮新频段竞拍中胜出的这五家企业包括该国现有的全部四个移动网络运营商：沃达丰、EE、和记黄埔3G英国分公司(Hutchison 3G UK)及O2英国分公司。另一个成功竞标者为英国电信附属的利基频谱风险投资公司(Niche Spectrum Ventures)。

沃达丰将为其新频段支付最多(12.2亿美元)；用户数量最大的英国电信商EE支付9.01亿美元；这个市场上最小的运营商和记黄埔3G英国分公司(以“3”作为品牌名称运营)支付3.442亿美元；O2英国分公司为800mHz频段的2X10mHz支付8.412美元。正如TeleGeography(2月20日)注意到的，Ofcom“唯一”确认的是，它向O2英国分公司获得的频段附加了一个覆盖率义务，要求截至2017年底，该公司要向至少98%的英国民众提供室内移动宽带服务。最后，成功竞标者利基频谱风险投资公司将为其新频段支付2.851亿美元。

为了让中标企业可以在夏天之前运用他们的频段推出商业服务，这些许可证将于许可费支付以后正式发放。Ofcom的首席执行官埃德·理查兹——在销售分配阶段完成以后，决定每家企业在800mHz和2.6gHz频段中的具体位置时——就观察到英国的4G覆盖将远远超过现有的3G服务。他说：“这对于我国那些还没有移动宽带覆盖的地方来说是个好消息。”

Photographer: Marty
Statue of Liberty Image from BigStockPhoto.com

Manufacturing

Buoyed by increases in new orders, factories in the United States see their best growth since mid-2011

According to the Institute for Supply Management (Tempe, Arizona), a trade group of purchasing managers, economic activity in the US manufacturing sector expanded in February for the third consecutive month. The ISM index of factory activity rose to 54.2 from 53.1 in January. A number above 50 indicates expansion – and February's factory reading was the highest since June 2011.

The group's measure of production rose to the highest level since April 2012, while its new orders gauge was the strongest since April 2011. The index of export demand improved to a nine-month high. And factories added jobs, ISM said.

The Washington-based *Business Times* pointed out that the pickup in factory activity indicates a strengthening demand for goods even as a higher payroll tax takes effect in the US, reducing the buying power of consumers. At the New Year the tax was allowed to return to its 2010 level of 6.2 per cent from 4.2, which means that an American earning $50,000 is now taking home about $83 less a month.

Alex Kowalski of *Bloomberg News* observed that companies in the US are benefiting from growing demand as businesses boost spending and as economies in emerging markets pick up. Combined with a rebound in housing and sustained gains in household purchases, the jump in orders will likely help propel an economy about to be tested by federal government cutbacks.

The data continues to be consistent with a moderate recovery, Dean Maki, chief US economist in New York for Barclays plc, told Mr Kowalski. "Production is picking up and we think growth will be stronger in the first quarter," Mr Maki said. "Underlying all this is a pretty steady pace of consumer spending. Auto sales and housing are quite solid right now. The economy can withstand some fiscal tightening without going into recession."

Also on 1st March, Thomson Reuters/University of Michigan said that its index of consumer sentiment – a measure of how consumers feel about the upcoming six months and their plans to make purchases (or not) – climbed in February to a three-month high of 77.6 from 73.8 a month earlier. The gauge is important because consumer spending accounts for roughly two-thirds of the US economy.

- Bloomberg noted that investment in new equipment is "at the root of" the pickup in increased activity on factory floors reported in March. According to Commerce Department figures, orders for capital goods, excluding military gear and aircraft, climbed 9.5 per cent since October, the biggest three-month gain since 1993.

  The brightening outlook was not lost on investors, who pushed the Standard & Poor's 500 to 6.3 per cent for the year up to March – better than the 4.1 per cent gain for the MSCI All Country World Index. The US Dollar Index, which tracks the greenback against six of America's biggest trading partners, reached a five-month high.

The environment

A 'blistering report' from NAFTA charges that faulty American battery recycling endangers the health of Mexicans

According to an environmental agency created under the North American Free Trade Agreement, cross-border trade in lead acid batteries increased between the United States and Mexico by up to 525 per cent from 2004 to 2011. Now the agency, the Commission for Environmental Cooperation, has charged that US companies are sending spent lead batteries to recycling plants in Mexico that do not meet American environmental standards, putting Mexican communities at risk.

In what Elisabeth Rosenthal of the *New York Times* called a "blistering report," submitted in early February, the NAFTA agency asserted that the United States does not fully follow procedures common among developed nations that treat international battery shipments as hazardous waste. It blames environmental watchdogs on both sides of the border for lapses in regulation and enforcement. ("Report Faults US Use of Mexican Battery Recyclers," 8th February). *The Times* said that almost all lead acid batteries used in the US – in vehicles, wind turbines, and cellphone towers – are recycled to extract the lead for reuse, both because lead is a dangerous pollutant and because it is a valuable commodity. Trade statistics indicate that an estimated 20 per cent of lead acid batteries from the US now go to Mexico for recycling.

Ms Rosenthal pointed out that, since 2008, new US limits on lead pollution have made domestic recycling complicated and costly. That has helped propel the recycling trade to Mexico, both legally and illegally, environmental groups say, because that country has less stringent limits for lead pollution – and much less vigorous enforcement.

Among other shortcomings highlighted by the report, customs data on the number of batteries crossing the border did not mesh with counts by the United States Environmental Protection Agency. While the EPA requires notice of batteries leaving the US, there was no effort to verify their arrival at qualified recyclers in Mexico.

The data that battery companies sent to the EPA about exports consisted of "piles of paper," said Evan Lloyd, who was the NAFTA agency's executive director until late 2012 and oversaw the year-long study; and it was never amassed into an electronic database that would be "useful to regulators."

- Mr Lloyd said that the NAFTA report was initiated in response to a report by the American environmental group Occupational Knowledge International, which has led the campaign against lead poisoning internationally,

and, in Mexico, Fronteras Comunes; as well as to an investigative article in the *Times*. Soil collected by the *Times* in a school playground near a recycling plant outside Mexico City was found to have lead levels five times those allowed in the United States.

"There's a pretty consistent pattern suggesting that exports [of batteries] are the direct result of US emissions standards," Perry Gottesfeld, executive director of Occupational Knowledge International, told Ms Rosenthal. He noted that a Mexican plant owned by a major American recycler puts out more than 30 times as much lead emissions as its newest plant in the United States.

Apparently motivated by the damaging attention, the Milwaukee-based company said in an email to the *Times* that it was "modernising and reinvesting" in the Mexican facility, acquired in 2005, to reduce its environmental impact. "What Mexico needs to do is to get its recycling up to US standards," said Mr Gottesfeld. "And the US needs to do a much better job of tracking batteries overseas."

- The NAFTA report, which had been circulating in draft form, was forwarded in early February to the governments of the United States, Canada, and Mexico, which were given 60 days to register objections to its publication.

Automotive

A Ford investment in Cleveland is a sign of how much American carmakers have trimmed labour costs and improved productivity

Ford Motor Co is adding 450 jobs and expanding an engine plant in Ohio to meet a growing demand for more fuel-efficient cars and SUVs in the American market. The second-largest US automaker after General Motors, said 21st February that it would spend $200 million to renovate its Cleveland engine plant to produce small, turbocharged engines for use in its top-selling models.

The move is the latest by American automakers to expand production at home, where sales had increased 14 per cent to that point this year compared with 2012. In January, GM announced plans to invest $600 million in its assembly plant near Kansas City, Kansas, one of the company's oldest factories. And Chrysler, the smallest of the Detroit "Big Three," is adding a third shift to its Jeep plant in Detroit.

As noted by the *International Herald Tribune* "Wheels" blogger Bill Vlasic, the expansions are another tangible sign of the steady recovery in the American auto market, which fell to historic lows during the recent recession. Both GM and Chrysler declared bankruptcy in 2009 to qualify for government bailouts. While Ford survived the industry's financial crisis without help, it cut thousands of jobs and shuttered several factories to reduce costs. ("Ramping Up US Production, Ford Expands in Ohio," 21st February).

But in Mr Vlasic's view "the tide has turned in car showrooms" across the US, prompting automakers to "strategically increase output" in their remaining plants. In Ford's case, he reported, the company added about 8,000 salaried and hourly jobs in 2012 and has said it plans to hire about 2,200 white-collar workers in 2013. Ford is also moving some production from Mexico to a Michigan plant, where it will add 1,200 jobs.

"Just a few years ago, the company was forced to consolidate two engine plants into one in northern Ohio and to close a major component operation," Mr Vlasic wrote. "The investment in Cleveland is indicative of how Ford and other carmakers have trimmed labour costs in the United States and improved productivity since the recession."

- While Ford is adding jobs and production domestically, Mr Vlasic said that it is racing to reduce costs in its European division. Workers who previously built the company's 2-litre EcoBoost engine in Spain, for shipment to America, will be moved to a nearby assembly plant that is taking on work from a plant to be closed in Belgium. Joe Hinrichs, the head of Ford's Americas region, told the "Wheels" blogger that a new agreement with the United Automobile Workers union local in Cleveland paved the way for the expansion there. The plant now employs about 1,300 workers. "This is about servicing more demand in the United States," Mr Hinrichs said. "And with our competitive labour agreements, we can bring business [here] from Spain and Mexico."

Other automotive news . . .

- Consumer demand for motor vehicles has bolstered business for US producers. February sales, reported 1st March, show General Motors Co, Ford Motor Co, Chrysler Group LLC and Toyota Motor Corp all posting gains as low interest rates and more available credit drew buyers to dealerships. Cars and light trucks sold at a 15.2 million annual rate in January after 15.3 million a month earlier, according to Ward's Automotive Group. November through January were the strongest three months in the American auto industry in five years.

- The recall announced on 16th February by German automaker BMW – on indications that a battery cable connector could fail – involves nearly 570,000 1-Series, 3-Series, and Z4 late-model vehicles sold in the US and Canada. According to the US National Highway Traffic Safety Administration (NHTSA), the connector and a fuse box terminal in some models can degrade over time, possibly breaking the electrical connection between the trunk-mounted battery and the fuse box at the front of the car. Electrical power might be lost, causing the engine to stall unexpectedly.

  BMW said in documents sent to NHTSA that the problem stems from movement between the battery cable and the fuse box. BMW said it knew of one minor collision in Canada due to the problem, but no injuries. In March the company was to start notifying owners – 504,000 in the US, 65,000 in Canada – that its dealers will replace the battery cable connector and secure it free of charge.

The 3-Series is BMW's most popular car in the US, dominating the small luxury car market. The company sold nearly 100,000 of them in the US last year.

Steel vs aluminium

As fuel-mileage efficiency targets loom, advanced high-strength steel products will carry the charge against the upstarts

Under rules finalised last year, car and light-duty truck fleets in the US will have to meet the corporate average fuel economy standard of 54.5 miles per gallon by the 2025 model year.

Speaking on 12th February at an Association for Iron & Steel Technology (AIST) Midwest chapter meeting, Robert Ives, director of sheet quality assurance at the Gary Works of United States Steel Corp (Pittsburgh), said the industry needs to bring a third generation of advanced high-strength steel products to market to compete with the aluminium sector as the light metal becomes more prominent in automobile production.

As reported by Bowdeya Tweh in the *Northwest Indiana Times*, Mr Ives said that the previous three months of discussions with automakers had encompassed about three years of materials decisions as companies plan what their vehicle fleets will look like in the next three to five years. Advanced high-strength steels occupy a spectrum of products forged and processed to make the steel not only stronger, but also lighter-weight compared to milder steel grades. However, noted Mr Tweh – while steel "isn't leaving its position as a dominant material in automobile production" – industry representatives and consultants say other materials are growing their market share as steel companies work to develop a new range of products that subtract weight even as they satisfy safety requirements. ("Steel Still Relevant in Auto Production despite Competition," 16th February).

"We believe that cars will come out with a lot of aluminium in the next generation," Mr Ives said to more than 350 people at the AIST event in Hobart, Indiana. "That's something we're watching very closely."

Consulting firm Ducker Worldwide (Troy, Michigan) in 2012 released a forecast that the average amount of steel in light-duty vehicles by weight in North America would fall 11 percentage points to 46 per cent in 2025. The amount of aluminium would nearly double, to 16 per cent.

- Over the same period, advanced high-strength steel product usage is expected to rise from 194 pounds to 375 pounds per vehicle. "That's a lot of steel," Dick Schultz, a Pittsburgh-based project consultant at Ducker, told Mr Tweh. "But nobody likes to lose share."

  Mr Schultz said smaller vehicles have been able to reach fuel mileage efficiency targets by adopting engine changes; but that automakers are eyeing an increased use of aluminium and other materials including magnesium for trucks.

- For the second year in a row, *Fortune* named Alcoa the most admired metals company in the world. Pittsburgh-based Alcoa, the largest global aluminium producer, has made the "Most Admired" list since the magazine began the annual ranking in 1983. Selection is based on surveys of executives, directors and analysts who rate companies in their own industries.

Elsewhere in steel . . .

- On 27th February, AK Steel said its base prices for carbon flat-rolled steel would go up at least $50 per ton for new orders. The West Chester, Ohio-based maker of flat-rolled carbon, stainless, and electrical steels did not give a reason for the increase. But the newsletter *Steel Market Update* had reported a US Steel rise in base prices for all flat-rolled steel by at least $50 a ton, and AK Steel appeared to follow suit.

  Analyst Anthony Rizzuto of the investment bank Dahlman Rose & Co told Reuters that it is unusual for US Steel to lead price increases in that way. He said the move should at least keep prices in the broader market from falling in the short term.

  "The last time US Steel was the first to move was in mid-October, when prices were in free fall," Mr Rizzuto wrote in a client note. "The move effectively marked the bottom, and list prices moved higher almost immediately."

- On 26th February it was reported that Usinas Siderurgicas de Minas Gerais SA, which accounts for 28 per cent of total steel output in Brazil, would be raising its steel prices to distributors in March.

  Usiminas, based in Belo Horizonte, was set to raise prices for some steel products by between six per cent and 12 per cent, Banco Santander SA analysts said in a note to clients. The boost is the second this year for Usiminas, which raised prices to distributors by an average five per cent in January.

  Also on 26th February, the US edition of *Reuters* reported the view of analysts at Bank of America Merrill Lynch that potential price hikes for flat steel products and higher import tariffs could generate momentum for Brazilian steelmakers, but that such developments are generally priced in. "Although this is a clear positive for flat steel players in Brazil, we question the sustainability and think such hikes might not be fully implemented," the analyst Thiago Lofiego said in a client note.

Technology

How may an award-winning new metal product expect to fare outside of the laboratory?

"Metals are among the most heavily researched materials, and inventing a new one that makes a splash in the marketplace is often excruciatingly difficult."

Writing in *R&D* (established in 1959 as *Industrial Research*), Paul Livingstone went on to describe a technology that has, in fact, made such a splash. It is AFA: Alumina-Forming Austenitic Steels, the brainchild of Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee, which earned an *R&D* 100 Award in 2009.

The magazine sponsors the award to recognise the 100 most technologically significant new products of a given year. Investigating the commercial progress of AFA, it found that successful licence agreements and real-world applications have been, in Mr Livingstone's words, "a pleasant surprise for the developers."

R&D in a recent issue reviewed their pursuit of a solution that would retain the excellent weldability and formability of stainless steel without resort to difficult-to-work, expensive nickel metals. The ORNL team in 2008 announced it had achieved their aim. ("Showing Their Metal," 15th February).

Summarised by Mr Livingstone, the process induces a protective aluminium oxide surface layer without the conventional addition of oxides. The counterintuitive improvement was noted when titanium and vanadium alloys – the strengthening additions – were omitted.

This yielded an upper-temperature oxidation (corrosion) limit that is greater than or equal to that of conventional stainless steels at 50 to 200°C higher. Creep, reportedly excellent at temperatures of 700 to 800°C, is optimal for use in such machinery as turbines. In addition, the material stands up to the aggressive oxidising conditions encountered in energy conversion and chemical process systems.

- As to the market traction of AFA, here, too, the results have been more than satisfactory. In 2010, the Oak Ridge scientists successfully made AFA steel foils for advanced turbine recuperator applications.

  Three foils measuring approximately 100 µm performed well in testing, forming chemically stable external alumina scale at temperatures up to 900°C. Acceptable oxidation was also shown for sheet specimens exposed in a 65 kW microturbine for 2,871 hours. One of the test compositions was selected for a commercial foil batch. In 2011 a turbine manufacturer took delivery of the first commercial material.

