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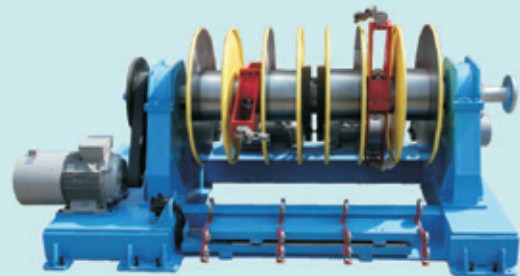
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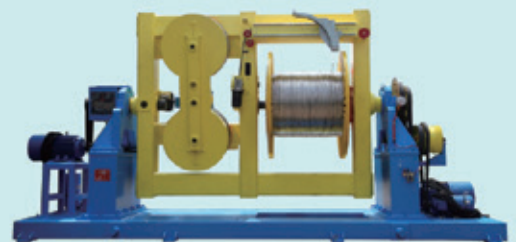
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bigstockphoto.com "Georgia Aquarium, Atlanta, Georgia", USA – Photographer f11 photo

Interwire and wire Russia gear up for show time

The first major exhibitions of the year – Interwire and wire Russia – are covered in this issue of Wire & Cable ASIA.

Interwire – the largest and longest-running exhibition and convention in the Americas – stages its biennial show in Atlanta, Georgia, from 8th to 11th May. Exhibiting companies can be found on page 68.

The promise of international networking on this stage ensures that both exhibitors and visitors alike return to the show where machinery is debuted, reviewed and sold, and information is shared among friends and colleagues within the industry.

Staged in conjunction with organisers Wire Association International's annual convention, Interwire crosses a number of vertical industries, including automotive, construction, aerospace, transportation and communications.

Heading into June it is the turn of Russia to play host to a large gathering of companies for wire Russia, held in Moscow, from 5th to 8th June.

Despite the tight economic situation overall in the country, expectations for the trade fair quartet – wire Russia, Tube Russia, Metallurgy Russia and Litmash Russia – are all very high.

Now is a particularly good time for both international and Russian companies to make their mark on the regional economy, with many international exhibitors expected to intensify their existing business relations in the country. Our coverage starts on page 66.



David Bell
Editor

When and where

2017

8-11 May:
Interwire –
trade exhibition –
Atlanta, Georgia, USA

Organisers:
Wire Association
International
Fax: +1 203 453 8384
Email: sales@wirenet.org
Website:
www.wirenet.org

2017

5-8 June:
wire Russia –
trade exhibition – Moscow,
Russia

Organisers: Messe
Düsseldorf and VNIIEP
Fax: +7 499 246 9277
Email:
info@wire-russia.com
Website:
www.wire-russia.com

2017

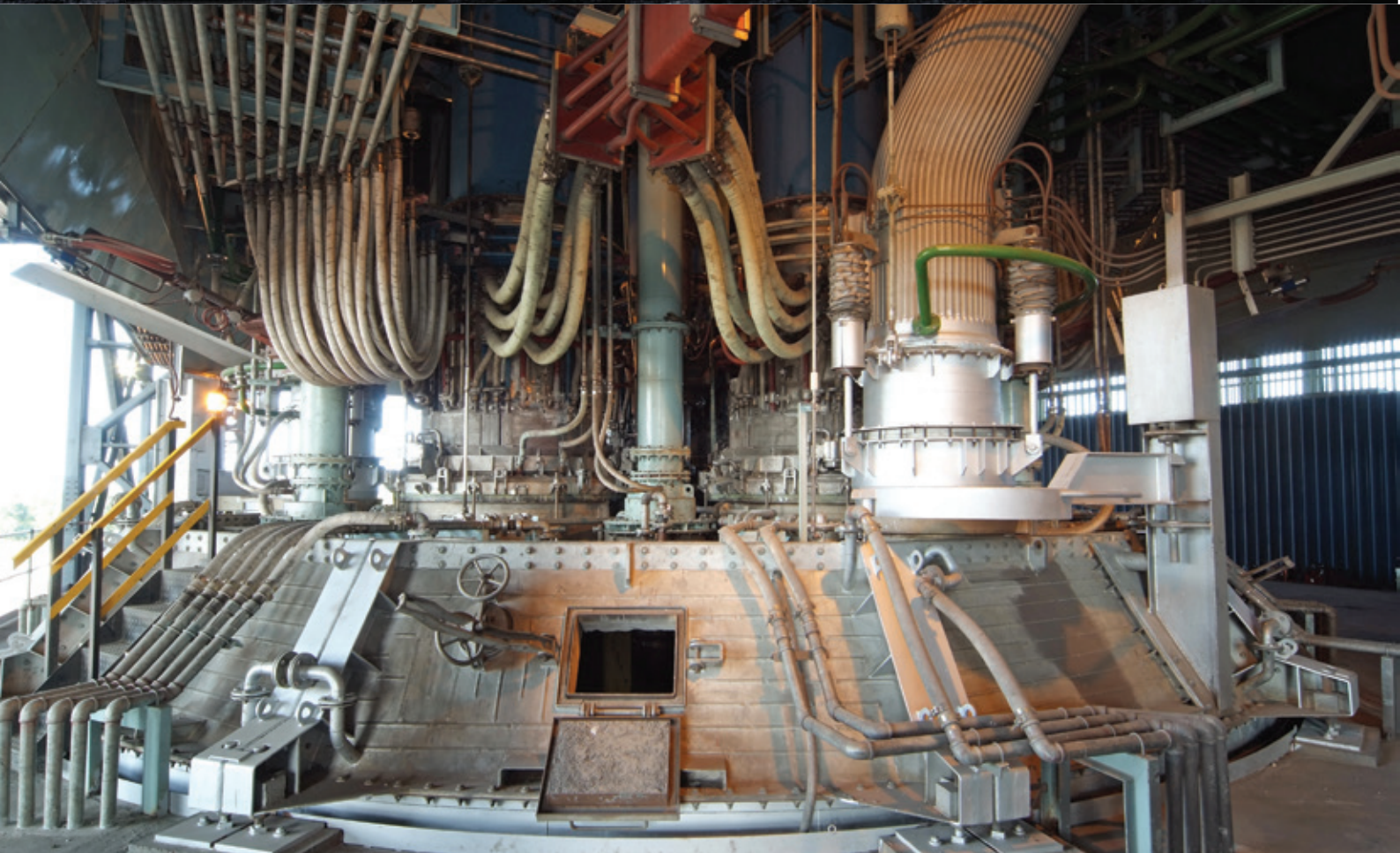
19-21 September:
wire Southeast Asia –
trade exhibition –
Bangkok, Thailand

Organisers:
Messe Düsseldorf
Asia Pte Ltd
Fax: +65 6337 4633
Email: wire@mda.com.sg
Website: www.
wire-southeastasia.com

2017

3-5 October:
wire South America –
trade exhibition –
São Paulo, Brazil

Organisers:
Messe Düsseldorf GmbH
Fax: +49 211 4560 668
Email: info@
wire-south-america.com
Website: www.
wire-south-america.com



○ The switch-in of the 45 MVA submerged arc furnace at SAIL's Chandrapur Ferro Alloy Plant (CFP) in India

India's largest SiMn furnace

HIGH capacity furnace and smelting plant specialist Tenova Pyromet has announced that the 45 MVA submerged arc furnace for the Steel Authority of India Ltd's (SAIL) Chandrapur Ferro Alloy Plant (CFP) has been successfully switched in. Ramping up and tapping of the silicomanganese (SiMn) furnace, the largest in India, is in progress.

Tenova Pyromet carried out the contract from SAIL for the expansion to the plant in a consortium agreement with a locally-based supplier, GSPL.

The scope of work awarded included design and manufacture, supply and installation of the complete furnace and auxiliary equipment, refractories and structures, followed by testing, commissioning and performance guarantees.

The plant has an installed capacity of 100,000 tpa (ferromanganese) FeMn, SiMn and medium/low carbon FeMn. It is the only public sector unit engaged in the production of manganese-based ferroalloys in the country.