  Also in 2011, Carpenter Technology Products (Wyomissing, Pennsylvania), a producer of stainless and speciality alloys, licensed the AFA technology. The company's intention is to build on the research done by the ORNL team to develop its own commercial products.

Telecom

Social media in the United States: accessible and influential irrespective of the cost and reach of broadband Internet

For its Internet & American Life Project, the Pew Research Center conducted phone interviews with 1,800 Americans over the period 14th November to 9th December.

With too few Asian-American respondents to allow of statistically reliable conclusions, The Washington, DC-based non-partisan think tank did not include this group in its report, released 14th February.

Pew found – no surprise – that 83 per cent of Internet users ages 18 to 29 avail themselves of social media. Nearly seven of every ten Internet users in the US use Facebook. The microblogging site Tumblr draws six per cent.

Of greater interest are some of Pew's findings on the demographics of social media usage. Among these:

- The popularity of Twitter and the emerging platform Instagram is surging among American blacks. Some 26 per cent of black Internet users access Twitter, far outpacing whites (14 per cent) and Hispanics (19 per cent). In August 2011, 18 per cent of black Internet users were using Twitter. Black Americans' use of Instagram (23 per cent) also outstripped that of Hispanics (18 per cent) and whites (11 per cent).

- Women outnumbered men in Instagram usage: 16 per cent vs ten per cent. The gender difference in social media usage was most noticeable with Pinterest, an online "pinboard". A quarter of American female Internet users are on Pinterest vs five per cent of men. White women under 50 in the US strongly favour it. Overall, 15 per cent of Internet users have tried the virtual scrapbooking site.

- Across all groups, younger and urban Twitter users outnumber their older and rural counterparts. But the usage rate generally held steady at around 14 to 17 per cent regardless of gender, education, and income levels.

Elsewhere in telecom . . .

- On day two of Mobile World Congress, held 25th-28th February in Barcelona, Spain, a Samsung Electronics executive pushed back against a *Wall Street Journal* report that Samsung's dominant position in Google's Android ecosystem is a source of tension between the two companies.

  "My interpretation is that we're a good partner and we build strong products that promote the ecosystem," Nick DiCarlo, vice president of portfolio planning and product marketing at Samsung's US mobile arm, told Phil Goldstein of FierceWireless. He asserted that Samsung has been an overall "big positive for the [Android] brand." His comments come after the *WSJ*, citing unnamed sources, reported increasing tension between Google and Samsung, by far the largest Android OEM. Google executives were said to be concerned that Samsung has become so big that it could pressure Google to alter the nature of their relationship.

  Not so, said Mr DiCarlo, who noted the shifting nature of an "incredibly competitive" wireless industry. "I don't think you can say that anybody has a dominant position at any [one] time," he said. "You've seen how many companies [were] at the top and aren't anymore."

Dorothy Fabian
Features Editor

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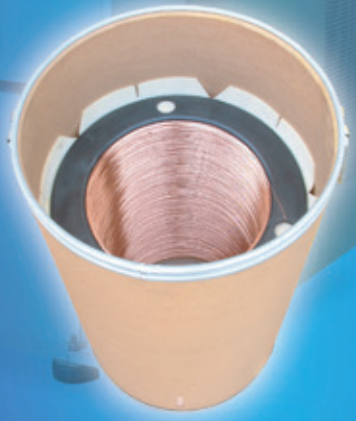

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美国展望

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制造业

由于新订单的增加，在美国的工厂看到了自2011年中期以来最好的增长

根据供应管理协会（坦佩市，亚利桑那州），一个采购经理的贸易组织，在美国制造业的经济行动在2月已经有连续第三个月的增加。供应管理协会的工厂指数从一月的53.1增长到了54.2。该数字超过50意味着扩张——同时2月的工厂指数达到了自2011年6月以来的最高点。

该组织的产品测量值自2012年4月以来上升到了最高水品，同时新订单的规模也是自2011年以来最大的。出口需求指数达到了9个月以来的高点。供应管理协会称，工厂也开始增加工作岗位了。

坐落于华盛顿的《商业时报》（Business Times）指出工业活动的回升意味着对货物需求的加大甚至可以看成更高的所得税在美国产生了效果，减少了消费者的购买力量。在新的一年里税率被允许从4.2%回升到2010年6.2%的水平，这意味着一个挣50,000美金的美国人要每个月要少拿83美金回家。

《彭博新闻》（Bloomberg News）的亚历克斯•科瓦尔斯基（Alex Kowalski）观察到在美国的公司正受益于因企业增加开支和当前市场经济的回升造成的需求增长。再将房屋的反弹和家庭采购持续获利结合起来，订单的大幅增加将有可能帮助促使经济经受联邦政府削减的考验。

数据仍旧与温和的经济增长相一致，巴克利银行纽约分行的首席美国经济学家迪恩•麦基（Dean Maki）告诉科瓦尔斯基（Kowalski）先生。“生产正在回升我们认为第一季度的增长将更为强劲，”麦基（Maki）先生说。“所有这些表象的背后的是消费者支出的稳定增长。汽车销售和房地产目前非常稳定。经济能经受住财政紧缩政策而不衰退。”

同样在3月1日，密西根大学的汤姆森•路透（Thomson Reuters）称消费者信心指数——一种消费者如何看待将来六个月及他们计划购买（或不购买）的测量方法——从一个月前的73.8上升到了三个月的高点77.6。该预测之所以重要是因为消费者支出在美国经济中的比重大约为三分之二。

- 彭博社在三月的报道中称工人工作场地中增加了对新设备的投资是“从底部”回升。根据商务部的数据，除去军用品及航天用品，生产资料的订单自10月以来已经上升了9.5%，这是1993年以来最大的3月期收入。

  如此光鲜艳丽的外表也不能缺少投资者，从新年伊始到3月，投资者将标准普尔指数推高了6.3个百分点——高于摩根斯坦利所有国家指数（MSCI All Country World Index）的4.1个百分点。美元指数，该指数追踪美元对比美国六个最大伙伴国的货币，达到了5个月以来的高点。

环境方面

一份来自北美自由贸易协定的“尖锐的报告”指控美国错误的电池回收方式对墨西哥人的健康造成危害

据北美自由贸易协定下属的环保机构称：从2004到2011年，墨西哥和美国之间的铅酸蓄电池跨国交易增加了525%。现在该机构，环境合作委员会，指控美国公司将用过的铅酸蓄电池送到未达到美国环境标准的墨西哥的回收工厂，将墨西哥社区置于风险之下。

这份《纽约时报》的伊丽莎白•罗森塔尔（Elisabeth Rosenthal）称之为“措辞尖锐报告”，于2月上旬递交，其中北美自由贸易协定组织宣称美国没有完全遵循关于发达国家将电池作为有害废弃物的国际输出的通用规程。该报告指责边境双方的环境监督部门在管理和执行方面的缺失。（“关于美国错误的使用墨西哥电池回收厂的报告”2月8日）

《时报》称几乎所有在美国被用过的铅酸蓄电池——汽车、风力发电机和移动信号站——都回收以将铅提取出来再次使用，即是因为铅是危险的污染物也因为它是宝贵的商品。贸易数据显示美国大约20%的铅酸蓄电池目前在墨西哥回收。

罗森塔尔（Rosenthal）女士指出，从2008年开始，新的对铅污染的限制使得美国国内的回收变得复杂和昂贵。这促进了对墨西哥的回收贸易，其中有合法的也有非法的，环境组织称，因为墨西哥对铅污染的限制比较宽松——而且很少得到有力执行。

在该报告强调的其他缺陷中，海关提供的离境电池的数据与美国国家环境保护局统计的数据不吻合。同时环保局要求留意那些从美国离境的电池，没有有效的证据表明它们被送抵有资质的墨西哥回收工厂。

2012年年末之前担任北美自由贸易协定机构的执行总裁并监管整年研究的埃文•劳埃德（Evan Lloyd）称，电池公司提供给环保局的出口数据由“成堆的纸”组成，而且从未被录入进“对管理者有用的”电子数据库。

- 劳埃德（Lloyd）先生称北美自由贸易协定的报告开始是响应美国环境组织“国际职业知识”（Occupational Knowledge International）该组织领导了国际反铅污染运动，以及在墨西哥的“共同边界”（Fronteras Comunes），《泰晤士报》的一篇调查文章也是由该组织策划的。《泰晤士报》在墨西哥城外回收厂附近的一所学校的操场上收集的土壤中发现铅含量超过了美国允许的标准5倍。

  国际职业知识的执行总裁佩里•哥特斯菲尔得（Perry Gottesfeld）告诉罗森塔尔（Rosenthal）女士：“这种相当统一的模式表明【电池】出口是美国排放标准导致的直接结果。”他注意到由大型美国回收公司拥有的墨西哥厂房所产出的铅排放量是该公司在美国最新厂房的30倍。

  怀着显而易见的破坏性倾向的动机，这家坐落于密尔沃基的公司，在电子邮件中对《泰晤士报》说公司准备对2005年在墨西哥收购的设备进行“现代化及追加投资”，以减少其对环境的破坏。

  “墨西哥需要做的是将其回收业达到美国的标准，”哥特斯菲尔得（Gottesfeld）先生说，“而美国需要更好的对流向海外电池进行跟踪。”

- 北美自由贸易协定报告，该报告草案已进入流转程序，在2月上旬递交给了美国，加拿大及墨西哥政府，分别给予以上政府60天期限以正式提出反对其出版。

汽车业

福特在克里夫兰的投资是美国汽车制造商已经削减了劳动成本并改善生产力的标志

福特汽车公司增加了450个工作岗位并在俄亥俄州扩大了一个引擎工厂规模以满足美国市场对节能型汽车和SUV（多功能）汽车的日益增长的需求。这家排名通用汽车之后的美国第二大汽车制造商在2月21日宣称将花费2亿美金为克里夫兰的引擎厂升级来给销路最好的车型制造小型涡轮增压引擎。

这是美国汽车制造商在最近的一次在国内扩大生产，与2012年同期相比，今年国内汽车销售额增加了14%。1月，通用汽车宣布对其靠近堪萨斯城的装配厂投资6亿美金的计划；堪萨斯是通用汽车最老的工厂之一。底特律三巨头中最小的克莱斯勒公司，其在底特律的吉普厂准备增加一个三班倒。

《国际先驱论坛报》“车轮”博主比尔•弗拉西克（Bill Vlasic）称，扩容是美国汽车市场稳步回升的另一个可见性标志，在最近的衰退中汽车市场落入了历史低谷。通用汽车和克莱斯勒都在2009年宣布破产以取得政府紧急资助的资格。福特公司在没有帮助的情况下从行业经济危机中幸存，而与此同时它裁减了上千个工作岗位并关掉几间厂房以削减成本。（美国产品稳步上升，福特在俄亥俄州扩张，2月21日）

但是在弗拉西克（Vlasic）先生的眼里“浪潮已经转向了遍布全美的汽车展示厅”，促使汽车制造商在其生育的工厂中“策略性的增加产出”。他写道，在福特的例子中，2012年公司增加了大约8,000个月薪或者时薪的工作，并宣布计划在2013年雇佣大约2,200个白领工人。福特还计划将部分产品从墨西哥移到密西根工厂，那里将会增加1,200工作岗位。

“就在几年前，公司被迫将两家在俄亥俄州的引擎厂整合成为一家并关闭了一个主要的部件生产系统，”弗拉西克（Vlasic）写道。“在克里夫兰的投资标志着福特和其他汽车制造商自衰退以来如何削减了美国的劳动成本并改善了生产力。”

- 在福特在国内增加工作岗位和生产的同时，弗拉西克（Vlasic）先生说它也在快速的降低欧洲分部的成本。先前在西班牙生产公司2升Ecoboost引擎并将之运往美洲的工人，将被调配到附近的装配工厂，该工厂接手了即将关闭的比利时工厂的工作。

  福特美国地区的主管韩瑞麒（Joe Hinrichs）告诉“车轮”博客：与克里夫兰的汽车联合工会达成的新协议为在这里的扩张铺平了道路。工厂目前雇佣了大约1,300名工人。

  “这是为了服务美国的更多的需求，”韩瑞麒（Hinrichs）先生说。“同时，凭着我们极具竞争力的劳动协议，我们能将业务从西班牙和墨西哥带来【这里】。”

其他汽车行业新闻.....

- 消费者对机动车辆的需求带动了美国制造商的生意。3月1日公布的2月销售数据显示通用汽车公司，福特汽车公司，克莱斯勒集团有限责任公司，和丰田汽车公司都公布了盈利，其原因是低利率和高信用额度使得经销商能吸引购买者。

  根据沃德汽车集团报告，一月的轿车和轻型卡车的销售的年度率达到了1,520万，而一个月之前是1,530万。11月到1月是5年以来美国汽车行业最强劲的三个月。

- 德国汽车制造商宝马公司在2月16日作出召回声明——有迹象表明电池线连接器可能产生故障——包括在美国和加拿大销售的570,000辆1系列，3系列，和Z4新型车。据美国国家公路交通管理局（NHTSA）称，某些车型的连接器和某个保险丝盒将会逐渐失灵，可能会破坏车前部的外挂式电池和保险丝盒之间的电路连接。电力可能会丧失，造成引擎莫名熄火。

  宝马在递交给美国国家公路交通管理局的文件中称故障源于电池线和保险丝盒之间的松动。宝马称其了解在加拿大曾有一起小的碰撞事故是由该故障引起，但是没有伤亡。在3月公司开始通知车主——504,000美国车主，65,000加拿大车主——经销商将免费替换电池线连接器并将其固定。

  宝马3系列是美国最受欢迎的车型，在小型豪华车市场中占支配地位。公司去年在美国销售这一系列车达100,000辆。

钢对抗铝

由于燃油里程效率目标的临近，高科技高强度钢材产品将加速对抗暴发户

根据去年敲定的规定，在2025年之前，在美国行驶的轿车及轻型卡车的新车型的燃油效率标准必须达到54.5英里/加仑。

2月12日，美国钢铁集团（匹兹堡）盖里工厂的钢板质保经理罗伯特•艾维斯（Robert Ives）在钢铁技术协会（AIST）中西部会议上发言称，整个行业需要引进第三代的高科技高强度的钢产品来营销，以和铝合金产品竞争，因为在轻金属在汽车产品中的作用变得越来越显著了。

正如Bowdeya Tweh在《西北印地安那时报》所报道，艾维斯(Ives)先生说之前与汽车制造商进行的3个月的讨论中包含未来三年用何种材料的决定，因为公司将计划未来3到5年他们车队的外观。

高科技高强度钢材融入了一部分产品的锻造和处理中以使得钢材不仅强度变大，与普通级别的钢材相比分量更轻。然而，Tweh先生评论——在钢材“还没有离开其在汽车产品材料中的统治地位”的同时——行业代表和顾问称其他材料的市场份额正在增长，尽管钢铁公司努力研发新的系列产品以减少重量以及能满足对安全的需求。（“尽管有竞争，钢铁对汽车产品仍有重要意义，”2月16日）

“我们相信下一代的轿车将会伴随着很多的铝合金面世，”艾维斯（Ives）先生在印第安那州的霍巴特的AIST会议对上超过350个人说，“我们不久即将会看到那些东西。”

咨询公司Ducker Worldwide（密西根州，特洛伊）在2012年公布预测称，到2025年轻型汽车中钢材的所占重量将会减少11个百分点，到占46%。而铝合金所占比重将会翻倍，达到16%。

- 就在同一时期，高科技高强度钢材制品被期望从每辆车194磅增加到375磅。“那是很多的钢材，” 迪克•舒尔茨（Dick Schultz），Duck公司在匹兹堡项目的咨询师，告诉Tweh先生。“但是没人喜欢丢失市场份额。”

  舒尔茨（Schultz）先生说，较小的汽车可以通过采用改变引擎的方法来达到燃油里程效率目标；但是汽车制造商正越来越多的把目光投向将铝合金和其他包括镁在内的材料应用到卡车上。

- 连续两年，财富杂志将美国铝业公司称为世界上最受尊敬的金属公司。坐落于匹兹堡的美国铝业公司，自从财富杂志从1983年开始每年为“最受尊敬”的公司排名以来，这家全球最大的铝合金制造商一直榜上有名。选择方式主要通过对管理人员和董事的调查，以及行业分析师对公司的评级。

钢铁业的其他新闻.....