The fully automated furnace incorporates Tenova Pyromet's state-of-the-art equipment, including its electrode column, and the patented AutoFurn™ Furnace Controller.

This user-friendly system is the ideal way to operate a

“smart” furnace, providing an additional level of automation above the SCADA and PLC to optimise power input to the furnace and maintain furnace balance and stability.

All equipment was locally manufactured in India, to optimise local content, with the exception of the mud gun and drill, which were manufactured in South Africa.

“This project demonstrates Tenova Pyromet's extensive process experience and project execution skills,” says Andre Esterhuizen, general manager, sales and marketing, Tenova Pyromet.

“Despite the remote area and language barrier, we delivered successfully on our commitments to the client who also recognised the contribution of Tenova Pyromet personnel in maintaining an exceptional safety record on site.”

With installation of the overall plant 95 per cent complete, this project has achieved an accident and incident free record throughout the 6,600 plus hours worked.

The majority of the labour force has been drawn from the local area as part of the project's focus on skills upliftment.

Tenova South Africa (Pty) Ltd – South Africa
Website: www.tenova.com



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Insulation material make-up	round, striped
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Feeding	automatic stripe feeder
Cross-linking method	25 kW IR-shock oven, 9 x IR-ovens



www.rosendahlnextrom.com



On-track expansion and diversification

AKSH Optifibre Limited, an Indian manufacturer of optical fibre, optical fibre cables and fibre reinforced composites and a major e-Governance service provider, has announced its quarter two results for the 2017 financial year.

- Revenue is recorded at Rs 90.41 Crore, EBIDTA at Rs10.68 Crore
- Export sales for the quarter are Rs 50.96 Crore

The upgrading and expansion plans announced by the company in 2016 are on track. Upgrading in OF and OFC has been completed while expansion in OF and FRP is progressing for timely completion in March.

To maintain leadership in FRP rods and catering to its strategic customers, the company has acquired 100 per cent share capital of Unitape Mandovi Composites Pvt Ltd, Silvassa (since renamed as Aksh Composites Pvt Ltd).

Diversification planned by the company for an ambitious ophthalmic lens project is showcasing promising execution. Land has already been acquired followed by facility construction and machinery ordering.

Consequent to the planned expansion across all the manufacturing facilities of the company, the total revenue was recorded at Rs 90.41 Crore. The undergoing upgrade and

expansion has enabled the company to enter into the second half with a healthy order book.

With a view to mitigate demographic risks, the company is focused to explore new geographies with strategic long-term alliances across the world. The company's export turnover was 63 per cent higher than the same period in the last financial year.

"1 Stop Aksh", the E-Governance arm of the company, now has more than 10,000 kiosks ahead of schedule. The company has registered more than 18,000 students for certification under "National Digital Literacy Mission" in more than 18 districts of Rajasthan.

Optical fibre cable installed throughout the world in 2016 was 210mn fibre-km as compared to 189mn fibre-km installed in the same period in 2015, registering a growth of 12 per cent.

India is presently witnessing a huge upsurge in the use of consumer mobile services coupled with increased use of data services, which has fuelled demand for 4G/LTE technology resulting in sizable opportunities for cable manufacturers in the country.

Aksh Optifibre Ltd – India
Website: www.akshoptifibre.com



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HEFEI SMARTER TECHNOLOGY GROUP CORP is affiliated to the state-owned central enterprise China National United Equipment Group Corp.

HEFEI SMARTER is now widely accepted as a leading manufacturer of wire and cable machinery in China.

Hefei Smarter has focused on research and innovation of wire and cable machinery, and is committed to meeting customized needs, supplying high quality products and providing strong technical support and perfect after-sales engineering service.

Hefei Smarter has started to develop several new innovations including JGT Concentric Stranding Machine, JSH Double Twister, and CYL Vertical Laying Up Machine with Steel Wire Armoring.

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- For stranding copper flexible conductors
- For cable screening
- For cable armoring

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JSH BUNCHER

The machine is used for stranding copper and aluminum conductor. It also can be used for compacting the al-alloy round single wire into shaped wire, then stranding into al-alloy conductor with double pitch.

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Show's industry support

WIRE & Cable Guangzhou 2017, organised by China Southern Power Grid Media Co Ltd, Guangzhou BoYou Exhibition Service Co Ltd, and Guangzhou Guangya Messe Frankfurt Co Ltd, will return to the China Import and Export Fair Complex from 9th to 11th June 2017.

Last year, the show was attended by 350 companies and 18,869 visitors from 25 countries and regions, of which 3,700 buyers were from overseas.

Mr Emeka Hu, general manager of Guangzhou Guangya Messe Frankfurt Co Ltd, said: "Wire & Cable Guangzhou has entered its ninth year and continues to act as a gateway to South China's wire and cable markets.

"The show's holistic profile serves manufacturers in a wide range of fields. It helps them to source suitable voltage cables, optical fibre cables, machines and all related accessories that fit growing needs in the EV, power grid and telecommunications sectors as well as for use in national infrastructures in China."

Mr Wang Xiuyu, general manager of Dongguan Yongke Electrical Machinery Co Ltd, is a repeat exhibitor. He was impressed by the promotional efforts and network of the show organisers.

"The 2016 show marked our third time participating and we give high importance to this event. With its large client base, the fair has helped us to establish new contacts and receive orders from Africa as well as Guangdong and western China. The promotional efforts of the organisers are well reflected in its visitor flow," he said.

Apart from exhibitors' positive feedback, the fair's influence is further backed by nationwide support from trade associations and other renowned companies who will be leading delegations to meet with exhibitors.

Some of the supporters include EHV Power Transmission Co, China Southern Power Grid Power Generation Co, Guangdong Power Grid Co, Yunnan Power Grid Co, Guizhou Power Grid Co, Hainan Power Grid Co, Guangzhou Power Supply Bureau Co Ltd, Shenzhen Power Supply Bureau Co Ltd, China Southern Power Grid



○ Visitors walking the halls at Wire & Cable Guangzhou 2016

Electric Power Research Institute, China Southern Power Grid Energy Co Ltd, Guangdong Wire and Cable Association, Hunan Wire & Cable Association, Liaoning Province Wire & Cable Industry Association and Zhongshan Electric Power Trade Association. The Taiwan Wire & Cable Association Synergy Development Center also lends its support to the show.

Wire and cable manufacturers in China are taking advantage of industry opportunities presented by public tenders for various types of cables requested by the country's telecommunications giants, China Telecom Group and China Mobile.

After one of China's largest procurement orders for 10kV and 380V XLPE telecommunications soft cables by China Telecom Group, the industry is

now anticipating a large-scale procurement project from China Mobile, its subsidiaries and branch offices for all of their projects until the end of 2018. In-demand products include copper conductor flame-retardant and fireproof flexible cables (ZA-RV-450/750V, ZA-RVV-600/1000V, ZA-RVV-22-600/1000V, WDNA-RYY-600/1000V) as well as low-smoke, zero-halogen and flame-retardant XLPE-insulated polyolefin-sheathed copper-core power cables (WDZA-YJY-600/1000V). The total cable length measurement up for bid is currently estimated at 14,400km.

Wire & Cable Guangzhou 2017 will be held concurrently with Guangzhou Electrical Building Technology, as well as the Guangzhou International Lighting Exhibition.

Wire & Cable Guangzhou 2017 – China Website: www.wire-cable-china.com

Growing network

South Korea telecom provider KT has begun operation of its new undersea cable system, Asia Pacific Gateway (APG), connecting nine Asian countries including Korea, Japan and China. The company is also planning to open a New Cross Pacific (NCP) international submarine cable this year, connecting not only Korea, Japan and China but also the USA.

KT announced in November last year: "The company has opened the 11,000km APG undersea cable that connects nine countries – South Korea, Japan, China, Taiwan, Thailand, Hong Kong, Vietnam, Singapore and Malaysia." The fibre optic system has channel speeds of 100 Gbps and is capable of transferring data at 60Tb per second.

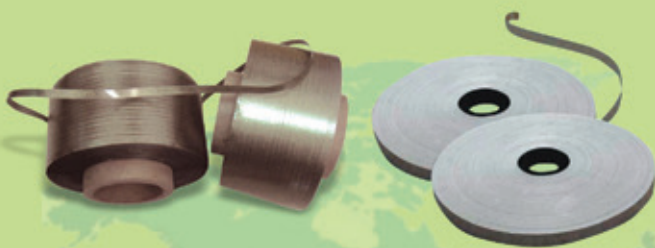
KT – South Korea

Website: www.kt.com

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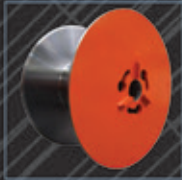
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Companies of the group:
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CMP Products targets Russian growth with Moscow office

CABLE gland and cable cleat manufacturer CMP Products is cementing its presence in the Russian market, with the launch of a Moscow-based company, alongside a new Russian website and suite of Russian literature.

CMP Products LLC in Moscow is set to strengthen the manufacturer's ten-year position within Russia and the Commonwealth of Independent States (CIS), with direct distribution to customers, allowing CMP to adapt more flexibly to the needs and demands of the market.

Opening in early 2017, the Russian office will initially stock a range of hazardous area cable glands, such as the Triton T3CDS, E1F-series and A2F-series; the location will also hold CMP's full range of cable cleats.

A new website has been developed in Russian to support the expansion into the market, including an advanced product finder. Director general of the new office, Yuri Savushkin has also recruited a new local team to spearhead the drive, with knowledge of the local market.

Mr Savushkin said: "With increasing demand from the region, the new office will allow CMP Products to provide a more flexible service to the market, and the ability to respond to customer needs quicker than ever. By recruiting a local CMP Products team, building a website in Russian and taking on both new offices and warehousing we show that we are 100 per cent committed to the market."

Vince Patterson, CEO of CMP Products, added: "We continue to identify growth opportunities across the world, ensuring that our products are readily available for projects and customers spanning six continents. Our years of experience in Russia, combined with a stronger 'on the ground' presence, promise exciting growth opportunities for CMP's Russian team over the coming months and years."

The expansion comes as part of CMP's ongoing drive to identify market growth opportunities across the globe, which has most recently been seen in the opening of a new stock location in Alberta, Canada, last year.

CMP Products – UK

Website: www.cmp-products.com

Price rise

Huber Engineered Materials, a division of J M Huber Corporation, has announced a price increase for its precipitated silica and silicate products manufactured in North America. The increase came into force from 1st January 2017, or as current contracts allow for direct customers and distributors.

Huber Engineered Materials – USA

Website: www.hubermaterials.com



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Ideal Networks' guidance for Tier-1 and Tier-2 fibre optic testing

TO help cable installers and maintenance technicians select the correct fibre optic testing equipment, Ideal Networks has published a free White Paper which offers guidance on the different tiers for certifying fibre optic cabling.

"Unlike copper cabling, there are two tiers available when certifying fibre optic cabling and these dictate which type of tests must be performed, and therefore which testers should be used," says Dan Payerle, business unit manager for Ideal Networks.

"To remove confusion around which type of test should be used, and whether performing Tier-2 certification also meets the requirements of Tier-1 certification, the White Paper clarifies the different requirements in detail as well as looking at the advantages of different testers and how they work," he added.

Tier-1 certification is a measurement of the total insertion loss (or attenuation) of cabling from one end of the link to the other and either uses an optical power meter and optical light source (PM/LS) or an optical loss test set (OLTS) for testing. Tier-2 certification provides loss information about each component of the link and uses an OTDR (optical time domain reflectometer) to perform certification, providing a useful graphical representation of each connection, splice and cable segment in the link and their performance.

When certification is required, it is good practice to perform a Tier-1 test, and optionally conduct a Tier-2 test. Although an OTDR can show the total link loss like an OLTS does, Tier-2 certification cannot replace Tier-1 certification as there is a subtle distinction between the total link loss reported by the two devices.

An OLTS, such as the Ideal Networks OC I Tier-1 fibre cable certifier, measures the true optical loss of the link, which makes it an accurate way to determine end-to-end loss of a link and a requirement for Tier-1 certification. However, an OTDR, like OTDR II from Ideal Networks, characterises the link under test and can offer additional advantages, such as advanced troubleshooting for faster repairs.

"Ultimately the required testing is an agreement between the cabling contractor and their customer," said Mr Payerle. "However, in order to provide customer satisfaction, it is essential that fibre optic installers understand the different tiers and therefore which certification reports will provide the necessary assurance."

Ideal Networks – UK
Website: www.idealnetworks.net

wire & cable GUANGZHOU

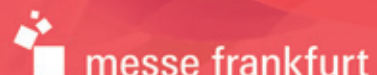
广州国际电线电缆及附件展览会

Gateway to South China's wire and cable market
华南重要的国际性线缆展会

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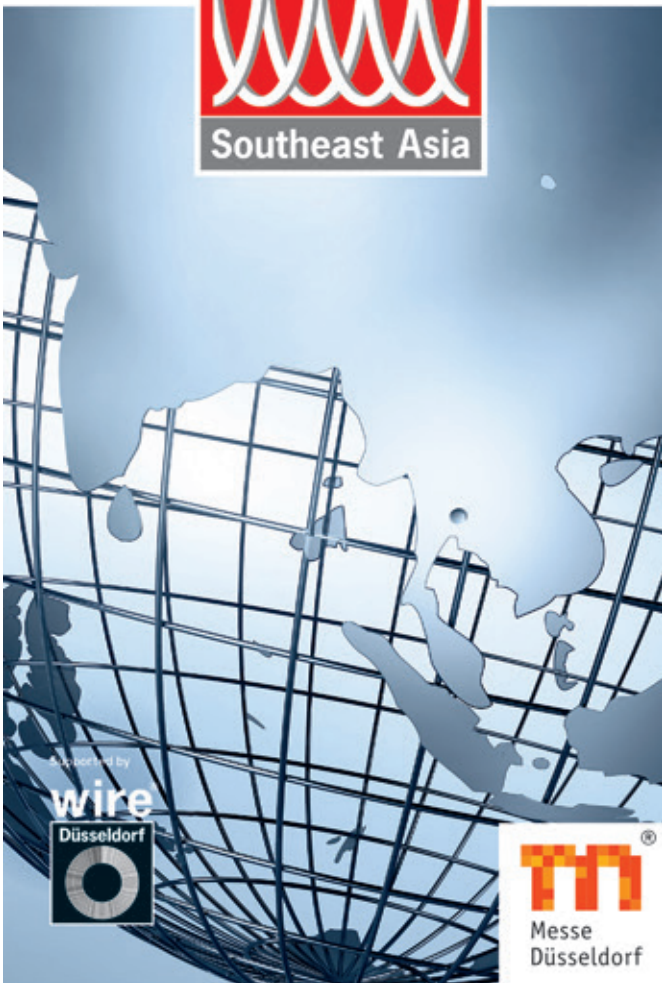
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- *Delisi – specialist manufacturer of automatic straightening and cutting machines for smooth and ribbed wires*

DELISI Srl specialises in manufacturing automatic straightening and cutting machines for smooth and ribbed wires from 1 to 20mm in diameter.

Its machines are characterised by rapid change of diameter, rapid change of the lengths and fast set up: about one minute, to change the diameter to work. The spinner is supplied with a straightening unit of pre-regulated jaws for each diameter of wire to work: it is enough to install the suitable straightening unit according to the wire to handle, and the spinner will be ready to work without waste of time and material.

The straightening jaws can be in polyamide for aluminium and copper wires; in bronze for aluminium, drawn steel stainless steel wires; in cast iron for drawn wires; in cast iron with carbide inserts for drawn, laminated and ribbed wires; or in integral carbide for drawn, laminated and ribbed wires. They can also be in Teflon or wood to fit them to the customer requirements.

The wire in the spinner is straightened through a series of bends that do not damage it while it is moving. With the flying cut, the shears run during the cut. After finishing the cut, they quickly return back to the starting point, without the wire stopping.