- 2月27日，阿拉斯加钢铁公司称碳扁钢新订单的底价每吨将至少涨50美金。这家位于俄亥俄州西切斯特的平轧碳钢、不锈钢及铁芯硅钢的生产商没有给出涨价的理由。但是实时通讯《钢铁市场更新》曾报道美国钢铁公司将其所有的扁钢制品都提价了至少50美金/每吨，阿拉斯加钢铁公司明显是在跟风。

  投资银行Dahlman Rose & Co的分析师安东尼•利茨托(Anthony Rizzuto)告诉路透社美国钢铁公司用这种方式领导涨价是非同寻常的。他表示此举应该至少应该使得短期内下跌的价格在一个宽幅震荡的市场上保持稳定。

“上一次美国钢铁公司带头行动是在10月中旬，当时价格直线下跌，”利茨托（Rizzuto）在客户报告中写道。“该举措有效的标志着底部，牌价几乎立刻上升了。”

❖ 2月26日的报道称南美米纳斯吉拉斯钢厂，该厂占有巴西出产的钢铁的28%份额，将在三月上涨其对分销商的钢铁价格。坐落于贝鲁奥利藏特的米纳斯钢铁公司，将部分钢铁制品的价格提高了6%-12%，桑坦德银行分析师在对客户的说明中说。这是米纳斯钢铁公司今年的第二次涨价，在一月它曾对分销商进行了平均5%的提价。

同样在2月26日，美国版的路透社报道了美国美林银行分析师的观点即扁平钢制品的潜在价格将上涨而且更高的进口关税将给巴西钢铁制造商打气，但是诸如此类的发展通常都是定价。

“虽然这对巴西扁平钢的参与者来说是绝对利好，但我们质疑可持续性并认为这次涨价未必能得到全面的实施，”分析师Thiago Lofiego在客户报告中如是说。

技术

一个获奖的新金属产品会期望如何在实验室之外开展经营呢?

“金属是研究材料中最重的，但是发明一种新金属使之能在市场上引发轰动则是非常困难的。

保罗•利文斯通（Paul Livingstone）在《研究与发展》（R&D）（作为行业研究创建于1959年）中描述一项技术，事实上，引起如此轰动。那就是AFA：氧化铝成型奥氏体钢，是位于田纳西州的橡树岭的橡树岭国家实验室（ORNL）的智慧产物，该材料在2009年获得R&D100奖。

该杂志赞助该奖项以鉴别某年度技术上最有意义100项新产品。调查AFA的商业进程，杂志发现成功的许可协议以及其在现实生活中的应用，用利文斯通（Livingstone）先生的话来说，“对开发者来说是种意外的惊喜。“

《研究与发展》在最近的事件中回顾了他们跟踪一种方案，该方案能保留不锈钢的可焊接性和可塑性而无需复杂的工艺和昂贵的镍材料。ORNL团队在2008年宣布达到了他们的目标。（“展示他们的金属”，2月15日）

利文斯通（Livingstone）先生总结称，该过程能引发保护性铝氧化外层而无需添加氧化物。这项违背直觉的改进可这样评价——加强型添加剂为钛和钒合金被省去了。

该过程产生了一种抗高温氧化物（腐蚀）物质，该物质要强于或等于50摄氏度到200摄氏度之间的传统不锈钢。

蠕动性，据说在700-800摄氏度间最佳，非常适合运用在诸如涡轮之类的机械中。另外，该材料在能量转换和化学处理系统中能承受强氧化环境。

❖ 根据对AFA所作的追踪调查，结果同样也非常让人满意。在2010年，橡树岭科学家成功制造了可用于先进的涡轮机换热器上的AFA钢箔片。

3片测量厚度大约在100微米的箔片在测试中表现良好，在温度达到900度时形成了化学性稳定的外部氧化铝。样品暴露在65千瓦的微型涡轮下2871小时后，如表格所显示，氧化物也在可接受范围内。测试的一部分是为商用箔批选择材料。在2011年，一家涡轮制造商首次采用其为商用材料。

同样在2011年，木工技术产品公司（宾夕法尼亚州Wyomissing），一家不锈钢制品和特种合金制品的生产商，被授权AFA技术。该公司的意图在橡树林国家实验室研究的基础上发展自己的商业产品。

电信业

社交媒体在美国: 只顾可登录性的和影响力而不计宽带的接入和成本

在11月14日至12月9日期间，皮尤研究中心为了“互联网和美国人的生活项目”对1800个美国人作了电话调查。由于受访者中亚裔美国人的数量过少，难以得出可靠的结论。这个坐落于华盛顿的无党派智囊团将这个类别排除在2月14日公布的报告之外。

皮尤中心发现——毫不意外——83%的18-29岁的互联网用户使用社交媒体。在美国每十个互联网用户中有将近7个使用“脸谱”（Facebook）。微博网站Tumblr吸引了6%的用户。

皮尤在社交媒体应用的人口统计中发现的更有趣的是：

❖ Twitter和新兴平台Instagram的声望在美国黑人中迅速崛起。大约26%的黑人互联网用户登录Twitter，远远超过白人（14%）和西班牙裔（19%）。在2011年8月，18%的黑人互联网使用者使用Twitter。美国黑人使用Instagram（23%）同样超过了西班牙裔（18%）和白人（11%）。

❖ 女性使用Instagram的人数大大超过男性：16%对比10%。社交媒体应用中的性别差异最显著的是Pinterest，一个在线的“转接板”。25%的美国女性互联网用户对比5%的男性。美国50岁以下的白人妇女及其热衷于它。总而言之，15%的互联网用户曾尝试虚拟剪贴板网站。

❖ 在所有的组中，年轻的和城市里的Twitter使用者大大超过相对应的年长者和乡村居民。但是无论性别，教育程度，收入水平，使用率通常稳定在14%-17%。

电信业其他新闻.....

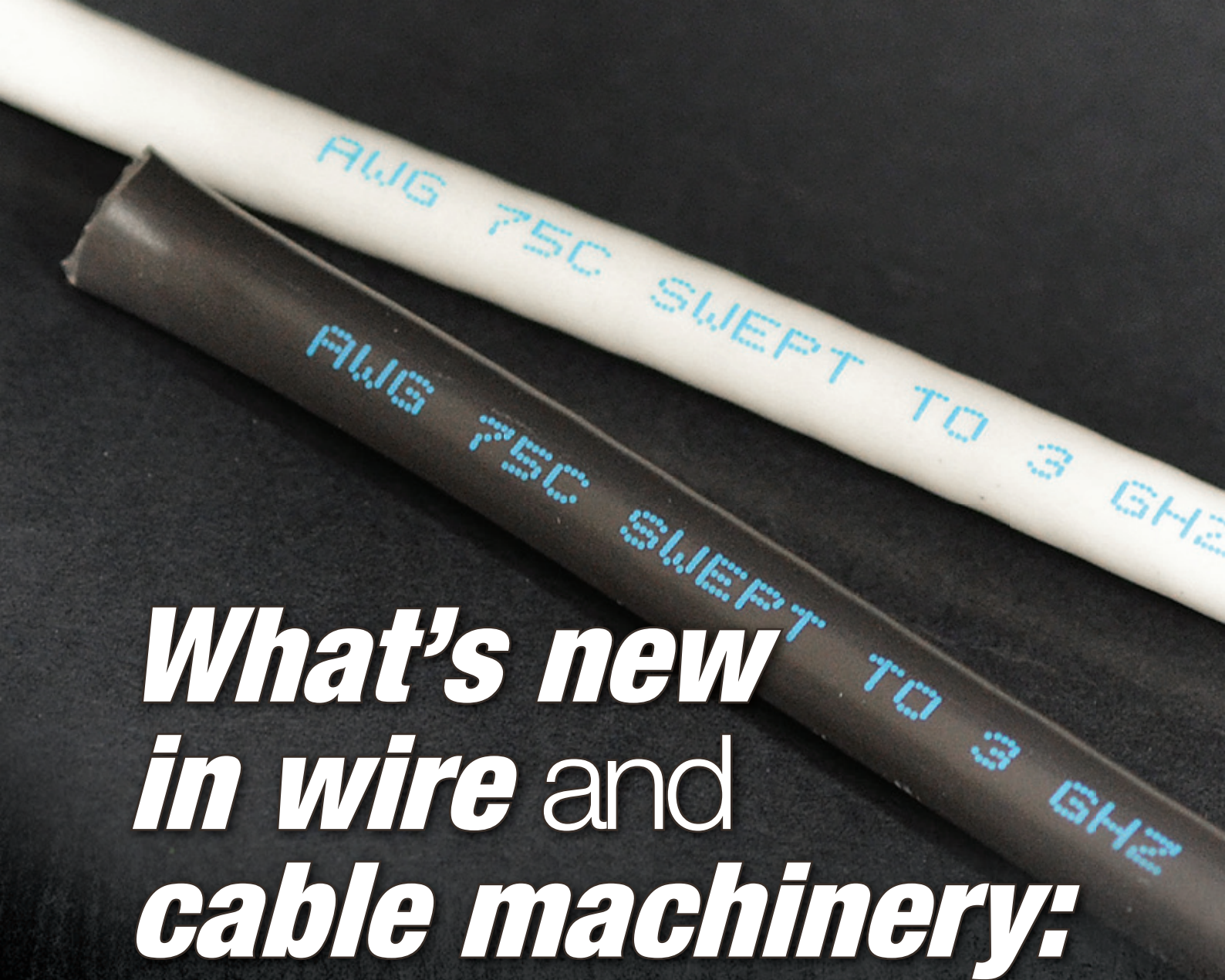
❖ 在于2月25日-28日在西班牙巴塞罗那举行的世界移动通讯大会的第二天，三星电子的总裁对《华尔街日报》进行回击。该报称三星在谷歌安卓生态系统中的统治地位是两家公司关系紧张的源头。

“我的理解是我们是很好的合作伙伴，我们建造了强大的产品提升了生态系统，”三星移动设备美国公司的组合计划及产品营销部的副总尼克•迪卡洛（Nick DiCarlo）告诉《激情无线》（FierceWireless）的菲尔•戈尔茨坦（Phil Goldstein）。他强调三星在各个方面都“对【安卓】品牌有积极的作用”。

他的评论紧随《华尔街日报》在引用了匿名消息之后，该报道称目前安卓最大的原始设备制造商谷歌和三星之间的关系日益紧张。据称谷歌总裁担忧三星变得如此庞大以至于能给谷歌压力以改变他们之间原本的关系。

并非如此，迪卡洛（DiCarlo）先生说，他评论说在“充满竞争”的无线行业关系变化莫测。“我觉得你不能说某公司在某【一】时刻是拥有统治地位的，”他说道。“你已经看到多少公司【曾】是行业翘楚而现已江河日下了。”

专栏编辑：Dorothy Fabian



What's new in wire and cable machinery:

wire production and cable making machinery

Wire and cable machinery must deliver on two imperatives above all: precision and productivity. And it does, reliably and repeatedly. Closely controlled quality is taken for granted, which is only as it should be in the highly developed engines of a mature and rigorously tested industry.

Long after the period of the early giant strides, the technology of wire and cable making is still advancing, but by way of enhancements to capability.

In announcing its latest innovation — a faster and safer cable-pulling method that also cuts down on waste — a leading maker of electrical wire compared it to "what the iPod did for Apple." To a wire and cable maker alert to the smallest advantage in a fiercely competitive marketplace, the comparison will not seem very wide of the mark.

Niehoff multiwire drawing technology

There is an increasing demand for wires made of aluminium and aluminium alloys. For weight reasons overhead power lines are made of aluminium wire, mostly reinforced with steel or composite material wires. In order to reduce weight and to replace the expensive copper material, also in the automotive industry aluminium and aluminium alloy wires are increasingly in demand.

More than ten years ago, Maschinenfabrik Niehoff started to develop both aluminium rod wire drawing technology and aluminium multiwire drawing and annealing technology. Because aluminium oxidises very quickly at higher temperatures if air and moisture are present, Niehoff's proven copper wire drawing and processing technology required certain process modification.

An ideal manufacturing line for the production of both round and trapezoidal-shaped aluminium wires required for overhead power lines is the electronically controlled MSM 85 type rod breakdown machine with integrated RA 501 continuous annealer.

The MSM drawing machines were developed to draw wires made of copper or aluminium, and their respective alloys, as well as other special materials like superconductor wires to a finish diameter from 1mm to 4.5mm while the RA 501 continuous annealers are specially designed for the inline annealing of aluminium and aluminium alloy wires.

The line control system minimises slip throughout the drawing and annealing process. It is also possible to work with different wire elongations for each draft according to the wires' material, properties and shapes. Capstans not used can be switched off. The total energy consumption of MSM machines is up to 20% lower than conventional rod breakdown machines.

The MMH multiwire drawing technology, initially developed for copper wire and introduced to the market in 1985, was also adapted to the characteristics of aluminium. The constructive outcome has been the MMH 104 / RMA 201 type drawing line.

One of the differences between the MMH 104 and the MMH version for copper wire is the die holder with drawing capstan spray, which is designed specifically to address aluminium wire drawing requirements.

The machine can be operated using drawing oil or drawing emulsion, and two drawing compound feed systems can be attached. The machine is also equipped with a suction unit for removing oil dust from the drawing chamber, which is returned to the drawing compound circulation system by a return path. The machine is plugged with an RMA 201 type continuous resistance annealer specially designed for round aluminium and aluminium alloy wire with single driven contact pulleys working under protective gas.

Annealing is realised by the two-zone annealing principle, which promotes the economical and ecological consumption of annealing current. Annealing paths have been kept short, and the entire wire path right up to the end of the annealing process is completely encapsulated from the outside to prevent oxidation on the wire surface. Nitrogen is used as protective atmosphere.

To provide the best match between wire throughput speed and the different properties of the wire alloys, every contact sheave is driven by its own AC motor. An automatic cleaning device for the contact pulleys and further constructive features regarding the wire path ensure a long service life of the contact pulleys. The individually cooled wires leave the annealer with a residual lubrication layer and can be spooled directly onto plastic spools, eg, the spools of the Niehoff Package System (NPS). Because of their lubrication the wires can be paid-off at high speeds without risk of damages.

An MMH 104 / RMA 201 drawing line is designed to draw simultaneously 8 or 16 wires with a maximum wire feed diameter of 2.5mm in 23 drafts to a finish diameter of 0.15 to 0.60mm. The maximum operating speed is 36m/s.

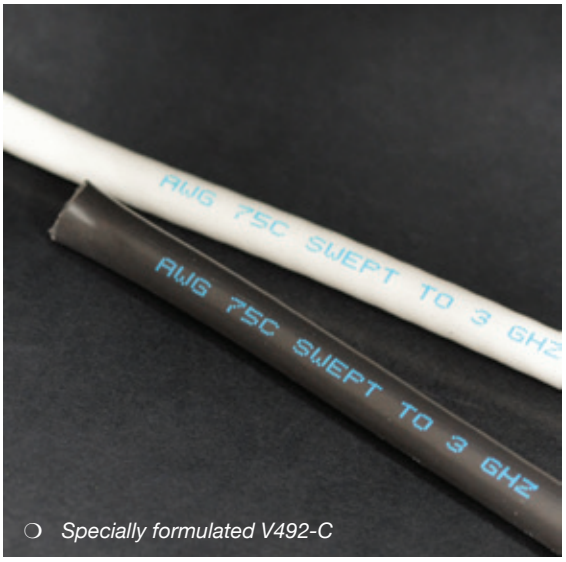
In the case of 16 wires, the wires can be split to 8 plus 8, 7 plus 7 or 16 wires on one spooler. The further processing of the wires can be realised on Niehoff's double-twist bunching machines of the D series. A typical line for the pre-stranding of the individual components for battery cables is composed of three pay-offs for 800mm spools, 2 x 16 wires and 1 x 8 wires (16 + 16 + 8), plus one D 801 double-twist bunching machine specially adapted for the manufacturing of aluminium wires.

Maschinenfabrik Niehoff GmbH & Co KG – Germany
Website: www.niehoff.de

❍ *MMH 104 / RMA 201 type multiwire drawing line for aluminium and aluminium alloy wires*

New inks for 1000 line

With specific customer requirements and applications in mind, Videojet introduced two new inks for its 1000 line of continuous ink jet printers: V492-C and V402. Designed for the Videojet 1710 high contrast ink printer, V492-C ink is specially formulated to adhere to a wide variety of extruded pipe, hose, cable and wire substrates.



❍ *Specially formulated V492-C*

These products are typically constructed of plastics including PVC, LDPE and HDPE in various colours. The colours help designate compliance to industry regulations, offer brand differentiation, identify quality standards and can provide visual cues important for accurate construction or assembly.

Videojet's V492-C light blue ink can achieve optimal contrast across the widest range of substrate colour variations, thereby increasing the versatility of the ink jet coder, eliminating the expense of switching to different inks, and/or minimising the need for "spare" printers dedicated to specific colours. V492-C ink provides exceptional transfer-resistance and adhesion. It is also sun/UV fade resistant – which is important for temporary outdoor exposure applications such as those at job sites or those in temporary outdoor storage at a manufacturer's plant.

For use on high-speed production lines, V402 is suitable for PVC plastic substrates that require fast dry times. With less than one second of dry time on cold PVC material, Videojet's V402 ink dries 25 per cent faster than the fastest drying ink previously available for Videojet's 1000 line of continuous ink jet printers. This ink formulation resists smearing on coded cables while providing good adhesion. As a secondary application, this dark grey ink can prove advantageous when lower contrast, lower visibility codes are desired for building materials, consumer products or parts assembly applications – especially where production codes are needed but only for infrequent or obscure reference.

Videojet – USA **Website**: www.videojet.com

Quick-change system for highest quality

For many years Sai Extrumech Pvt Ltd has been supplying crossheads and extrusion tooling to the cable industry.

Continuous improvement in the production process and the increase in the requirements of its customers to help the company to develop products of highest quality.

❍ *Continuous improvement from Sai Extrumech*

Recently, less change over time crossheads for extrusion lines have been added to the product range. The quick change system crossheads' manufacturing range is up to 45mm cable. The approximate downtime for the extrusion line is only five minutes.

State-of-the-art sintering technology and accuracy in concentricity, within 0.0005mm, gives the product the highest performance during cable manufacturing.

Each of these manufactured tips and crossheads is individually engineered with unique applications expertise, and then 100 per cent tested concentricity verification to ensure proper wire centring. The end product will be a wire having uniform insulation thickness as well as precise conductor centring that provides the correct electrical characteristics in the finished product.

Sai Extrumech Pvt Ltd – India
Website: www.saiextrusion.com

Busy time for Shree Ambika

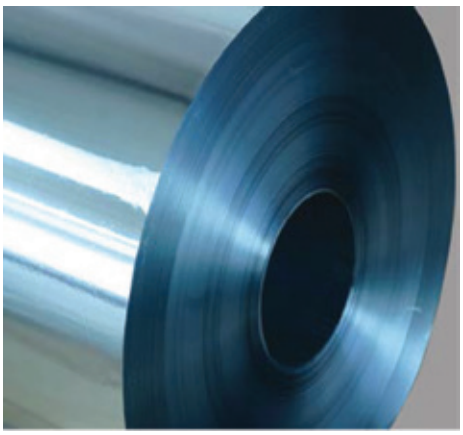
Shree Ambika Cable has been manufacturing cable and conductor machinery in India since 1992, and has developed and supplied rod breakdown machines, bow type skip stranders and bobbin tubular machines with or without pre and post forming.

Recently a 91 bobbin rigid stranding machine with automatic batch loading bobbin size 630 DIN has been supplied and commissioned by Polycab Wires Pvt Ltd, Halol, India's largest manufacturer of power cables.

❍ *Shree Ambika Cable has been manufacturing in India since 1992*

The company has also supplied them a double rod breakdown machine, single rod breakdown machine for aluminium and copper, 12 bobbin tubular, and 12+18 bobbin tubular machines.

Shree Ambika Cable Machine Pvt Ltd – India
Website: www.cable-machine.com



New premises for Besel

Besel Group has been a producer and converter of flexible materials for technical applications since 1975.

The company processes 800 tons of films, foils and tapes every month from its new 42,000m^2 premises, which is equipped with the latest converting technology.

The company is ISO 9001 certified.

❍ *Annealed pure aluminium tapes for cables*

Besel – Turkey **Website**: www.beselfoil.com

Specialising in non-ferrous wire drawing lines

Sictra helping keep you on track

With the increasing requirement for high speed railways, the demands being placed on the technical features of the shaped trolley wire are also becoming more stringent. For example; the high tensile copper alloys such as copper silver and copper magnesium which are used to extend the life of the line and to withstand the higher friction due to the increased train speed.

Sictra, a division of Cortinovis Machinery specialising in drawing lines for non-ferrous wire for many years, manufactures a dedicated drawing line to draw shaped wire for trolley lines.

This proven Sictra technology continuously evolves to match the increased cross sections of the inlet rod as well as the higher tensile strength requirements of the finished product.

A typical line configuration to produce 150mm^2 trolley wire consists of the following:

- Copper rod pay off stand, rotating type, for up to 6 metric ton coils
- Heavy duty adjustable wire straightener
- Four capstan drawing sections with up to 1,200mm capstan diameter
- Capstans are internally water cooled and with further spray emulsion outer cooling
- Transmission with heavy duty helical gears
- Die holders with guiding die (Sictra unique design) and separate drawing oil cooling system
- High precision portal take up with self traversing movement
- Dedicated process software manages the speed synchronisation of the four capstans via encoders controlling the amount of slip. All the motors are AC utilising the most modern Siemens Sinamics Inverters with "Drive CLiQ" automatic interface parameterisation

Copper magnesium is the preferred alloyed-copper for high speed rail applications in many countries, as it provides good electrical conductivity and high tensile strength and good creep resistance. Additionally copper magnesium is an environmentally benign material with no toxicity hazard. From the manufacturing point of view, there isn't such a big difference in the drawing process, but the main difficulty of making trolley wire with copper magnesium alloy is to be identified in the production of the rod for the following reasons:

- The light and volatile nature of magnesium
- Magnesium's propensity to form slag when molten
- The need to maintain a very precise alloy composition in the wire rod

Copper magnesium trolley wire is now widely used in western Europe, including on the high-speed TGV line from Brussels to France, Netherlands, Germany and Spain. Continuous innovation of products to fulfil specific customer needs, combined with over 40 years of field experience, enables Sictra to offer practical solutions consistent with the high quality standards in the non-ferrous wire industry.

Cortinovis Machinery America Inc – USA
Website: www.cortinovisamerica.com

高质快速更换系统

多年来Sai Extrumech有限公司一直为电缆产业供应十字头挤出模具。

在生产过程中不断改进和增加其客户的要求，有助于公司开发高质产品。

❍ *Sai Extrumech 的不断发展*

最近一段时间，更短更换时间的挤出模具的十字头已添加至生产范围。快速更换系统十字头的生产范围已经达到45mm的电缆。挤塑生产线的大约停机时间只有5分钟。

该系统达到最先进的烧结工艺和0.0005毫米以内同心精度，因此，产品可以在电缆制造过程中达到最高性能。

每个制造的模具头和十字头都单独设计，然后经过100%的同心精度验证，以确保具有独特的应用程序的专业知识，然后100%测试的同心度验证，以确保精确的线芯。成品线体的绝缘层厚度均匀，线芯精确，且成品可以提供准确无误的电气特性。

Sai Extrumech Pvt Ltd – 印度
网址: www.saiextrusion.com

尼霍夫多头拉拔丝工艺

对铝和铝合金金属丝的需求也一直在不断增加。由于重量原因，架空线使用铝线制成，大多数再用钢丝或复合材料金属丝进行加固。

为了减轻重量和代替昂贵的铜材料，汽车工业中铝和铝合金金属丝的需求日益增长。

十几年前，机械制造商尼霍夫开始开发铝杆拉丝工艺和铝多头拉拔和退火工艺。空气和水分的存在的情况下，高温下铝的氧化过程非常迅速，尼霍夫开始研究铜丝拉拔技术以及一定需要改进的加工工艺。

生产架空线需要的圆形和梯形铝丝的理想生产线是电子控制的MSM85型棒状大拉机，配有集成RA501型连续退火炉。

MSM拉丝机的开发是用来拉拔铜丝或铝丝、其各自的合金，以及其他类似超导线的特殊材料，将其制成直径从1.0毫米到4.5毫米的线体。而RA501连续退火炉是为铝丝和铝合金丝的内联炉退火而专门设计的。

该生产线控制系统最大限度地减少整个拉拔和退火工艺过程中的是失误。另外，也可以根据金属线体的材料、性质和形状，为每款设计加工处理不用线体伸长率。可以不使用绞盘，并将其关闭。MSM机的能源消费总量要比常规大拉机低达20%。

MMH多头拉丝工艺最初开发用于铜丝，也适用于铝丝的特点，并于1985年引进市场。建设性成果是已经使用MMH104/RMA201型拉拔生产线。MMH104和MMH版本加工铜丝的区别之一是拉拔绞盘喷水器的下模座，MMH104下模座是为处理铝丝拉拔而专门设计的。

本机器可以使用拉拔油和拉拔乳进行操作，可以连接两套拉拔复合送丝系统。另外，机器还配备用于拉引室除油去灰的吸扬设备，并通过一个返回路径将其返回到拉拔复合循环系统。本机器插在RMA201型连续电阻退火炉上，该型退火炉专门为圆形铝丝和铝合金丝而设计，单机驱动接触轮在保护气体下运行工作。

❍ *MMH104 / RMA201型铝及铝合金多头拉拔线*

根据双区退火原理来实现退火，这提高了退火电流的经济和生态消耗。退火路径尽量缩短，并且整个线路一直到达退火加工过程的末端，并从外部被完全封装以防止线体表面被氧化。使用氮气作为保护气体。

为了达到线体吞吐速度和不同材质合金金属丝之间的最佳匹配，每一个接触轮由其本身的交流电机驱动。

用于接触轮的自动清洗装置和线路的进一步建设性功能用于确保接触轮的使用寿命变长。个别冷却的线体离开带有剩余润滑层的退火炉，可以直接缠到塑料线轴上，例如：尼霍夫包装系统（NPS）的线轴。

由于其经过润滑，这些线体可以以高速行驶，并且没有损坏风险。

MMH104/ RMA201拉拔生产线的设计是为了同时拉拔8根或16根金属丝，其最大送丝直径为2.5毫米的23款设计绘样，加工后外径为0.15...0.60毫米。最大运行速度是36米/秒。

在16根线体的情况下，线体可以被分割为8加8，7加7, 或16根线体缠在一个线轴上。线体可以在尼霍夫倍捻合股机D系列上实现。蓄电池缆线各个组成部分的卧式标准生产线包括3个800毫米线轴放线机，2乘16根线体和1乘8跟线体(16加16加8)，外加1个特别适用于铝丝制造D801型倍捻合股机。

Maschinenfabrik Niehoff GmbH & Co KG – 德国
网址: www.niehoff.de

伟迪捷1000系列使用的新款油墨

根据客户的特定需求和应用而设计，伟迪捷推出了两款1000系列连续式喷墨打印机使用的新型油墨：V492-C和V402。

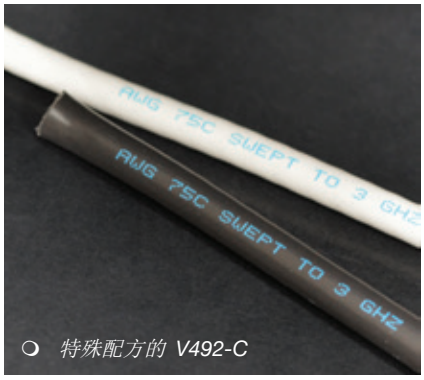
V492-C油墨专为伟迪捷1710系列高对比度喷墨打印机而设计，并特别配有各种各样的挤压管，软管，电线和布线板。

这些产品通常由塑料制成，包括PVC，LDPE和HDPE等各种颜色的塑料。指定的颜色符合行业法规，有助于提供品牌差异化，确定质量标准，并能提供对精确构建及装配重要的视觉提示。

伟迪捷V492-C的淡蓝色油墨可以实现最佳的对比度，可以最大范围的跨越基板颜色变化，从而增加油墨喷墨编码器的通用性，同时在切换到不同油墨的时候消除消耗，和/或将专用颜色“备用”打印机的需要最小化。伟迪捷V492-C的油墨提供出色的抗转印性和附着力。

而且，该款油墨还抗阳光/UV褪色 ——这在临时户外曝晒使用的情况下非常重要，例如：那些工作地点在户外或临时在户外储存的厂商。

如果用于高速生产线，V402最好是使用需要快速干燥的PVC塑料基板。冷却



特殊配方的 V492-C

PVC材料的干燥时间不到1分钟。伟迪捷V402油墨的干燥时间比以前伟迪捷1000系列连续喷墨打印机的可用油墨速度要快25%。

这款油墨配方涂在编码电缆上时有抗涂抹行，并有良好的附着力。

作为一个次要的应用程序，当对比度较低，能见度较低，并且建筑材料、消费品或零件装配应用需要进行编码时，暗灰色墨水可以发挥其优势——尤其当生产代码是必要时，而不是仅仅作为少量或模糊参考。

Videojet – 美国
网址: www.videojet.com

Besel的新厂房

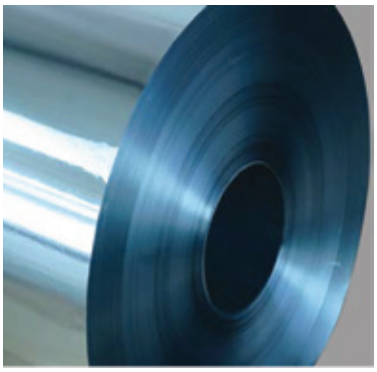
Besel集团自1975年以来一直是技术应用柔性材料生产商和加工商。

公司新厂有42000平方米，还配备了最新的加工技术，每月处理加工800吨胶片、金属箔和磁带。

公司已通过ISO9001认证。

Besel – 土耳其
网址: www.beselfoil.com

用于电缆的退火纯铝带



Sictra助您在轨道上行驶

随着高速铁路需求的不断提升，对成形架空线技术特征的要求也随之越来越严格。例如使用高拉伸强度的铜合金(如：银铜合金、镁铜合金)以延长线体寿命，能够承受列车高速行驶带来的较高摩擦。

作为意大利Cortinovis机械公司的一个部门，Sictra多年以来致力于从事有色金属架空线的研究，并生产有轨及无轨电车路线专用的架空线用以拉拔电车路线的异形丝。Sictra一直在不断发展，以满足嵌入拉杆截面的增加以及成品对更高拉伸强度的要求。

生产150平方毫米 架空线的标准线体配置包括以下几个：

- 铜杆收放线架，旋转型，线圈重达6公吨
- 重型、可调节式线材整直器
- 4个拉拔绞盘，绞盘直径为1200毫米
- 内部水冷式及外部附加喷雾冷却式绞盘
- 重型螺旋齿轮式变速器
- 有导模式下模座（Sictra独特设计）和单独的拉拔油冷却系统
- 高精度的网络接口，可以实现自身导线测量运转
- 使用专用处理软件通过编码器控制滑移量来管理4个绞盘的运转速度。所有的电机是交流电机，使用了最先进的西门子Sinamics 变频器，该变频器使用自动接口参数的Drive CLiQ许多国家在高速铁路的应用上首选的铜合金是镁铜合金，因为其导电性能良好和拉伸强度较高，以及其良好的抗蠕变性。此外镁铜合金也是一种对环境无毒无害的材料。

从生产的角度来看，在拉拔过程中没有太大的差别，但在使用镁铜合金生产架空线的主要困难被定位在生产拉杆上有以下几个原因：

- 镁本身很轻且不稳定性
- 熔化时镁会形成镁渣
- 生产拉拔杆时合金成分的比例要非常精确

现在在西欧镁铜合金架空线的使用非常广泛，包括从布鲁塞尔到法国、荷兰、德国和西班牙的高铁。Sictra不断创新产品以满足客户特定需求，且有着超过40年的行业经验，二者的结合使Sictra可以提供切实可行的解决方案，以符合在非铁金属丝行业的高品质标准。

Cortinovis Machinery America Inc – 美国
网址: www.cortinovisamerica.com

致力于从事有色金属丝架空线的研究

wire Russia 2013

Moscow – capital city of one of the most buoyant economies in the world – plays host to wire Russia 2013 in June.

More than 200 companies from the wire and cable industry are expected to descend on the ZAO Expocentr Exhibition Centre from 25th to 28th June.

Organised by Messe Düsseldorf, the exhibition is the ideal platform for companies to showcase their technology in Eastern Europe, especially with more than 10,000 visitors expected to the three-day showcase.