For a high number of short cuts, as for example when working electrodes, Delisi can supply the machine with a continuous cutting disc, so the cutting speed is higher and the maximum production of 400 pieces per minute can easily be reached.

On request, the machines can be supplied with electronic programmer and different types of pay-offs and rod collection beds and other special devices.

Delisi Srl – Italy
Website: www.delisisrl.com

Hitchcock finalises purchase of Siri Wire

HITCHCOCK Enterprises has acquired Danielson, Connecticut-based stainless steel wire producer Siri Wire Co.

Founded in 1992, Siri Wire has been a family-owned manufacturer of stainless steel and nickel alloy wire and will continue to offer quality wire products from its current location.

Providing products to the automotive, spring, wire forming and cold heading industries, Siri Wire will continue to build on a strong foundation with new product offerings.

Hitchcock Enterprises, led by president Bryan Hitchcock, is a natural fit as he and his father David have been key components to the outside sales of Siri Wire over the last 16 years.

Together Bryan and David have over 45 years' combined experience in the wire business, and look to use experience and expertise to grow and diversify the company. Being able to continue to operate as a family-owned business was important to the Hitchcocks, and the day-to-day operations will continue to be led by general manager Tammy Joly and plant manager Rick Nelson, both long-time key employees of the mill.

"It gives me great pleasure to

On the move!

Allied Wire & Cable, USA, has relocated its New Hampshire office from Merrimack, to Bedford, New Hampshire. This move gives Allied the ability to reach a larger audience in the New England area.

New Hampshire branch manager Mike Reardon said: "I'm very excited about our move to Bedford. It's incredible to think this is our third facility in ten years.

"Our new facility will allow us to continue to grow and expand. Our continued success is a testament to the entire staff in New Hampshire."

Allied Wire & Cable – USA
Website: www.awcwire.com

announce this acquisition, there is a great deal of pride from the workforce at Siri," said Bryan Hitchcock. "It is our mission to continue to grow the business and maintain jobs in our local economy.

"Siri Wire's goal is not only to develop new relationships but to

maintain and strengthen its current customer base by supplying high quality wire products."

Going forward the company will continue operations as Siri Wire.

Hitchcock Enterprises LLC – USA
Website: www.hitchcockenterprises.com

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Jiangsu Handling Machinery Co Ltd

BRE Global turns up heat on cable CE marking

MANUFACTURERS risk losing out on trade opportunities with Europe without appropriate CE marking for their cable products, says UK company BRE Global, which specialises in fire, security and environmental testing and certification of construction products.

The warning comes with just months to go to the 1st July 2017 deadline when CE marking becomes mandatory for power, control and communication cables placed on the European market.

The company is a long-serving notified body for the testing and certification of a wide portfolio of construction products and systems and is well versed with the requirements of the Construction Products Regulation (CPR).

With the publication of EN 50575, the EU's harmonised product standard for power, control and communication cables for permanent use in buildings, manufacturers entered a window of transition to comply with regulation.

But despite a deadline extension from December 2016 to July 2017, some manufacturers are still holding back, either daunted by the process or hesitant in the current state of uncertainty following the UK's vote to leave the EU.

Classification Fca can be self-declared by the manufacturer, while classifications Dca and Eca require testing by a notified test laboratory. However, Aca, Bca and Cca follow a more complex certification process which must be undertaken by a notified certification body such as BRE Global.

This process mainly involves testing to two fire performance standards, EN 50399 and EN 60332-1-2, followed by classification to EN 13501-6 based on the outcome of the tests.

The EN 50575 standard also includes the use of new extended field of application (EXAP) rules that allow for the testing of a family of products to be classified to a certain fire property without testing all of the individual members of the family.

The safety testing requirement for cable CE marking is exclusively focused on fire performance.

With its resources in fire testing, research and investigation, BRE Global says that clients can be fully confident of the integrity of its cable testing and CE marking services.

The company is encouraging manufacturers to contact its cables certification team for information on their CE marking and product testing requirements, however small, large or technically complex.

BRE Global Ltd – UK
Website: www.bre.co.uk

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Open day success for NENA



○ Bernd Lohmueller, executive VP sales and marketing Niehoff, during his open day speech

FOR 20 years, Niehoff Endex North America Inc (NENA) has opened its doors to customers and partners for a biennial two-day open house. The most recent exhibition in November 2016 welcomed approximately 65 customers from 30 different companies to the factory and offices in Swedesboro, New Jersey, USA.

On the first day, a German-style “Barn fest” with traditional music allowed the guests to network with NENA personnel, guests from the Niehoff Group headquarters in Schwabach, Germany, and other colleagues from the wire and cable industry.

The second day had a focus on four elements to create maximum benefit for the visitors. First, there was a set of presentations providing information on Niehoff machinery and processes as well as industry specific matters.

Louisa Winnik, senior analyst Integer Research, spoke about “Integer’s View on the North American Wire and Cable Market.” Then Stefan Nixdorf, director of engineering Maschinenfabrik Niehoff, presented “New Product Developments/Innovations at Niehoff.”

NENA CEO Robert Wild followed with “Aluminium Multi-Wire Drawing and Annealing: Key Success Factors and Challenges.” Holger Junkereit, managing director of Schmidt Maschinenbau GmbH, presented “Specialty Drawing Machines and Wire Industry Equipment,” followed by Klaus Eichelmann, managing director of Reber Systematic GmbH and Co KG, who spoke on “Filter-Media, the Right Selection

Makes the Difference in Your Drawing Process.” Finally, Tom Whitcombe, VP sales/marketing of Baum’s Castorine Co Inc, finished the presentations with “Aluminium Wire Drawing: Oil Versus Emulsion.”

The second element of focus was a factory tour with a demonstration of Niehoff machinery: A D632 double twist buncher, two BMV braiders, one NPS double spooler, and a complete rod breakdown line for aluminium and copper, including an annealer. In addition, a multi-wire line had been concealed from everybody’s view with a 20ft-high black curtain.

As a third element, NENA representatives and partners from other companies – Buehler Redex, Reber Systematic GmbH, Schmidt Maschinenbau, Esteves Group USA, Baum’s Castorine Co Inc and Howar Equipment Inc – took part in tabletop presentations.

The last element, and the highlight of the event, was the North American unveiling of the new generation of multi-wire drawing lines type MMH 112 and RM 202. Hidden behind a curtain for the earlier part of the day, an impressive ‘curtain drop’ opened the view and stage to this latest development. Before showing this line working under production conditions at a speed of 8,000 fpm, Bernd Lohmueller, executive VP sales and marketing Niehoff, explained the details to the audience.

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

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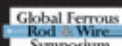
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Green forecast

By 2020, Kazakhstan plans to commission 106 facilities generating 3,054.55MW of renewable energy, the country's energy ministry has announced.

These will include 28 solar power plants with a capacity of 713.5MW. The ministry added that the renewable energy projects will be implemented with additional funds, not financed from the state budget.

The volume of electricity generated from renewable energy sources in Kazakhstan is planned to reach three per cent of the total volume of electricity by 2020, and rise to ten per cent by 2030.

Cables for the home market

UAE-based Ducab took advantage of the Abu Dhabi International Petroleum Exhibition and Conference (Adipec) to showcase its products for the oil, gas and petrochemical industry.

The company, owned equally by Abu Dhabi's Senaat and by Investment Corporation Dubai (ICD), is a manufacturer of technologically advanced cables and cabling products, serving both onshore and offshore industries.

Ducab announced \$12 million of secured orders in the Khalifa Industrial Zone, Abu Dhabi. The order includes the delivery of medium and low-voltage power cables, control cables and accessories.

The company's PetroBICC range has also witnessed significant attention from the oil and gas sector in the region, where presently Ducab is supplying an order worth \$1.3 million.

Other recent significant orders include

a \$10 million delivery of medium- and low-voltage cables for the North East Bab field development project, phase III: Rumaitha and Shanayel fields.

Deliveries to Abu Dhabi's Island Surface Facility project, of \$60 million, and \$70 million to Kuwait's Clean Fuels project have also been recently completed.