Exhibition opening times are from 10am to 6pm daily. More details can be found on the website at www.wire-russia.com

wire Russia 2013 – Krasnaya Presnya Expo fairgrounds
Moscow, Russia 25th-28th June 2013

Alphabetical list of Exhibitors

wire Russia 2013

Maschinenfabrik Niehoff GmbH & Co KG 7-4 C08/7-4 D19
OMCG Srl 7-3 A03
Ozyasar Tel ve Galvanizleme San AS ..... 7-6 B 03
Parafluid Mineraloelgesellschaft mbH 7-3 B08
Joh Pengg AG 7-4 B03
Pioneer Machinery Co Ltd ..... 7-5 A 29
Pourtier sas Gauder Group 7-3 A06/7-3 B06
Proplast GmbH 7-4 B06
Queins Machines GmbH ..... 7-5 B 02/7-5 C 01
Reber Systematic GmbH + Co KG ..... 7-5 B 06
Roblon A/S ..... 7-5 D 18
Rosendahl Maschinen GmbH 7-3 A10/7-3 A14
RSD Technik GmbH 7-4 A07
Saizar Strapping Machines SL ..... 7-5 A 27
Rolf Schlicht GmbH ..... 7-5 C 05
SCOB - Silke Schaaf eK 7-5 A03
Setic sas Gauder Group 7-3 A06/7-3 B06
Shanghai Hosn Machinery Technology Co Ltd 7-5 A23
Shanghai Resources Industrial & Trading Co Ltd 7-5 A12
Shanghai Shenchen Wire & Cable Equipment Co Ltd 7-5 B15
Shanghai Wangxun New Material Co Ltd ..... TBA
Shenyang Jinggong Cable Materials Co Ltd 7-6 B04
Sikora AG 7-4 A10/7-4 B07
SKET Verseilmaschinenbau GmbH 7-5 B05
Southwire Company 7-3 B03
Spajic doo 7-5 D02
August Strecker GmbH & Co KG ..... TBA
Supermac Industries (India) Ltd 7-3 B02
Suzhou Forever Import & Export Corp Ltd 7-5 B13
SysKom GmbH Berlin 7-5 A11
Technodiament Ltd 7-6 C05
Tianjin Zhiyan Import & Export Co Ltd ..... TBA
Trafileria Lariana SpA ..... TBA
Traxit International GmbH 7-5 A05
Troester GmbH & Co KG ..... 7-5 C 07/7-5 B08
Ultimation/Ultimate Automation Ltd 7-6 A01
Unience Co Ltd ..... TBA
Unigel (UK) Ltd 7-6 B10
Upcast Oy 7-6 D10
VÖDKM/AWCMA Verband Österreicher Draht- und Kabelmaschinen-Hersteller 7-3 B10
voestalpine Austria Draht GmbH 7-4 A08
WAFIOS AG ..... 7-4 C 09
Walson Woodburn Wire Die Pvt Ltd 7-3 A02
Windak OÜ 7-6 D08
Wire & Cable ASIA Magazine 7-6 B05
Wire & Plastic Machinery Corp 7-3 B05
wiredInUSA Ezine 7-6 B05
WiTechs GmbH 7-4 B10
Advantage Austria Wirtschaftskammer Österreich Aussenwirtschaft Austria 7-3 A10/7-4 B05
Advantage Austria Wirtschaftskammer Österreich Aussenwirtschaft Austria 7-4 A04
Woywod Kunststoffmaschinen GmbH & Co Vertriebs-KG 7-5 C06
Wuxi Kemaite Material Technology Co Ltd ..... TBA
Yuang Hsian Metal Industrial Corp ..... TBA
Zhejiang Wanma MacroMolecule Material Co Ltd ..... TBA
Zumbach Electronic AG 7-3 B11

AESA Cortaillod

Thirty years of experience in the cable industry allows AESA Cortaillod to offer customers the benefits of its skills and complete solutions for testing and quality control of telephone and LAN cabling as well as power lines or coaxial cabling.

Acknowledged leaders within the sector, AESA is here to help you run your business with maximum efficiency by offering you the most productive solutions.

ASEA Cortaillod – Switzerland
Website: www.aesa-cortaillod.com

Anbao Qinhuangdao Wire & Mesh Co Ltd

Anbao (Qinhuangdao) Wire & Mesh Co offers armouring cable strip (tape), supplied as 50-60g/m² and 210g/m² and zinc coated on four or two sides in widths from 15mm to 100mm.

❍ *Range of thicknesses for armouring cable strip*

The cable comes in thicknesses of 0.2mm, 0.5mm, 0.8mm or 1mm. Elongation minimum is 10-30 per cent and the diameter inside the coil is 160-200mm. Outside diameter is 500-800mm.

Anbao (Qinhuangdao) Wire & Mesh Co Ltd – China
Website: www.anbao.com

Carl Bechem GmbH

Bechem develops, produces and sells high performance lubricants and additives all over the world. Its special solutions in the fields of speciality lubricants, industrial lubricants and lubricants for metal working and forming technology are based on the latest tribological knowledge.

Bechem's research and development of lubricants and additives always sets standards with regard to the reduction of friction and wear, high and low temperature properties, corrosion protection, sealing and media compatibility, especially in respect of environmental protection and toxicological innocuousness.

The basis: modern laboratory technologies, analytical methods and computer-assisted test rigs.

Besides the headquarters in Hagen, Bechem has two other production sites in Germany, in Mieste and Kierspe. In addition to that, its worldwide distribution network allows it to develop markets all over the world.

With daughter companies in France, India and Switzerland, as well as joint ventures in the USA, South Africa, Sweden and China, Bechem shows its international presence.

The quality of Bechem's products is confirmed by certification according to ISO/TS 16949.

Carl Bechem GmbH – Germany
Website: www.bechem.de

Bongard Trading GmbH & Co KG

Bongard Trading is a second-generation family business that can look back on more than 50 years of experience in new machine manufacturing as well as several decades of experience in the purchase and selling of used machines for the wire, cable and rolling industries.

This includes the design and production of custom machines, the combining of new and used machines as well as the reconditioning of used machines.

The company is committed to the highest technological standards to ensure efficient production and reliable machines, with a guarantee of intelligent design solutions, ease of operation, standard replacement parts and minimal maintenance requirements.

Bongard can also manufacture machines to your needs and specifications, and is constantly generating innovative ideas and cost-efficient solutions.

The company's strength comes from its international network and the close dialogue with customers around the world.

Bongard Trading GmbH & Co KG – Germany
Website: www.bongard.de

Borealis

With more than 50 years of experience in polyolefins and using the unique Borstar® and Borlink™ technologies, Borealis focuses on providing plastic materials to the infrastructure, automotive and advanced packaging markets across Europe, the Middle East and Asia.

Production facilities, innovation centres and service centres work with customers in more than 120 countries to provide materials that make an essential contribution to society and sustainable development.

In addition, Borealis offers a wide range of base chemicals from melamine and fertilisers to phenol and acetone.

It is a leading provider of chemical and plastics solutions and committed to the principles of Responsible Care®. Borealis employs around 5,300 employees worldwide.

Its polypropylene (PP) and polyethylene (PE) products continue to enhance society and address challenges such as providing clean drinking water and sanitation to millions of people around the globe and safe, light, energy-saving components for cars.

Borealis Group – Austria
Website: www.borealisgroup.com

CM Caballé SA

With over 60 years of experience in the design and manufacture of rotating machinery for the production of power and telecommunication cables and steel ropes, CM Caballé provides the

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❍ *Rigid strander with automatic loading system*

cable industry with a wide array of stranding, twinning, bunching and cabling machinery.

The firm is constantly developing new, high quality equipment to meet the ever-changing needs of the wire and cable industry.

The company's portfolio includes equipment for power cables (double twist stranders, rigid stranders, drum twisters, single twist stranders, bow skip stranders, tubular stranders, planetary stranders and SZ stranders); telecom and LAN cables (double twist pairing-quadding machines, single twist cabling lines, group twinners, drum twisters, shielding-jelly filling-sheathing lines and SZ stranders); steel ropes (double twist stranders, tubular stranders, planetary stranders and bow skip stranders); and ancillary equipment (payoffs, take-ups, capstans, caterpillars, taping machines and binders).

At wire Russia, the company will show a new range of rigid stranders and drum twisters that have been redesigned and upgraded in collaboration with energy cable producers to manufacture products such as compacted conductors of copper and aluminium for LV, MV, HV and EHV insulated conductors; sector conductors (Milliken) of copper and aluminium for high and extra high voltage insulated conductors; aluminium overhead conductors (AAAC, ACSR) with round or trapezoidal wires; screening with copper wires (single or multi-wire) for MV and HV conductors; and armouring with galvanised steel wires.

CM Caballé SA – Spain
Website: www.cmcaballe.com

Cortinovis Machinery SpA

Cortinovis Machinery holds a global position in designing and manufacturing of all kinds of rotating machines for power cables, telecommunication cables and steel ropes. The company, part of the Eurolls group, has subsidiaries in America – Cortinovis Machinery of America Inc – and also Brazil, Cortinovis Do Brazil, supplying customers with immediate and qualified support on-site.

In February 2011 Cortinovis Machinery SpA acquired the business and operating unit of Sictra Srl forming a corporation having two divisions:

- Drawing lines for non-ferrous (production Sictra)
- Stranding lines (typical product Cortinovis Machinery)

This gave the company complete plants for the non-ferrous wire and electric cable market.

Cortinovis Machinery SpA – Italy
Website:
www.cortinovismachinery.com

Dow Electrical and Telecommunications

As the world gets "smaller" and "flatter" the demand for power and telecommunications grows stronger – both in newly developing nations as well as in established regions. Expanding the wire and cable infrastructure is vital, but long-term investments require assurance of long-term quality.

Dow Electrical & Telecommunications provides that assurance, with a broad portfolio of high-quality insulation, semi-conductive shields, jacketing and speciality application materials that are setting new quality and performance standards in the industry, including new standards for safety, sustainability and reliability.

Experience, innovation, customer focus – these are the reasons Dow is a leader in providing technology-driven solutions for the wire and cable industry.

Dow Electrical and Telecommunications – USA
Website: www.dow.com

Esteves Group

The Esteves Group is a global company with almost 100 years of

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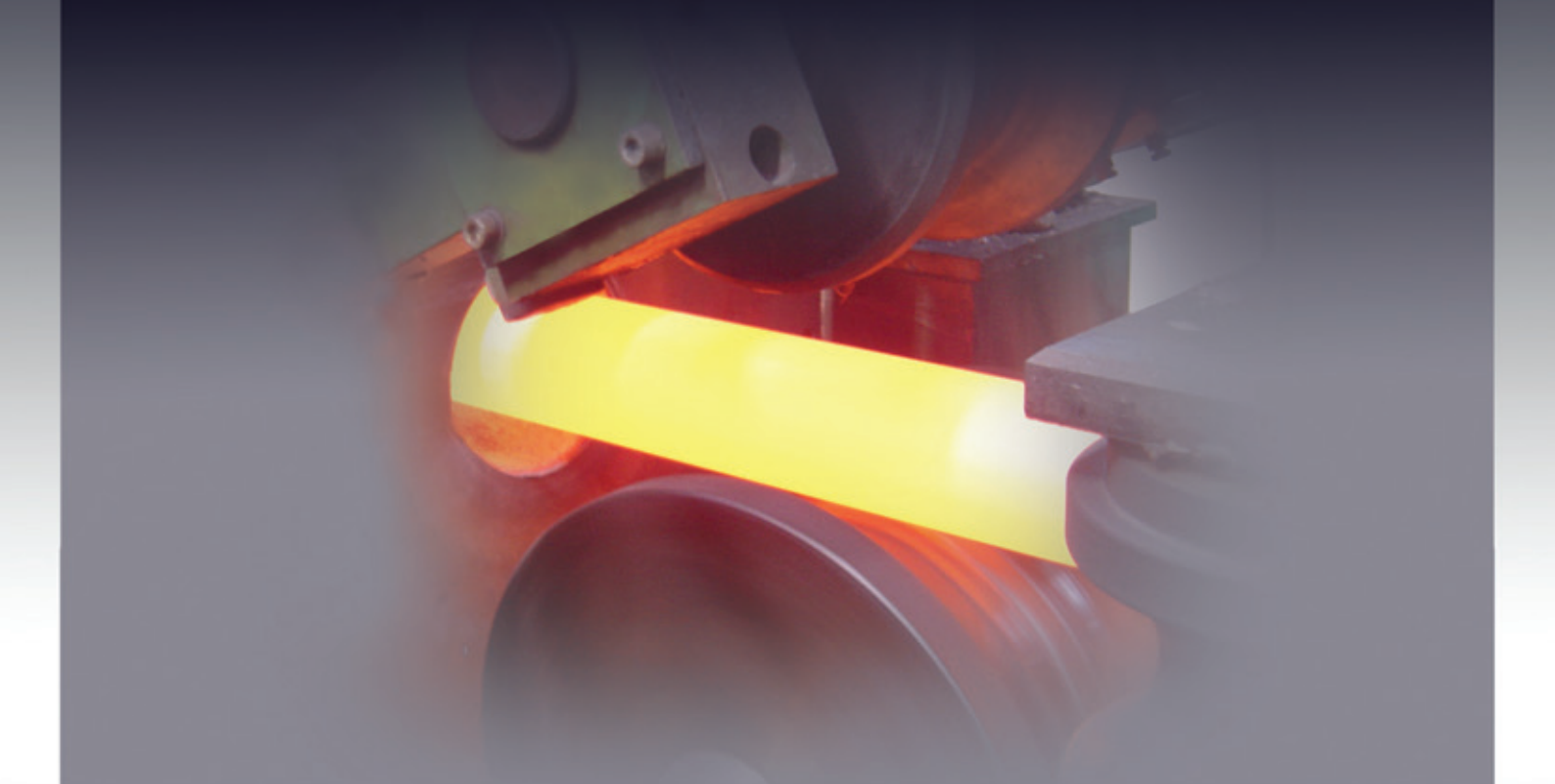
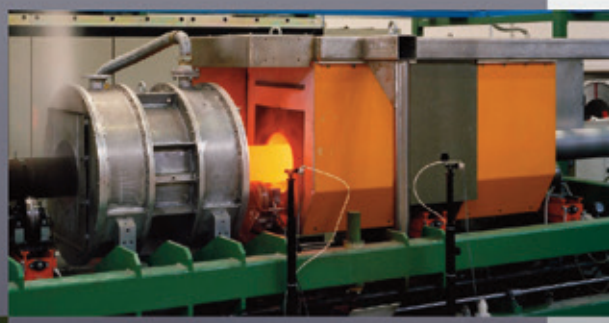
INDUCTION HAS GOT MANY ADVANTAGES...

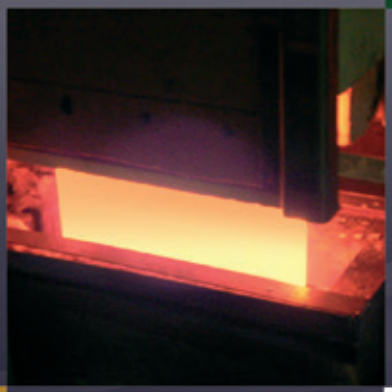


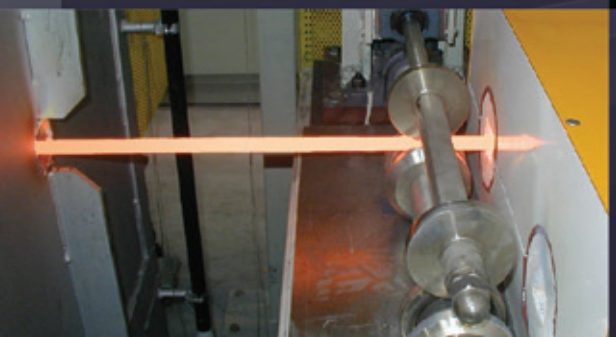
...ATE'S EXTRA ADVANTAGE!

ATE Applicazioni Termo Elettroniche guarantees its Customers the highest standards of quality, reliability and service in every stage of a project, from the feasibility study of an application through the manufacturing to the commissioning and for the whole working life of the plant.
All over the world, hundreds of ATE induction systems and equipments for the heat-treatment of wires, bars, pipes and straps prove the reliability of the technical solutions implemented and Customers' satisfaction.



High efficiency
Fast heating time
System reliability
Long-Lasting quality





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APPLICAZIONI TERMOELETTRONICHE

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expertise in the production of dies, extrusion tools, machines for die reconditioning and refurbishing services. The group is committed to continue expanding and strengthening its worldwide network of production and service facilities in order to support customers in optimising their processes.

Esteves Group – USA
Website: www.estevesgroup.com

Flymca and Flyro

For many years Flymca has been producing standard and traditional rotating machines such as rigid, tubular, skip, and planetary stranders as well as drum twisting lines, bow cablers and double twist bunchers.

The company, which produces payoffs and take-ups for bobbins up to 8,000mm/650 tons, is now also involved in the production of special equipment used for submarine, offshore and umbilical cables production, as well as machinery for steel rope manufacturing.