Dr Ahmad Bin Hassan Al Shaikh, chairman of Ducab, said: "Our company's specialist product portfolio establishes it as a single-source cable solutions provider for a range of sectors and we take pride in meeting the highest standards globally as well as remain aligned with the UAE's and the region's future energy visions."

"Adipec offers us the ideal opportunity to showcase our products and explore business opportunities with clients," he added.

Ducab – United Arab Emirates
Website: www.ducab.com

Then there were four

Sumitomo Electric Wiring Systems has opened a new production facility in Petroşani, Romania. The plant is the Japanese manufacturer's fourth production facility in the Romanian market.

The move is part of Sumitomo's long-term strategy to concentrate its manufacturing capacities in Romania. In 2015, Sumitomo shut down its factory in Topolcany, in western Slovakia, and moved its output to three existing plants in Deva, Alba Iulia and Orăştie.

Based in Osaka, Japan, Sumitomo has a global network of facilities located in 24 countries worldwide. The factories are operated by a workforce of over 60,000 employees, of which 10,000 workers are employed in Europe.

The Japanese group supplies its output to a number of major car producers, including GM, Mazda and Honda.

Sumitomo Electric Wiring Systems – Japan
Website: www.sws.co.jp



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Uhing produces 100,000th RG3-15 rolling ring drive

IN August last year, the 100,000th rolling ring drive of the RG3-15 series from Joachim Uhing was completed.

Celebrating the milestone achievement, company director Wolfgang Weber said: "We are showcasing the anniversary product in a prominent place of our facilities.

"We did not yet deliver it to a customer. Although technicians are said to be rational people, we look at this item with a certain pride."

But this is not the first anniversary Uhing has celebrated. In April 2012, a toast was raised to the 100,000th RS8 linear drive nut. The following year's summer saw the 70th anniversary of Uhing as a company.

"Such milestones show again and again how long our company has been a successful market player," said Mr Weber.

"And to some extent, they make us grateful because not every technology venture founded around 1950 was granted such a long-term success in a world that is constantly changing and makes higher and higher demands."

Why are Uhing products being manufactured on the



○ The 100,000th RG3-15 rolling ring drive from Uhing

rolling ring basis and used worldwide for decades so successful?

"There are fundamental properties that speak in favour of these products," explained Jörg Wadehn, Uhing's managing technical director. "Our drives designed on the rolling ring principle are easy to seal against dust and liquids, for example.

"For this reason, they are particularly suited for use in the foodstuffs industry and other sectors with high hygiene requirements.

"They are likewise recommended for implementation in medical devices because of their low operating noise.

"Another asset is that rolling ring drives are easily operated and have a long service life due to their extremely well designed mechanism.

"This makes our products attractive, not only from a technical but also from an economical point of view."

The electronic variant of the Uhing rolling ring drive showcased at wire 2016 in Düsseldorf last year is also interesting: The Uhing Motion Drive system is based on a Uhing rolling ring drive enhanced by sensors and an electronic control unit.

The mechanical and electronic components are matched to each other and let the user individually define and store a great number of parameters.

Available for shaft diameters from 8 to 60mm, the products of the RG series fit a wide range of machines. The total number of rolling ring drive units shipped by Uhing during all the decades since it was invented should by far exceed 100,000.

Joachim Uhing GmbH & Co KG – Germany
Website: www.uhing.com

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REF#	DESCRIPTION
59A-259	NIEHOFF M85, 11 die, With Annealer and Coiler.
15-150	OMA Braider 24 carrier, 190 mm.
21-159	OUTOKUMPU Oxygen Free Copper Rod Upcaster, 14,000 tons/year, 15 mm cast rod, 16 lines.
59A-258	SYNCRO 18T 13 Die Aluminum Rod Machine.
10-233	HENRICH Continuous Resistance Copper Rod Annealer Model ES -01-DR-501-4; 18 - 6 AWG.
17-346	MGS Double Twist Buncher, 30 inch Diameter.
32-100	ITO SIN Continuous Lead Sheathing Extruder. 35 kg/min pure lead. 10 to 110 mm Cross Heads.
59C-325	HENRICH Fine/Intermediate Copper Wire Drawing Lines. Enter 1.3 mm, 27 Dies, Annealer and Spooler.
23-156	SCHUMAG KZRP-IV, 60 mm Dia. Draw Straighten and Cut Line.
20-187	NIEHOFF Drop Down Coiler, Mdl. WF-800, 800 mm diameter, with T-400 Dancer.
50-253	BARTELL Tubular Strander, Model B64, 10" Diameter, 24 Bays, Encircling Bearings.
60A-280	KOCH Steel Rod Drawing Line 8 Blocks, enter 11 mm.
27-271	DAVIS STANDARD THHN Extrusion Line. 3.5/2.5 inch, 24:1 Extruders. Year 2012.
27-275	PVC COMPOUNDING Plant 900 kg/hour.
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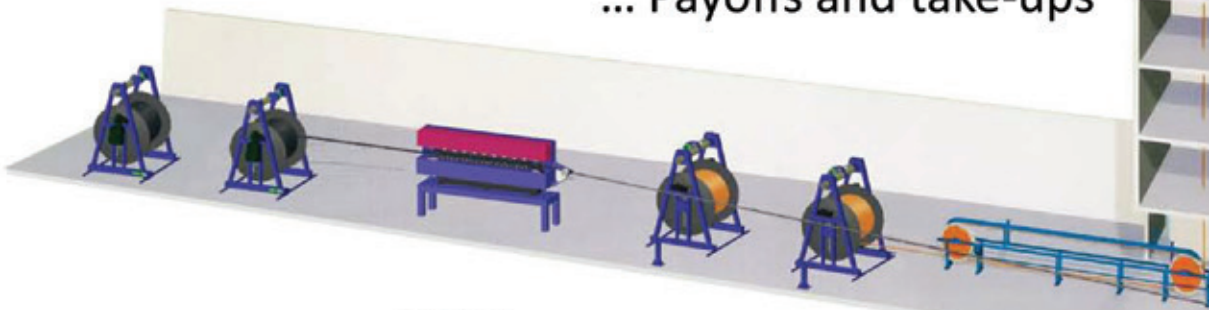
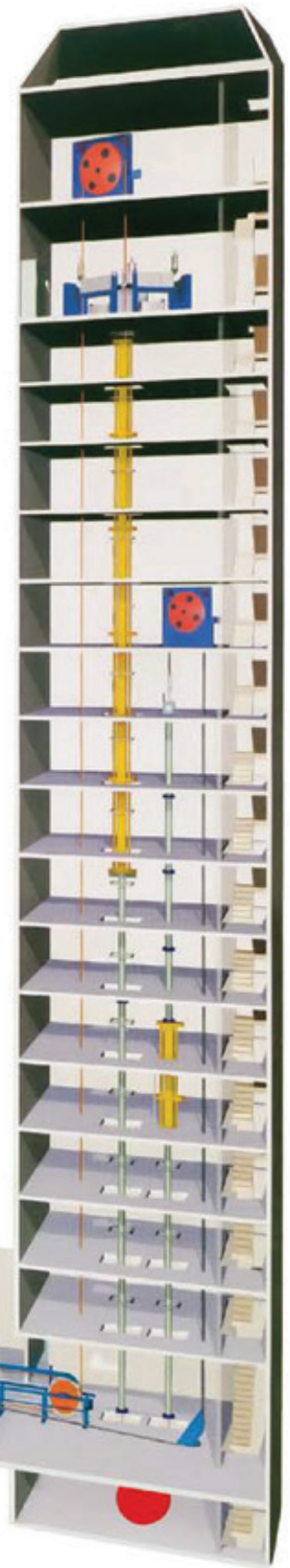


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€8m investment in steel site

THERE is continuing growing trend toward modified custom special steels. To meet future customer demands for wire rod products and greater coil weights, Swiss Steel has invested €8.5m at its Emmenbrücke site.

The entire coil handling division is now state of the art and provides maximum flexibility during further processing of the steel as well as during binding and packaging of the drawn wire. These are important prerequisites for the development of steel products for specific customers. Modernisation is one way that Swiss Steel AG is further strengthening its position as a technology leader.