Flyro is also buying and selling used equipment for the wire and cable, tube and bar industry.

Flymca and Flyro – Spain
Website: www.flymca.com

Fort Wayne Wire Die Inc

Fort Wayne Wire Die has historically been the birthplace of technology that drives the wire drawing and wire die industries.

From the first wire die manufacturing equipment and processes developed in the 1930s, to the ongoing engineering advancements that have marked the industry's evolution ever since, Fort Wayne Wire Die has always stood at the forefront.

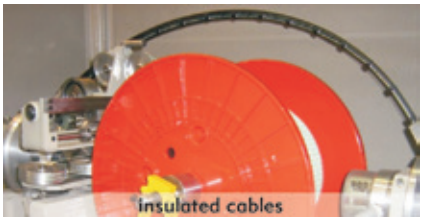
Today, with four manufacturing locations, two additional sales offices and 19 more sales rep firms positioned around the globe, Fort Wayne Wire Die extends this uniquely historic wire die engineering and applications expertise to the world.

Fort Wayne Wire Die Inc – USA
Website: www.fwwd.com

Gauder Group Inc

With over 20 years of continuous presence and after several recent major machine installations in the USA, the wire Russia show is an opportunity for the Gauder Group Inc to highlight the joint rebranding of its Pourtier and SETIC product range as a combined entity, Pourtier & SETIC of America.

Based in France, both are leaders in rotating machines for the non-ferrous wire and cable industry.



❍ *Bow technology – Gauder Group*

Gauder Group Inc develops its support and parts services (including high technology bows) to the North American market from Greensboro, North Carolina.

Gauder Group Inc – USA
Website: www.gaudergroup.com

GMP Slovakia

GMP Slovakia produces take-apart reels, including the Easykoil Plus reel.

This patented reel can also be used as a coil lifter: with lifting rings in "lifting" position, the barrel expands during the lifting operation and lifts the coil.

❍ *GMP's Easykoil Plus take-apart reel*

With lifting rings in "free" position, the barrel collapses during the lifting operation and sets the coil free.

Easykoil Plus is completely machined on the parts in contact with the wire,

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and can be customised according to customers' requirements. It can be supplied with slots in the flange to fit cardboard barrels, or with changeable flanges to make coils of different widths.

Easykoil Plus can be balanced, and to prevent wear problems due to the high rotation speed, hardened changeable bushings are recommended.

GMP Slovakia – Slovakia
Website: www.gmp-slovakia.com

Maillefer

Vitaly Meschanov, head of the Maillefer SA Moscow representative office, and his team will be joined by key personnel from Finland and Switzerland.

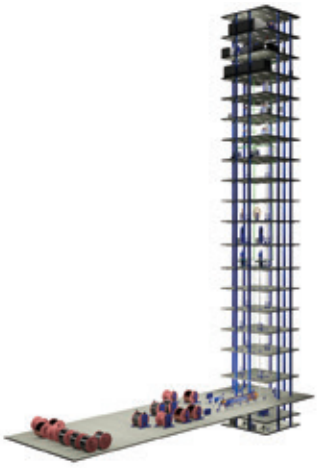
Maillefer provides complete extrusion solutions serving both wire and cable and pipe and tube manufacturers worldwide. From individual components to complete production units, it prides itself on providing maximum productivity to its customers through superior technology, know-how and services.

The product families available from Maillefer are energy cables including manufacturing solutions for producing automotive, building, rubber, LV, MV, HV and EHV cables; fibre optic cable manufacturing solutions for buffering and jacketing fibre optic cables; telecom cable making including solutions for producing telecom, LAN, coax and speciality signal cables; plastic pipe manufacturing technology; and solutions for producing heating and plumbing, medical, automotive, irrigation, water and gas pipes.

Mr Meschanov said: "Customers benefit from nearly 40 years of the company's experience in the Russian and CIS market. Our Moscow office is the region's long-term partner for wire and cable manufacturing solutions.

"As of today, BRIC countries are the main world markets both for cable manufacturers and equipment producers. Maillefer recognises this. Russia and the CIS countries occupy sizeable shares of the company's activities.

"The progress we achieve together with customers comes not only from



❍ *VCV line from Maillefer*

supply of technology and equipment solutions but also from products with high added value.

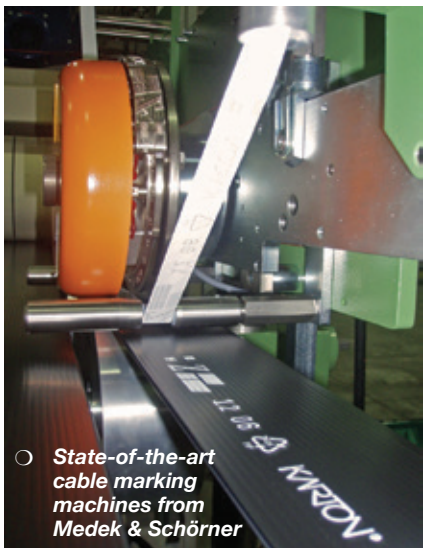
"A wide range of services and maintenance packages, product cost and materials saving solutions, insulation cleanness and quality improvements are proposed for your consideration at the show."

Maillefer SA – Finland
Website: www.mailleferextrusion.com

Medek & Schörner GmbH

Medek & Schörner will present the following state-of-the-art cable marking machines:

Cable marking machines:
- High quality gravure printers (LAN cables, control cables etc) for speeds up to 1,200m/min



❍ *State-of-the-art cable marking machines from Medek & Schörner*

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- Water misting unit for the application of fine water dust for pre-cooling of the hot wire immediately after the extruder
- Embossing metre markers/hot foil sequential metre markers for highest accuracy of length measurement (power cables, telecommunication cables, optical fibre cables, etc)
- High performance ring markers for marking telephone wires, switchboard wires, automotive cables and LAN cables
- Video system for monitoring the print quality of fast-running cable printing machines, eg allowing real-time inspection for bad quality and/or missing prints
- Laser marking system for cables

Optical fibre coating systems:
- Top speed optical fibre processing systems
- Optical fibre colour coding up to 3,000m/min
- Ring marking of optical fibres
- Tight buffering up to 1,300m/min
- Fibre ribbon production with excellent ribbon planarity and for speeds up to 1,000m/min
- CFU production of compact fibre units

Copper wire insulation with UV varnishes (enamelled wire):
- Manufacture of dimension-sensitive precision micro-flexible flat cables (FFC) using UV resins

As the only company operating in cable marking machines and optical fibre processing lines, Medek & Schörner covers virtually the entire spectrum of machines for marking cables and coding optical fibres, in particular for power, telecom and data cables.

Medek & Schörner GmbH – Austria
Website: www.medek.at

Nextrom Oy

Nextrom is a premium supplier of optical fibreglass preform manufacturing equipment, and produces fibre draw towers and associated machinery for the global fibre market using MCVD, OVD and VAD technologies.

The company is also a supplier of fibre optic cable production lines. It will present its latest advancements and technology highlights, including the latest developments for the production of fibre optic cables, energy, automotive and communication.

❍ *The SCC 100 from Nextrom*

Nextrom OY – Finland
Website: www.nextrom.com

Maschinenfabrik Niehoff and Niehoff of Russia

Maschinenfabrik Niehoff and Niehoff of Russia, Niehoff's Moscow-based branch office, will be presenting the following exhibits:
- MMH 121 + RM 161.S multi-wire drawing line
- BMV 124 rotary braiding machine

The multi-wire drawing line MMH 121 + RM 201.S is designed to draw simultaneously eg 16 wires with a final diameter of up to 0.2mm. The wires drawn on this machine are characterised by very homogeneous properties with very fine tolerances along the entire wire length and can be processed to intermediate multi-wire bundles; as the bundles are spooled onto the spools under controlled wire tension, the wires drawn on MMH type machines are suited for the highest quality strands. By using the machine spools handling is simplified, and the lower number of payoff stations results in huge savings in capital investments.

Based on a modular principle, customer-specific MMH machines adapted to each application and kind of non-ferrous metal can be built. More than 1,000 MMH lines are working worldwide.

The 24-carrier lever arm rotary braiding machine BMV 124, a heavier version of the BMV 24 model, has a

➢➢➢

Krasnaya Presnya Expo fairgrounds Moscow, Russia 25th-28th June

central passage of 55mm and can carry spools with a weight of up to 5.5kg. By means of integrated and optionally available quality assurance systems, BMV braiders can work for a long time unattended and without operator intervention. The machines are designed to process round or flat wire of bare or coated copper, aluminium and stainless steel with a single-wire diameter ranging from 0.05 to 0.3mm as well as artificial yarn and fibres. With an integrated central taping device, the braiding and the subsequent taping processes are completed in one step.

❍ *The BMV 124 rotary braiding machine from Niehoff*

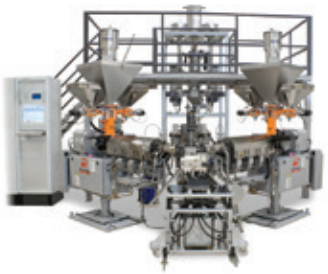
The Niehoff After Sales Original + provides expert know-how, a remote maintenance service, modernisation and upgrading measures, machine operator and maintenance training courses and the fast and reliable supply of wear and spare parts.

Especially developed machine components can also be obtained from the Niehoff After Sales Original + service which helps wire and cable makers reduce operational costs. Outstanding examples are the 'just plug and play' ECO-Bow for Niehoff's D type single bow design double twist bunching machines and the new generation of contact tubes for continuous annealers.

Maschinenfabrik Niehoff GmbH & Co KG – Germany
Website: www.niehoff.de

Rosendahl Maschinen GmbH

Rosendahl supplies hi-tech wire and cable manufacturing solutions, which offer first class products and turnkey solutions in the fields of extrusion, corrugation, fibre optic cable as well as SZ stranding.



❍ *Rosendahl Russland is ideally located in Moscow to serve the local market*

Out of these competences Rosendahl developed the product segments power cable, automotive wire, LAN cable, coaxial cable and fibre optic cables. Rosendahl's most recent completion of its product portfolio is the crosshead series. It will present its latest advancements and technology highlights, including the latest developments for the production of energy, automotive, communication and fibre optic cables.

Rosendahl's Russian subsidiary OOO Rosendahl Russland is ideally located in Moscow where it is able to serve areas of Russia and the CIS market. The local sales and the service team are there to fully support Rosendahl's and sister company Nextrom's customers in all dealings during and after the execution of a project, from the initial consultation to long-term maintenance.

Rosendahl Maschinen GmbH – Austria
Website: www.rosendahlaustria.com

Troester GmbH & Co KG

Troester is a supplier of machines and complete lines for the cable manufacturing and rubber processing industry, comprising CV lines for XLPE and rubber cables, silane lines, sheathing and insulation lines.

❍ *Extruder group for 2-layer extrusion*

The German company will be presenting its technology and solutions in the field of:

- Rubber CV and CCV-lines up to 35 kV
- XLPE CCV and VCV lines for power cables up to 500 kV

- Sheathing lines for medium and high voltage cables
- Silane lines for LV and MV cables

Troester also represents its subsidiary X-Compound, which supplies compounding plants for cable compounds like PVC, HFFR, XLPE, semi-conductive material and special applications.

Troester GmbH & Co KG – Germany
Website: www.troester.de

Windak Inc

Windak specialises in automatic packaging solutions for the wire and cable industry, and has offices in Sweden, USA, Australia and Estonia. The company will introduce its new automatic reeler AR18-DB line at wire Russia.

The Auto Reeler AR18-DB is a fully automatic reeler developed for automatic packaging of cable and wire products on spools or reels between 216mm and 460mm (8.5" to 18") in overall diameter. It can be run both in-line (direct connection with extruder) and off-line, and loads and unloads the empty reels automatically. The line includes stretch wrapping of the spool to contain the cut end, and the output of the machine is two reels per minute.

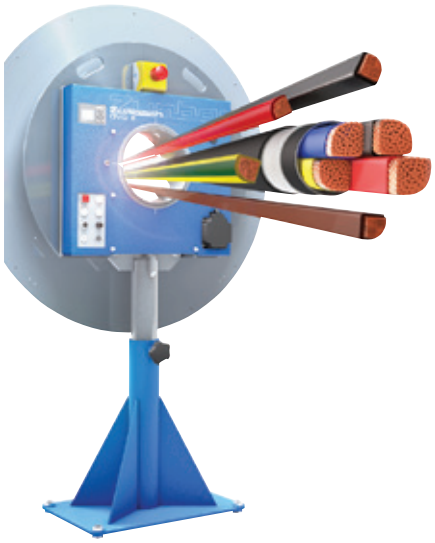
❍ *Windak's AR18-DB automatic reeler*

At wire Russia Windak will combine the AR18-DB reeler with the integrated palletiser GP5, payoff and accumulator, to make a complete automatic spooling line with a short investment payback. The company will also show the winding process and palletising of the finished spools. Windak will also present the latest information about its full range of products, including payoffs, take-ups, rewind lines, coiling and spooling solutions, accumulators and palletisers.

Windak – USA
Website: www.windakusa.com

Zumbach Electronic AG

Zumbach will showcase its broad range of dimensional measurement and inspection systems for rod and bar mills, and wire drawing, wire insulating and cable jacketing processes.



❍ *The DVO2 oscillating device from Zumbach*

Existing technology to be featured includes, Odac® laser scanning diameter gauges; DVO 2 oscillating device for Odac® gauges; Odex® non-contact diameter and eccentricity system; Capac® for in-line dielectric testing and FFT/SRL analysis; Wallmaster in-line ultrasonic wall thickness and concentricity systems; Rayex® for diameter, wall thickness and concentricity for CV power cable applications; WST and AUTAC pre-heating and conductor temperature sensors; and Sparkmaster spark tester solutions.

New developments to be introduced include the new modular USYS IPC line of processors and controllers; Steelmaster Rotation (SMR) for in-line hot and cold rod and bar mills; Simac® 63 for in-line surface faults and defects; KW 13TRIO for lump and neckdown detection for fine dimension applications; and Profilemaster® PMM 30 for in-line profile measurement of non-round products for fine dimensions.

Zumbach Electronic AG – Switzerland
Website: www.zumbach.com

Foam fluoropolymer solutions and processing for insulating high performance cables

By Gary G Thuot and Robert T Young, of DuPont Chemicals and Fluoroproducts, Wilmington, Delaware, USA

Abstract

With the number of high performing dielectric materials available today, selecting the ideal insulating materials for high demand cables is a balance of performance, processability and cost. This paper will present electrical performance and selection criteria for foam fluoropolymer dielectrics. Establishing viable processing ranges and key processing considerations, which will provide a stable, repeatable process, will also be investigated.

Foam fluoropolymers offer excellent electrical characteristics, low smoke and high temperature resistance. Typically fluoropolymers are used in applications where low smoke is required such as plenum cables, high temperature applications such as military specified cables and applications requiring resistance to soldering.

Selecting the right polymer as it relates to product size and the electrical properties is important in obtaining a robust process and desired cable performance. Processing and monitoring equipment selection and their operation are important to producing quality product at high yields.

The intent of this paper is to explain some of these key product and process characteristics and their effects on the process and performance.

Selecting the right material

Considerations for selecting a foaming fluoropolymer resin for high performance cables include electrical/physical performance needs, product conductor size and dielectric wall thickness. Electrical performance, as the graph below indicates, can vary with resin composition.

The dissipation factor data (*Figure 1*) illustrates differences measured on solid plaques of various grades of DuPont™ Airquick FFR foam resins in their solid state (un-foamed).