Customer orientation, flexibility and safety are key words in focus of sustainable steel production. With the modernisation of the steel rolling mill, Swiss Steel, a company of the Schmolz + Bickenbach Group, is specifically focusing on the future demands of wire production.

Apart from occupational safety, the high degree of automation and more room for manoeuvring in production and customer service are central elements of coil handling. The process parameters were extensively documented electronically, and the material flow is comprehensible at all times.

Intelligent data analysis supports conceptual freedom in bespoke development projects – specifically when it comes to configuring product properties to meet specific requirements and the needs of individual customers. Swiss Steel is taking a crucial step towards Industry 4.0 in steel production.

Also new at the rolling mill is the technology used from acceptance of the drawn wire to its pressing into coils at the two wire lines.

After acceptance testing, the wire is transported by means of a vertical pallet system with 60 pallets and a smaller, horizontal hook conveyor to the press.

The technology replaces the almost 40-year-old horizontal transport via a hook conveyor. Combined with the new press, the process is now faster and delivers more consistent quality while using much less energy: The loose wire is pressed into coils using two press



○ The new wire handling system at Swiss Steel

plates to prevent damage to the product.

The pressing power of this process can be adjusted to customer specification. The coils are then bound with flat steel strips for a more compact package. Compared to conventional binding with steel wire, transport safety and surface quality are guaranteed at all times.

In focusing offerings on the customer, the efficiency of the wire's further processing by the customer improves. Swiss Steel is thus prepared for the increasing demand in this area for higher coil weights and innovative process ideas.

Swiss Steel implemented the measure during the summer production stop and at the same time modernised the five-stage Kocks block which was inaugurated in 2002. This block is used to produce bar and wire in Garret (18-50mm ø) and Stelmor (5.5-17.5mm ø) dimensions.

In taking this step, delivery reliability has increased sustainably, while maintaining the high standards of quality. Occupational safety has also improved and now complies with current occupational health and safety regulations.

Schmolz + Bickenbach – Germany
Website: www.schmolz-bickenbach.com

Tenova business forges ahead

Effective from 1st January, the businesses of Tenova Core Inc, Pomini Tenova Inc (USA) and Tenova I2S will operate as a single company. The new company identity is Tenova Inc and all of its business activities will be conducted as Tenova Inc.

Thomas Bovalina, current Tenova Core president and CEO, will continue to serve in the same position for the newly formed Tenova Inc.

The new company will allow each product area to take advantage of Tenova's global resource network and advanced technology offerings. The Tenova Inc product portfolio includes Melt Shops, LOI Thermprocess (heat treating furnaces), Italmimpianti (reheating furnaces and strip processing), Pomini (roll shops) and I2S (cold rolling mills).

The combined company will also allow for a more seamless and efficient sales and delivery process for its customers in the USA, Canada and Mexico markets.

Tenova Inc – Italy

Website: www.tenova.com

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Planning pays off for Highvolt

THE planning of Highvolt and LPEng has paid off: After two years, the Highvolt Service Centre in São Paulo, Brazil, has already earned a good reputation and can look back on its first successes.

In January 2015, LPEng, the Highvolt representation in Brazil, opened the first local Highvolt Service Centre worldwide, located at LPEng's headquarters in São Paulo.

Initially, the focus was on Brazilian customers, who benefit from an improved range of services.

"In the meantime, our service centre has got established so well that its activities have been extended successfully across national borders," explained Highvolt sales engineer Dan Keller.


Highvolt and LPEng have been working together closely for 17 years. The managing directors of both companies are certain that the demand for high-quality consulting services when planning high voltage test laboratories is going to increase.

The South American customers of Highvolt can now take advantage of many of the services offered directly on site, including training, thus saving time and costs.



○ The high quality of the services is ensured by the continued training of service employees in Dresden by Highvolt, like Alex Bernardi, pictured, and by teaching on new product developments

Highvolt Prüftechnik Dresden GmbH – Germany
Website: www.highvolt.de



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We are looking forward to seeing you!

For more information: www.lamnea.se

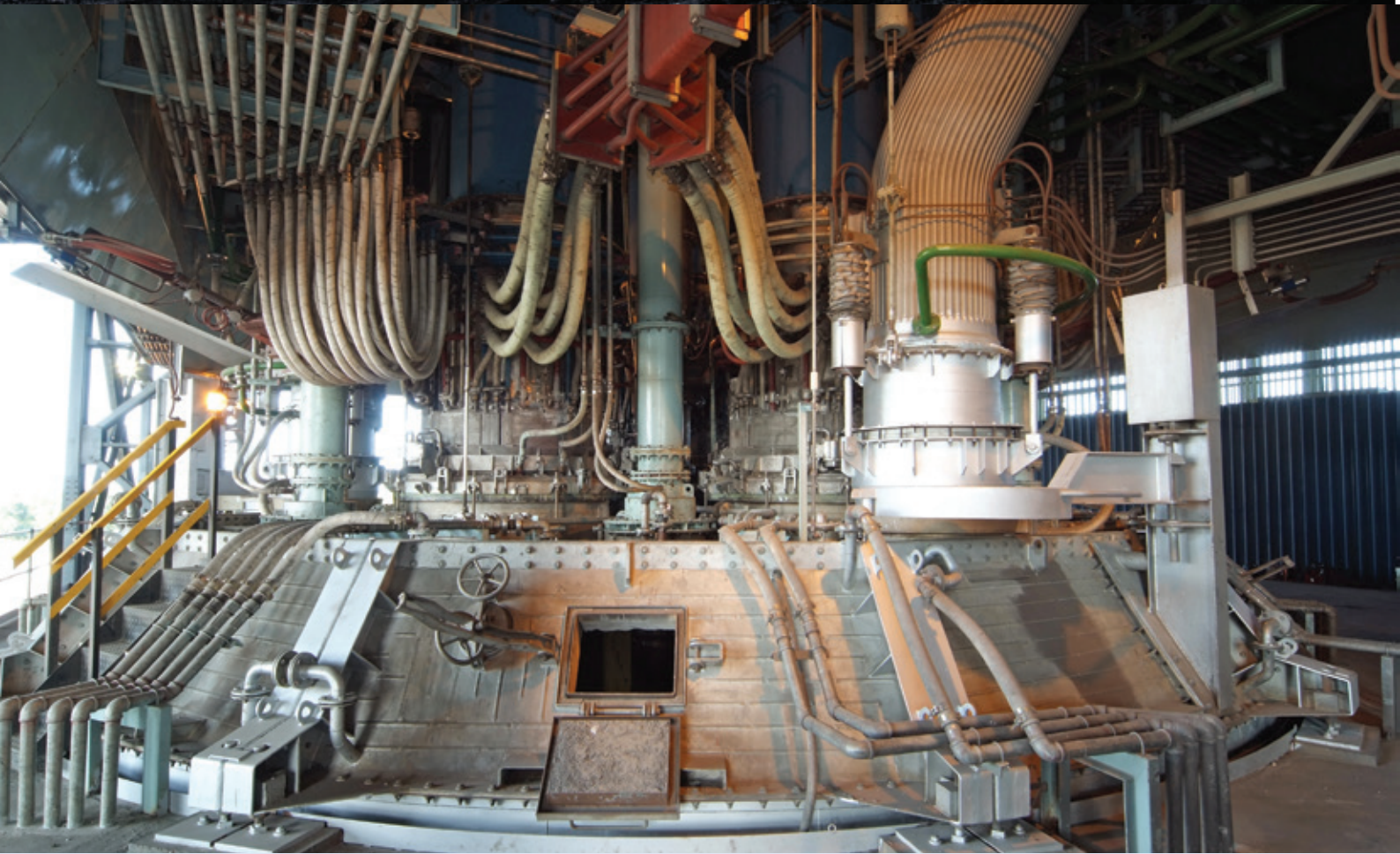
Highest Production Speed through round soap box design. The **special round soap box** design allows extended exposure of the wire with the lubricant, resulting in better lubricated wire for **faster wire drawing**.

Looking for more machine flexibility when drawing wire?

With Lämneå Bruk's Drawing Machine you can start and finish on any block you want and what makes our machine special, is the option to **bypass any number of blocks**.

Superior Block Cooling Effect

The blocks with v-grooves create a **double cooling effect** from inside and outside the block. On the inside the block is **coated with zinc** to prevent overheating through corrosion. On the **outside the tungsten carbide coating**, channels heat three times more than ceramic coating for advanced cooling.



○ 印度SAIL钱德拉布尔铁合金厂(CFP)45 MVA埋弧炉开炉仪式的 Tenova Pyromet代表及客户代表

印度最大的硅锰炉

大容量炉和冶炼厂专家Tenova Pyromet 宣布，用于印度钢铁管理局有限公司（SAIL）钱德拉布尔铁合金厂（CFP）的45 MVA埋弧炉已成功合闸。

作为印度最大的硅锰炉，该设备目前正在进行倾炉和出渣。

Tenova Pyromet在集团协议中与本地供应商 GSPL 一起为SAIL工厂扩大规模履行合同。

工作范围包括设计和制造、完整炉及辅助设备的供应和安装、耐火材料和结构、以及测试、调试和性能保证。

该厂装机容量为100,000 tpa锰铁、硅锰、以及中碳/低碳锰铁，是该国从事锰铁合金生产的唯一国有企业。

这款完全自动化且极具价格竞争力的硅锰炉采用Tenova Pyromet最先进设备，包括其工业基准电极柱和专利AutoFurn™ 炉控制器。

此用户友好型系统是操作“智能”炉的理想方式，提供超过

SCADA和PLC的更高自动化水平，优化功率输入，维持平衡与稳定。

除了泥炮和钻头是在南非生产，所有设备都在印度本地制造，以达到最佳的国产化。

“该项目展示了 Tenova Pyromet 全面的工艺经验和项目执行能力。” Tenova Pyromet 销售与市场总经理 Andre Esterhuizen说。

“尽管地域偏远且存在语言障碍，我们已向客户成功交付我们的承诺——客户也对 Tenova Pyromet 员工为工厂卓越安全记录所作的贡献表示感谢。”

整个工厂95%的安装已完成，此项目已达成在6,600多个工作小时内没有发生安全事故的记录。大多数劳动力来自本地区，这也是该项目关注技能提升的一部分。”

Tenova South Africa (Pty) Ltd – 南非
网址: www.tenova.com



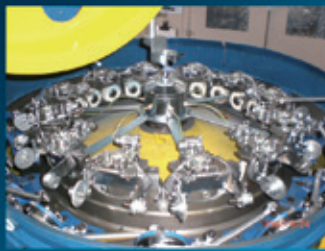
YDCE

PTFE Coaxial taping machine

RBJ-Z series driven taping machine (vertical, horizontal)

RBJ-Z型主动放带绕包机 (立式, 卧式)

is the special equipment for producing communication cable, control cable, aircraft cable etc. This machine is specially suitable for small-tension, easily-stretching tape material, and it has the function of displaying tension change through the tension sensor.



10% up of speed for the braiding machine

GSB-1A: 165r.p.m.

GSB-2: 110r.p.m.

Please contact us for more details about our machines:

- GSB series high speed braider
GSB 系列高速编织机
- GSB-Z series heavy braider
GSB-Z 系列重型编织机
- WGSB series horizontal heavy braider
WGSB 系列重型卧式编织机
- LRBJ series vertical taping machine
LRBJ 系列立式绕包机
- WRBJ series horizontal taping machine line
WRBJ 系列卧式绕包机生产线
- Extruding line
挤出机生产线
- Pay-off and take-up
各类收放线架



在正确的道路上扩大规模和多样化

作为印度光纤、光缆、纤维增强复合材料制造商和主要电子政务服务提供商，Aksh Optifibre 有限公司宣布了2017财年的两项季度结果。

- 收入额为9.041亿卢比。息税折旧摊销前利润(EBIDTA)为1.068亿卢比。
- 本季度出口销售额为5.096亿卢比。

公司在2016年宣布的升级和扩大规模计划已走上正轨。OF和OFC升级已完成，而OF和FRP扩大规模正在进行中，即将在3月按时竣工。为了在纤维增强复合塑料(FRP)杆领域保持领先地位并维系其战略客户，公司已收购锡尔瓦萨Unitape Mandovi Composites 私营有限责任公司100%的股权(而后更名为Aksh Composites私营有限责任公司)。

针对其规模宏大的Ophthalmic Lens项目，公司筹划的多样化战略执行顺利，正展现出良好的前景。土地已完成收购，然后是施工建设和机器采购。

规模扩大计划覆盖了公司所有制造工厂。公司的总收入额达9.041亿卢比，也是该计划的成果之一。正在进行的升级和扩大规模项目，将会让公司以健康的订单情况进入下半年。为了缓解人口危机，公司正在世界范围内着力拓展新地区并发掘长期战略同盟。公司出口营业额相比上一财政年度同期上涨 63%。公司下属的电子政务机构“1 Stop Aksh”已提前实现超过10000台自助服务机的目标。在拉贾斯坦邦超过18个地区，共有18000名学生注册了公司所支持的“国家数字化扫盲任务”认证。

2016年在世界各地安装的光缆长度达2.10亿芯公里，相比2015年同期的1.89亿芯公里，增长率达到12%。到2020年，OFC市场预计可达120亿美元。印度目前已迎来消费者移动服务的高峰期，数据服务使用量激增，刺激了4G/LTE技术的使用需求，为印度电缆制造商提供了大量机会。

根据主导产业报告，印度到2020年3G/4G订阅用户将会超过6.7亿，约占订阅用户总基数的48%。印度还在2016年超越美国成为世界上第二大智能手机市场，安装基数达2.75亿台设备。印度和东盟(ASEAN)将是光缆需求的主要地区。

Aksh Optifibre Ltd – 印度
网址: www.akshoptifibre.com

有实体工业支持的广州2017年国际电线电缆及附件展览会

广州2017年国际电线电缆及附件展览会将于2017年6月9日至11日，再次于中国进出口商品交易会展馆中举行。本次盛会由南方电网传媒有限公司、广州博览会展览服务有限公司及广州光亚法兰克福展览有限公司联合举办。

去年，展会成功吸引350家参展商以及来自25个国家和地区共18,869名客人入场，其中包括3,700名海外买家。

广州光亚法兰克福展览有限公司总经理胡忠顺先生说道：“这已经是广州国际线缆展成功举办第九个年头，是华南地区重要的国际性行业盛事。

展会内容丰富，服务多个不同领域的制造商，为不同行业带来合适的电线电缆、光纤光缆、相关机械设备及附件，以满足电动汽车、电网、电信业以及国家基建日益增长的需求。”

东莞市涌科电工机械有限公司总经理王秀宇已多次参展。他对宣传工作和展会组织网络印象深刻。“2016年是我们第三次参加广州线缆展，我们对此予以高度重视。展会客户基础庞大，有助于我们建立新的联系并获得来自非洲以及广东和中国西部的订单。主办单位的宣传工作充分反应在客流量上。”他说。除了参展商的积极反馈，展会还获得全

国范围内来自贸易协会和其他著名公司(他们将是会见参展商的主要代表团)的支持，其影响力进一步提升。部分协办单位包括：超高压输电公司、中国南方电网、广东电网公司、云南电网公司、贵州电网公司、海南电网公司、广州供电局、深圳供电局、南方电网电力研究院、中国南方电网能源有限公司、广东电线电缆协会、湖南电线电缆协会、辽宁省电线电缆行业协会和中山市电力行业协会。台湾区电线电缆工业同业公会也为展会提供了支持。中国电线电缆制造商正利用行业机会通过公开招标提出各种类型的电缆，以满足中国电信巨头(中国电信集团和中国移动)的要求。