Figure 1*: Dissipation factor*

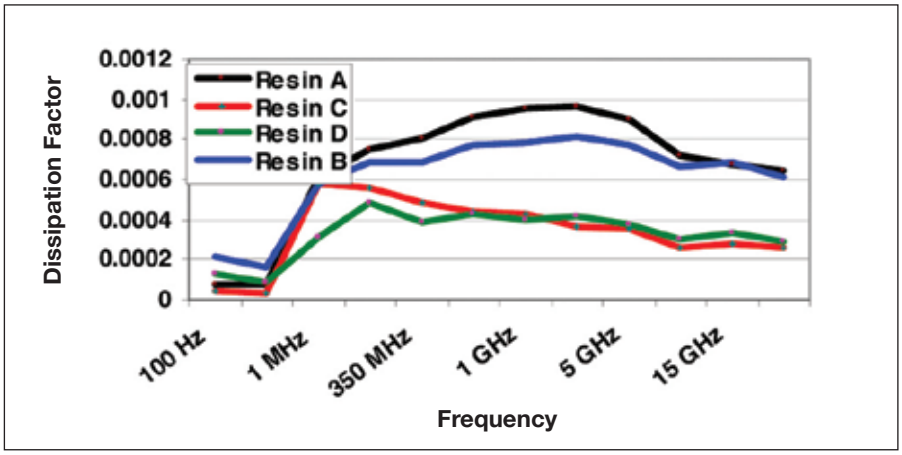
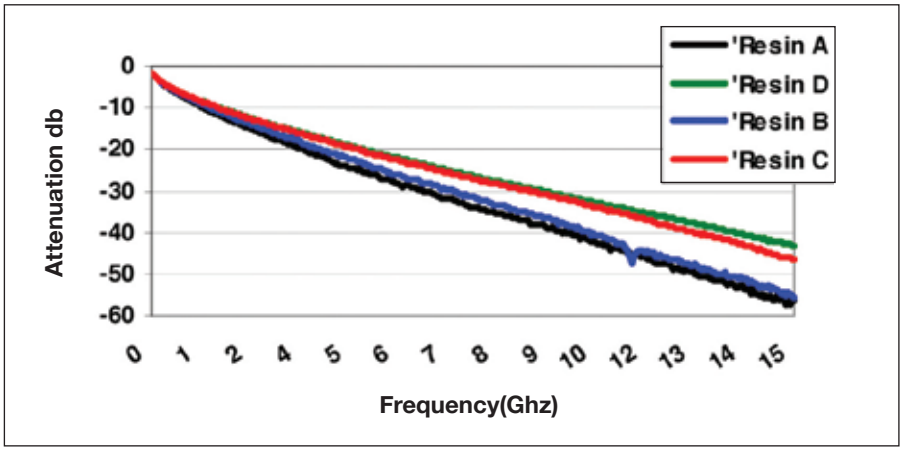


Figure 2*: Attenuation*



The attenuation results (*Figure 2*) are based upon actual 50-ohm cable samples produced using identical design and processing conditions but varying resin grades.

As illustrated in *Figure 2*, there can be a significant difference in the cable loss based on grade selection. The electrical power loss in a cable is typically measured in decibels (db) and is equal to ten times the log of the ratio of the power input of one end of the cable to the power output at the other end.

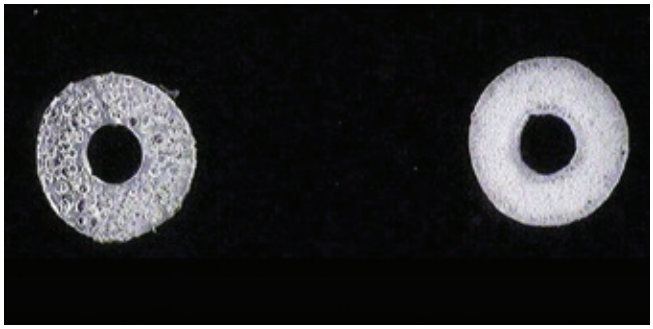
As greater demands are placed on cables to operate at higher frequencies, these material differences play a large role in the overall cable performance.

For example, a fluoropolymer cable foamed to approximately 82 per cent velocity of propagation produced with the resins referenced in *Figures 1* and *2* and tested at 2.5 Ghz would yield significant differences in signal loss.

A 100-foot cable produced with Resin B would display approximately a 20 per cent loss in power as compared to the equivalent cable made with Resins C or D. Resin A would lead to almost a 30 per cent loss in power as compared to Resins C or D. These differences in performance would be accentuated as the cables are utilised at higher operating frequencies.

DuPont has developed a portfolio of resins using the DuPont Airquick Technology, such as FFR 330, FFR 550, FFR 750, and FFR 770 foam resins, which offers the customer a wide range of electrical performance and cable design options.

❍ **Figure 3***: Cell structure comparison*



❍ **Table 2***: Resin selection by cable design*

Resin	Conductor range	Wall range	Void range
Resin A (7 MRF)	24 and up	.015 and up	10-58%
Resin B (14 MRF)	24 and up	.015 and up	10-55%
Resin C (12 MRF)	26 and up	.015 and up	10-58%
Resin D (30 MRF)	24 and smaller	.005- .02	10-50%
Resin E (42 MRF)	24 and smaller	.003- .02	10-55%

Nucleant	Average capacitance	Capacitance variation	Sparks/ 1,000ft
Concentrate	27.6 pf/ft	.9 pf/ft	10
Fully compounded	26.9 pf/ft	.4 pf/ft	0

❍ **Table 1***: Performance summary*

Nucleant technology and cell formation

To provide sites for the foam cell nucleation to occur, inorganic materials such as boron nitride have been typically added to the resin to aid in foaming. The addition of other proprietary materials to the boron nitride markedly improves the foaming process.

The method of introduction can vary from fully compounded ready-to-use resins to concentrates, which are added during the extrusion process. To help demonstrate this, a side-by-side process comparison of a fully compounded resin (DuPont™ FFR 770 foam resin) was made to an equivalent product with a commercially available foam concentrate.

For the purpose of this comparison, the nucleant compositions were varied but the per cent loading and base resin utilised were held constant. The cable construction used for this experiment was a 23 AWG single wire with a 19-mil wall, typical of a 100-ohm shielded twisted pair construction. The target expansion rate was 40 per cent. The fully compounded DuPont™ FFR 770 performed well achieving the desired capacitance with low variation, easily holding spark voltage of 2.5 kV.

The equivalent product with the commercially available concentrate was unable to achieve the desired expansion rate, displayed greater capacitance variation and would not hold the spark test voltage. *Table 1* provides a summary of the results.

The significant performance difference between the two materials is a result of foam cell structure differences caused by nucleating package selection. *Figure 3* illustrates the differences in cell size and structure between the two materials. As can be seen in *Figure 3*, the fully compounded material provides a small uniform cell structure, whereas the sample made with the concentrate results in large, non-uniform cells. The inability to foam the concentrate-based material to the higher extent would have other cable design consequences. To achieve equivalent electrical performance, the wall thickness would have to be increased to compensate for the lower void content, thereby consuming more fluoropolymer material.

For example in the singles for the aforementioned sample, the inability to foam to the higher extent would result in an increase of approximately 20 per cent in the required lb/1,000ft for each single to achieve equivalent impedance.

Selecting the resin grade for the application

Once the desired electrical performance is determined, resin selection moves to determining the resin based

on conductor, insulation wall size and burn performance, as applicable. Typically the lower the melt flow rate, the better the burn performance (ie less smoke generation). The higher the melt flow rate, the more suitable the resin is for thinner insulation walls and smaller cable designs. *Table 2* provides some general guidelines for resin selection.

Process parameter and effects – foam expansion rates

It is common for cable engineers to design cables using calculated expansion rates yielding the lowest theoretical cost. However, there are other important factors that impact cost, such as process ability, overall electrical performance and cable damage and compression from subsequent operations after extrusion. Neglecting these design factors could mistakenly result in higher cost and significant scrap generation. Consider a typical video coax cable designed using a 59 per cent expansion rate versus the same cable designed with a 54 per cent expansion rate.

The cable with 59 per cent expansion may push the process to its limits, subsequently increasing start-up scrap and causing greater process variation. From an electrical standpoint, higher void content typically results in larger cells and higher formation of cells around the centre conductor, which can have a major impact on cable return loss. Alternatively, the same cable can be made at a 54 per cent expansion rate with a weight increase of only 0.28lb/1,000ft. This small change will provide a robust, repeatable product with improved cable return loss, less scrap and higher productivity with the same cable impedance.

Figure 4 provides general guidelines for foam expansion rates based on the dielectric wall thickness. Actual maximum expansion rates will vary based on resin selection and processing methods.

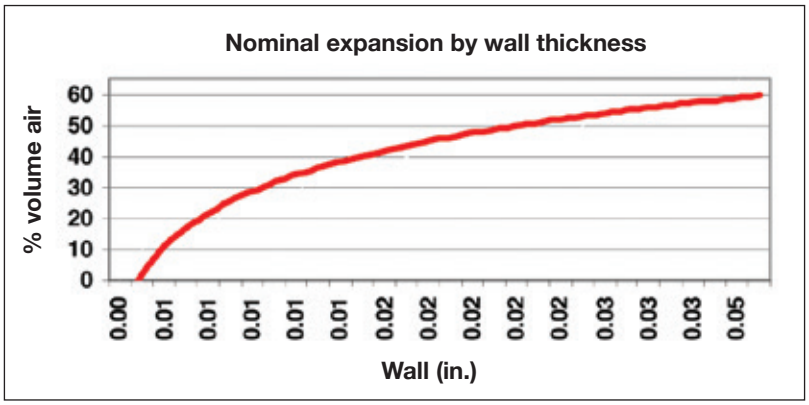


Figure 4*: Nominal expansion rates*

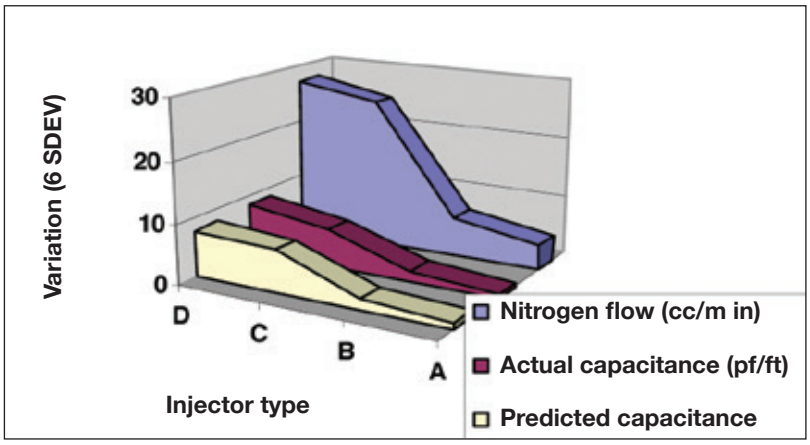


Figure 5*: Gas flow and capacitance variation*

High-pressure nitrogen gas injection

Foaming is achieved by injecting high-pressure nitrogen gas into the molten polymer during the extrusion process. The rate of foaming is determined by the flow rate of the gas in proportion to the resin output at the operating RPMs of the extruder. The higher the gas flow to the resin output, the higher the expansion rate.

The consistency of this gas flow is critical to maintaining a uniform expansion rate, which is needed to maintain low variations in cable capacitance and signal time delay for the cable.

Measuring gas flow

Ensuring that a constant, correct gas flow is injected into the melt is one of the most important foaming process variables. Undetected variation of gas flow will result in capacitance variation, leading to process instability and significant scrap. Off-line injector flow measurements (such as water displacement) will determine the average injector flow rate at room temperature.

However, it will not determine the actual process flow rate or flow variation as injector flows can change radically once heated to processing temperatures.

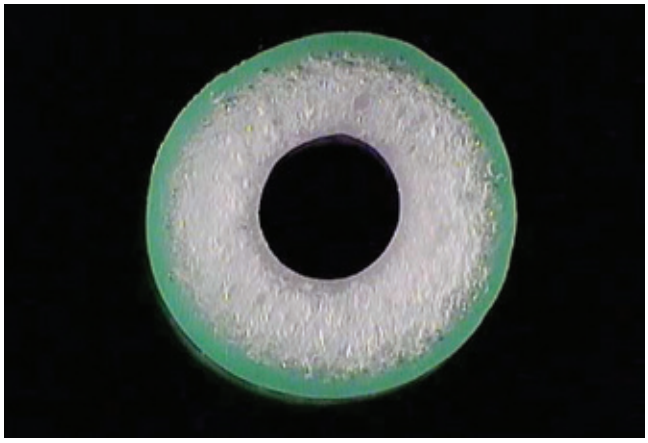
Consequently, an in-line flow meter is recommended when utilising the gas injection foaming process. With a flow meter, the gas pressure can accurately be set to obtain the calculated flow rate required for the desired nominal capacitance. In addition, variations in flow rate can be monitored.

Selecting the gas injector for the product

When sizing an injector, the extruder barrel pressure and the nitrogen flow rate for the desired expansion rate versus the product run speed need to be considered.

The flow rate of the gas is controlled by the injector orifice size and the nitrogen gas pressure. The orifice needs to be sized so that the gas pressure is higher than the barrel pressure for the desired gas flow. Suppose a given cable construction requires a flow rate of 50cc/minute of nitrogen for a line speed of 600 feet per minute and creates an extruder barrel pressure of 1,000psig.

The selected injector for this process needs to have the orifice sized no larger than to deliver a gas flow rate of 50cc/minute at pressure greater than the barrel pressure.



❍ **Figure 6***: Cross section of foam core with solid skin outer layer*

With a flow rate greater than 50cc/minute @1,000psig, the gas pressure would need to be adjusted lower than the barrel pressure and doing so would result in the injector plugging leading to the product going solid. Increasing the gas pressure higher than 1,000 psig will cause too high a gas flow resulting in over foaming. This over foaming condition is often misunderstood as to be a material or processing problem.

Conversely, if the injector orifice is too small there may not be enough available gas pressure to obtain the gas flow needed. This will result in an inability to achieve the desired expansion rate and product capacitance. For this reason it is typical to have several injectors with different flow rates available over a wide range of pressures.

The number of different sizes needed varies with the product mix and available gas pressure. Utilising a high-pressure nitrogen pump increases the gas pressure range over that produced from a high-pressure cylinder.

The use of a pump can then help reduce the number of injector sizes needed for an operation leading to lower overall costs.

The injector design can also impact performance. *Figure 5* shows the result of trials comparing four commercially available injector styles as quantified by the gas flow variation and the resultant capacitance variation.

A 50-ohm core with a 23-gauge conductor foamed to approximately 50 per cent was used for these trials. The gas flow rate six sigma variation (± 3 standard deviations) ranged from 4cc/min to 27cc/min with a resultant capacitance variation of 0.3 to 3.8pf/ft. These results demonstrate that performance issues often attributed to the fluoropolymer material are typically a processing issue related to the equipment. Use of the wrong-sized injector or an unstable design can mask the true performance benefit of certain materials.

Product cooling

The cooling medium for the extruded core is usually a combination of ambient air and water. The distance required for each of these is dependent on product size and line speed. Having the correct distances is critical for cooling prior to wire take-up to avoid flattening of the insulation on the reel and impacting the electrical performance.

By keeping the water quench point distance as far from the crosshead as possible will yield the best product. This is because a long air-cooling distance gives time for the resin to shrink down onto the conductor providing a consistent, tight interface with the conductor without the use of excessive preheat. This consistent conductor interface provides a uniform insulation strip force even after the initial bond is broken.

The advantage is improved structural return loss and resistance to stresses of subsequent processing operations. Sometimes a long air-cooling distance is not an option because of total available cooling distance.

If this is the case cold water should be avoided in the first cooling section as excessive ovality of the insulation and low conductor adhesion can result. Tempered cooling is recommended as it reduces the initial shock on the insulation improving insulation ovality and conductor adhesion.

Skinning

Extruding an outer layer of solid material or skinning provides additional benefits, such as:

- An easy and efficient way of colouring the insulation
- Improved dielectric strength, which is useful on thinner wall cable designs
- Higher foam expansion rates
- Greater resistance to insulation damage during subsequent processing such as twinning or braiding

Applying a solid skin coat requires an initial equipment investment (an auxiliary extruder and special crosshead) but provides payback in reduced scrap and product cost. Both the foam and solid layer are achieved at the same time through a single cross-head using standard processing methods. *Figure 6* illustrates a foam core with a coloured solid outer layer.

Conclusions

There are various foamable fluoropolymer resin options available, each having unique capabilities and limitations. Selecting the correct resin for the application is important for cost, ease of processing and desired electrical performance.

Designing and processing cables within the materials' capabilities will produce quality products with high yields. Processing equipment selection and process conditions are critical to ensure a stable process, maintain minimum product variation and achieve the lowest cost operation. Special techniques, such as the addition of solid skin layer(s) to foam constructions, can provide additional improvements to processing and performance.

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泡沫型含氟聚合物在高性能电缆绝缘中的使用及工艺

作者：美国特拉华州威尔明顿杜邦化工和氟产品公司Gary G Thuot 和 Robert T Young

摘要

当今市场上可供选择的高性能绝缘材料数量众多，为高性能电缆选择理想的绝缘材料需要平衡考虑如性能、可加工性和成本等各个方面。本文将介绍泡沫型含氟聚合物绝缘材料的电气性能和选择标准。如何建立可行的加工范围和关键加工注意事项从而使工艺稳定并可以被重复使用的方法也会在本文中得到探索。

泡沫型含氟聚合物拥有非常好的电气特性，低烟和耐高温。通常来说聚合物材料会被用于需要低烟的环境，如阻燃电缆，或高温环境如军用电缆以及需耐焊接的产品中。

聚合物影响到产品的尺寸和电气特性，因此合适的聚合物对牢固的工艺和理想电缆性能非常重要。加工和监测设备的选择和操作对高质量产品的高产量非常重要。本文将详细说明一些关键产品和加工工艺的特点及它们对工艺及性能的影响。

选择正确的材料

为高性能电缆选择合适的泡沫含氟聚合物树脂的考虑因素有电气/物理性能要求，产品导体尺寸和绝缘壁厚度。如下图所示，电气性能随着树脂成分的变化而变化。消耗因子测试

数据(图1)显示了不同等级的杜邦 Airquick FFR型泡沫树脂在固体状态(未泡沫化)下测量出的不同数据。

衰减度测试(图2)以实际电阻为50欧姆的电缆作为样品，这些电缆除了所用树脂等级不同，其他如设计和加工条件完全相同。如图2所示，选择不同的等级会使产生的电缆损耗明显不同。电缆中电功率损耗的通常计量单位是分贝(db)，其大小相当于电缆一头输入功率和另一头输出功率比率的10倍。随着使电缆向更高频率使用的要求日渐增大，不同材料对电缆的整体性能表现至关重要。

例如，将使用如图1和图2中所示树脂的含氟聚合物电缆以大约百分之八十二的传播速度发泡，再以2.5千兆赫的频率分别进行测试就会发现信号损失有显著不同。用B型树脂长度为100英尺的电缆要比相同长度用C或D型树脂的电缆功率损耗大约百分之二十。A型树脂电缆则比C或D型多出近百分之三十功率损耗。这些性能差别在电缆被高频率使用时会更加突出。杜邦使用杜邦Airquick技术发展出一系列树脂产品，如FFR330，FFR550，FFR750和FFR770型泡沫树脂，为客户就电气性能和电缆设计选择提供了广阔的空间。

成核技术和泡沫单元的形成

为给泡沫单元成核环境提供良好条件，树脂里通常会被加入无机材料，如氮化硼，以帮助发泡。氮化硼中的一些独特成分对发泡过程有非常显著的促进作用。最后成品可以是已完全调和并可立即投入使用的树脂，也可以是在挤压过程时才加入的浓缩产品。为了更好的说明这点，我们用已完全调和的树脂(杜邦FFR770型泡沫树脂)与市场上有售的泡沫浓缩产品进行并排的工艺对比。

为了达到对比的目的，成核剂的成分会有变化，但是加载的百分比和使用的基本树脂都保持不变。实验中的电缆为23awg单线，内壁厚19毫寸，常规电阻100欧姆的屏蔽双绞线结构。目标扩张率为百分之四十。

完全调和的杜邦FFR770型树脂性能表现良好，能稳定达到所期望的电流容量，并且轻松承受2.5千伏的火花电压。而用市场上有售的浓缩产品配置出来的树脂无法达到理想扩张率，显示出较大的电容不稳定性，并且无法承受火花测试电压。表1归纳总结了这些结论。

这两种材料的显著性能差别是由不同成核方法所引起的泡沫单元结构差别带来的。图3演示了这两种材料中泡沫单元的不同尺寸和结构。

如图3所示，完全调和材料中的单元结构小并且完全一致，而用浓缩物的样本里的单元大并且结构都不一样。无法将浓缩

图1: *损耗因数*

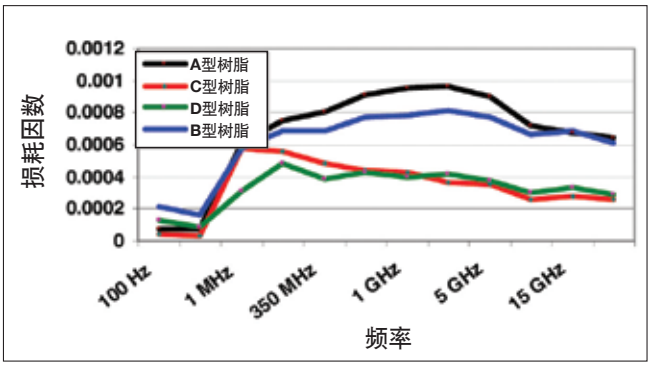
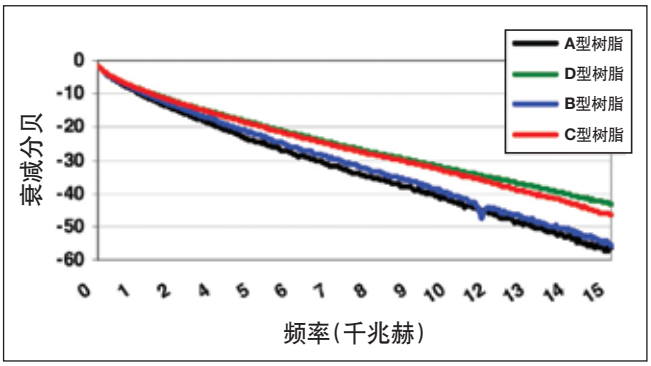


图2: *衰减*



物进行较高度的泡沫化会给电缆设计带来其他后果。为了达到相同的电气特性，内壁的厚度必须加厚以补偿较底的空隙率，这样就加大了含氟聚合物的材料消耗。

举例来说，仅仅以上述所举为例，如果无法进行更高程度的泡沫化，所消耗材料将比所要求的1磅/1000英尺多近百分之二十，才可以使每个产品都达到相同电阻抗。

根据用途选择不同的树脂等级

一旦决定了理想的电气性能，树脂的选择就取决于导体、绝缘壁尺寸和燃烧性能(如果需要)。一般来说熔融指数越低，燃烧性能就越好(如少烟雾)。熔融指数越高的树脂越适用于较薄绝缘壁和较小的电缆上。表2列出了树脂选择的一些基本准则。

工艺参数和效应 – 泡沫扩张率

通常电缆工程师为了得到理论上的最低成本，会将进过计算的扩张率应用于设计中。然而影响成本的还有一些其他的重要因素，如加工能力，整体电气性能以及由挤压的后续操作引起的对电缆的损坏和挤压。在设计中忽略这些因素会错误的增加成本并产生大量报废。可以考虑比较一下在相同的普通视频同轴电缆中使用百分之五十九和百分之五十四扩张率会产生何种不同。

百分之五十九扩张率的电缆可能将加工工艺推向极限，因此，产生较多启动报废和较大的工艺不稳定性。从电气性角度看，大空隙率通常产生较大的泡沫单元并且这些单元大量集中在中央导体周围，这将对电缆的回波损耗产生重大影响。或者，可在同类电缆中将扩张率设定为百分之五十四从而产生仅为0.28磅/1000英尺的增重。这细小的变化使产品更牢固并可重复生产，同时减少回波损耗和报废，提高了具有

❍ **图3**: *单元结构比较*

❍ **表2**: *根据电缆设计选择树脂的准则*

型树脂	传导范围	壁厚范围	空隙范围
A 型树脂 (7 MRF)	24 及以上	.015 及以上	10-58%
B 型树脂 (14 MRF)	24 及以上	.015 及以上	10-55%
C 型树脂 (12 MRF)	26 及以上	.015 及以上	10-58%
D 型树脂 (30 MRF)	24 及以下	.005- .02	10-50%
E 型树脂 (42 MRF)	24 及以下	.003- .02	10-55%

成核剂	平均电容	电容变量	火花/1000英尺
浓缩物	27.6 pf/ft	.9 pf/ft	10
完全调和	26.9 pf/ft	.4 pf/ft	0

❍ **表1**: *性能总结*

相同电阻抗电缆的生产效率。图4提供了根据绝缘壁厚度决定泡沫扩张率的基本准则。实际最大扩张率会由于树脂的种类和加工的方法有所不同。

高压氮气喷射

泡沫是挤压过程中将高压氮气向熔融聚合物中喷射时产生。泡沫的产生速度取决于气流速度与挤压机正常使用速度时的树脂产量的比例。气流速度相对树脂产量比例越高，扩张率越大。气流的稳定性对保持统一的扩张率至关重要。维持电缆的电容稳定性和减缓电缆的信号延迟都需要统一的扩张率。

气流的测量

确保向熔融物中喷射持续合适的气流是发泡工艺中最重要的可变因素之一。气流中不易被察觉的变化会引起电容不稳，从而导致工艺不稳定和大量报废。独立的喷流测量法(如水排量)可以控制在室温下的平均喷射流速度。但是，喷射流在被加热到工艺所需温度时会产生重大变化。因此，这种方法无法决定实际加工时的流速和流量变化。所以，在进行气体喷射泡化工艺时推荐使用一种嵌入式气流测量仪。使用测量仪可精确设置气压以得到可以达到理想额定电容所需要的测算气流速度。此外，气流速度的变化也会得到监测。

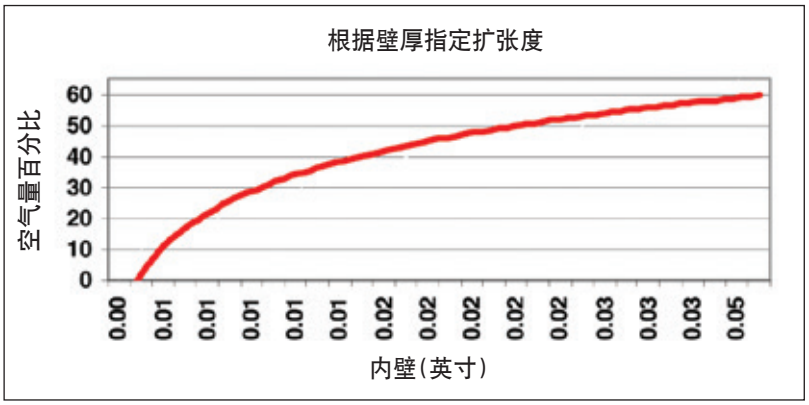
为产品选择气体喷射装置

在选择喷射装置时，要考虑为得到理想扩张率所需的挤压机桶压及氮气流速度与产品运行速度的对比。气流速度由喷射装置口径大小及氮气气压决定。为得到理想的气流，喷射口大小需要修改到合适的尺寸以确保气压大于桶压。假设一种特定构造的电缆针对每分钟600英尺的运行速度需要的氮气流速度为50cc/分钟，产生的挤出机桶压为1000psig。

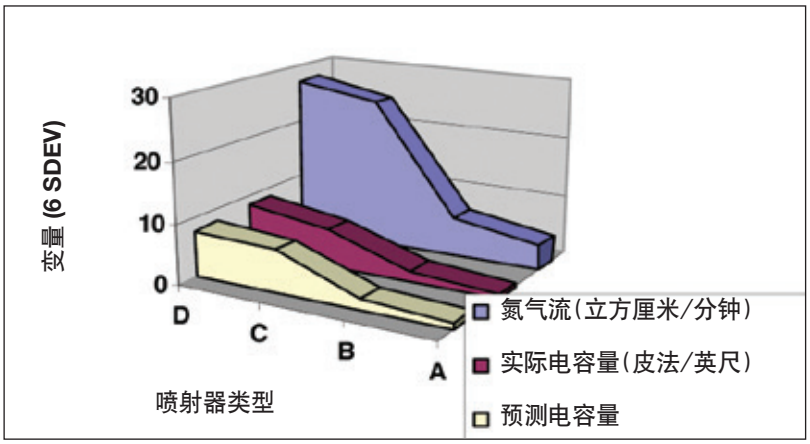
所选择的喷射装置的喷射口尺寸喷出的气流速度不能大于50cc/分钟并且气压必须保持大于桶压。如果气压为1000psig时的气流速度大于50cc/分钟，气压必须调节到小于桶压，这样会引起喷射装置堵塞从而使产品固化。将气压提高到大于1000psig又会使气流速度过高而产生泡化过度。这种泡化过度的情况经常被误认为是材料或工艺问题。

与之相反，如果喷射口太小就可能会使气压不足而得不到想要的气流速度。从而就无法得到理想的扩张率和产品电容。因为这个原因，通常来说都会准备几个在不同气压范围内具备不同气流速度的喷射器。所需不同型号仪器的数量取决于产品组合和可供使用的气压。使用一种高压氮气泵可以使高压气缸产出的气压范围增大。因此在操作中实用高压泵可以减少不同型号喷射器的所需数量从而降低整体成本。

喷射装置的设计也会影响到其性能表现。图5为比较4种不同款式但都可以在市场上买到的喷射器的实验结果，该实验是将气流变化和因此而引起的电容变化进行量化。一个50欧姆的芯线和23针的导体被一起泡化致约百分之五十并被用于这些实验。气流速度有六个单位变化(±3标准偏差)，范围从4cc/分钟到27cc/分钟，由之引起的电容量变化从0.3至3.8pf/英尺。这些结果显示那些经常被归责于含氟聚合物材料



❍ **图4**: *指定扩张率*



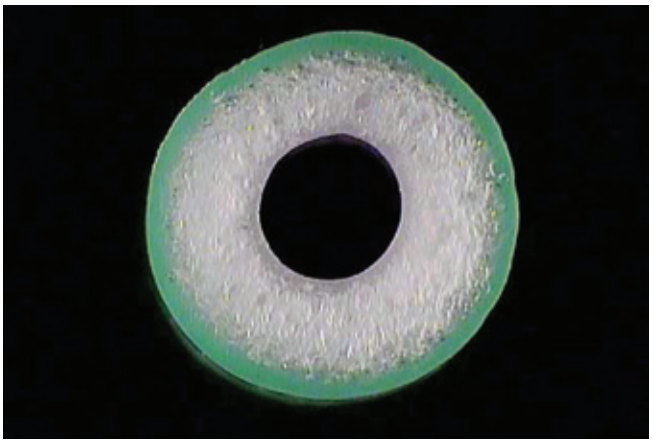
❍ **图5**: *气流和电容变量*

原因的性能问题实际上是典型的与设备有关的工艺问题。使用型号错误或设计不稳定的喷射器掩盖了某些材料的真实性能优点。

产品的冷却

挤压出的芯线的冷却媒介通常是其周围的空气和水。每个芯线之间的相隔距离取决于产品大小和运行速度。正确的相隔距离对接线开始前的冷却过程至关重要，这样可以避免绝缘层在传送带上就遭到破坏及对其电气性能产生影响。水淬点的距离离十字头越远越好，这样才能生产出最好的产品。

❍ **图6**: *泡沫芯和固体表层的横切面*



因为长距离的空气冷却可以给树脂足够的时间来缩附在导体上，不用过量的预热也可以与导体稳定紧密的黏合。

这种导体黏接部位的稳定性就算在最初的粘合破裂后也可以使绝缘层均匀剥离。好处是减少了结构性回波损耗和提高了对后程工艺操作的抗压性。有时，限于整体冷却条件，长距离空气冷却可能无法实现。

在这种情况下，在第一个冷却阶段要避免使用冷水，否则会造成绝缘体过度椭圆和导体处粘合度差。这里推荐使用温和的冷却方法，减少开始阶段对绝缘层的刺激，提高绝缘体椭圆度和导体处粘合度。

剥除表皮

挤去或剥去固体材料的外层表皮会有额外益处，如：

- 给绝缘层上色更容易更有效
- 提高绝缘体强度，这对需要较薄内壁的电缆设计非常有用
- 更高的泡沫扩张率
- 更好的抵抗后续加工如对绞或编织时产生的对绝缘层的破坏

要给材料涂上固体表层需要初始的设备投资(一个辅助挤出机和特殊的十字头)，但这些投资会从减少报废和降低产品成本上收回。

单个十字头依据标准加工方法可以同时生成泡沫和固体层。图6演示的是泡沫芯和已上色的固体表层。

结论

可泡沫化的含氟聚合物树脂有很多选择，每一种都有其专长和限制。为产品选择合适的树脂对加工成本和方便性及理想的电气性能都有非常重要的影响。在材料可承受能力范围内对其进行设计加工是高质量高产量产品生产的关键。

加工设备的选择和工艺条件对确保稳定的工艺。维持最低的产品不稳定性及获得最低操作成本至关重要。一些特殊的技术，如在泡沫结构外加涂固体表层，可更大的提高其工艺和性能。

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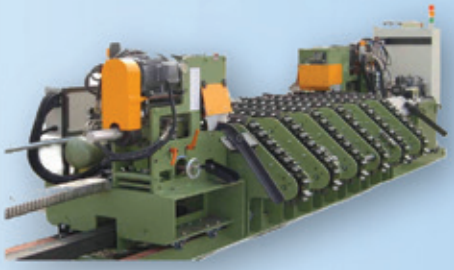

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