○ 来宾参观2016广州线缆展的展厅



继中国最大的采购订单之一(来自中国电信集团的10kV和380V XLPE通信软电缆)以后，截至2018年底，还会有来自中国移动及其子公司和分支机构为旗下所有项目进行的大型采购活动，备受行业期待。相关需求产品包括阻燃铜导线和防火柔性电缆(ZA-RV-450/750V、ZA-RVV-600/1000V、ZA-RVV22-600/1000V、WDNA-RYY-600/1000V)，以及低烟、无卤、阻燃、XLPE绝缘、聚烯烃护套铜芯电缆(WDZA-YJY-600/1000V)。投标电缆总长度当前估计为14,400公里。广州2017年国际电线电缆及附件展览会将与广州国际建筑电气技术展览会、以及亚洲最大的照明展广州国际照明展览会同期举行。

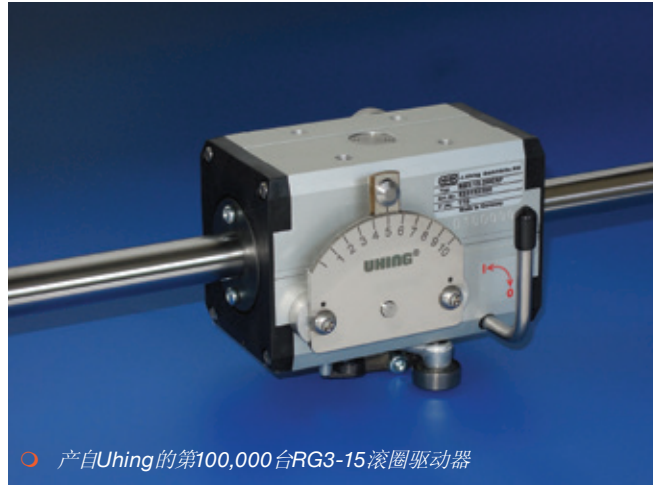
Wire & Cable Guangzhou 2017 – 中国
网址: www.wire-cable-china.com

Uhing的RG3-15滚圈驱动器产量达100,000台

去年八月份, Joachim Uhing 公司完成了第100,000台RG3-15系列滚圈驱动器。

公司庆祝此里程碑成就时, 主任 Wolfgang Weber说: “我们正在厂区隆重展示这周年纪念产品。”

“目前还没有将其交付给客户。尽管技术人员通常被认为是理性的人, 但我们仍对此感到非常骄傲。”不过, 这并非Uhing第一次庆祝的周年纪念活动。四年半以前, 即2012年4月, 线性驱动器RS8的产量达到100,000台。其后一年夏天又见证了Uhing公司成立70周年。



产自Uhing的第100,000台RG3-15滚圈驱动器

“这些里程碑一再显示出, 我们公司一直是成功的市场竞争者。” Weber先生说。

“这在某种程度上也使我们心怀感恩。我们是成立于1950年前后的技术公司, 面对这个要求越来越高而且不断变化的世界, 不是所有同时期成立的企业都能取得长期成功。”

为什么Uhing能够制造基于滚圈的产品并在几十年间成功应用于全世界?

“产品的基本属性就是最好的解释。” Uhing管理技术总监 Jörg Wadehn解释道。“我们的驱动器基于滚圈原理设计, 易于密封防护(比如防尘和防水)。因此, 产品特别适合用于食品

工业和卫生要求很高的其他部门。而且由于运行噪声小, 也推荐用于医疗设备。滚圈驱动器的另一项优点是设计机理优秀卓越, 因此操作方便, 使用寿命长。无论是从技术角度还是从经济角度, 这都使我们的产品非常具有吸引力。”

去年在杜塞尔多夫国际线缆及线材展览会(wire 2016)展出的Uhing滚圈驱动器电控版也值得关注: Uhing Motion Drive系统基于由传感器和电控单元增强的Uhing滚圈驱动器。其机械组件和电子组件相互之间完美匹配, 允许用户自定义并存储大量参数。

RG系列产品适用轴直径范围为8-60mm, 可广泛用于多种机器。自公司成立以来的几十年内, Uhing交货的滚圈驱动器单元总数已远远超过100,000个。

Joachim Uhing GmbH & Co KG
- 德国
网址: www.uhing.com

Ideal Networks公司为一类(Tier-1)和二类(Tier-2)光纤测试提供指导

为了帮助电缆安装人员和维护人员选择正确的光纤测试设备, Ideal Networks公司新出版了免费白皮书, 为认证光纤布线提供有关各类测试的指导。

“不同于铜布线, 认证光纤布线时有两个级别, 这决定了必须执行何种类别的测试以及应使用何种测试仪。” Ideal Networks公司业务部经理Dan Payerle说。“为了说明应使用何种类别的测试, 以及执行二类认证是否还要符合一类认证的要求, 白皮书详细说明了各种要求, 介绍了各种测试仪的优点及其工作方式。”他补充说。

一类(Tier-1)认证是对一端到另一端布线总插入损耗(即衰减)的测量, 测试要么使用光功率计和光源(PM/LS), 要么使用光纤损耗认证测试仪(OLTS)。二类(Tier-2)认证提供线路各组件相关的损耗信息, 使用光时域反射计(OTDR)执行认证, 为线路中的各连接、接头和电缆区段及其性能提供有用的图形显示。需要认证时, 执行一类测试是较好的做法, 也可以选择执行二类测试。尽管OTDR能像OLTS一样显示总链路损耗, 但二类认证不能替代一类认证, 因为两类设备报告的总链路损耗存在细微的差别。

OLTS(比如Ideal Networks OC I 一类光缆认证仪)测量线路真实的光损耗, 使其成为确定线路端到端损耗的最准确方法, 是一类测试的必需设备。另一方面, OTDR(比如 Ideal Networks公司的 OTDR II)可以获得待测试线路的特征, 从而提供额外优势, 比如用于更快速维修的高级故障排除。

“最终所需测试是布线承包商与其客户之间的协议。” Payerle先生说。“不过为了保证客户满意, 至关重要是光纤安装人员应理解不同类别, 进而理解何种认证报告将能提供必要的保障。”

Ideal Networks - 英国

网址: www.idealnetworks.net

价格上涨

作为 J M Huber Corporation 的子公司, Huber Engineered Materials 已宣布将提高其在北美制造的沉淀二氧化硅和硅酸盐产品价格。涨价从2017年1月1日起生效, 或遵照直接客户和经销商认可的当前合同。由于原材料、能源、货运、劳动力和制造成本不断提高, 北美制造的产品价格上调了3%, 这是非常必要的。

Huber Engineered Materials - 美国
网址: www.hubermaterials.com

绿色能源

哈萨克斯坦国家能源部已宣布, 到2020年计划委托106家工厂生产3,054.55MW的可再生能源。这将包括总发电容量713.5MW的28座太阳能发电厂。能源部还补充说, 可再生能源项目实施将来自其他资金, 不由国家预算提供经费。到2020年, 哈萨克斯坦利用可再生能源发电量计划达到电总量的3%, 到2030年将上升到10%。

矫直机和切割机专家

Delisi Srl 公司专业制造自动矫直机和切割机，用于直径1-20mm的光面线材和带肋线材。机器特征是可以快速更改直径和长度，实现快捷设置——只需约一分钟，即可更改加工直径。

事实上，机器陀螺配备了矫直单元预调节咬合口，以加工各种直径的线材：能根据需要加工的线材安装合适的矫直单元，使陀螺工作不浪费时间和材料。由于长度合适，Delisi机器不会损坏线材。

就矫直咬合口而言，铝线和铜线可以使用聚酰胺；铝线、拉丝钢和不锈钢线材可以使用青铜；拉丝线材可以使用铸铁；拉丝、层压和带肋线材可以使用含硬质合金的铸铁；拉丝、层压和带肋线材也可以使用整体硬质合金。此外还可以使用特氟龙或木制材料以满足客户要求。

通过一系列不损坏线材的弯折，陀螺中的线材在移动的同时完成矫直。切割期间，切刀迅速完成切割。完成切割后就快



○ Delisi — 光面线材和带肋线材矫直机和切割机的专业制造商

速返回至起点，无需停止线材。对于大量短程切割(比如工作电极)，Delisi可为机器配备连续切割圆盘，进而提高切割速度，很容易即可达到每分钟400件的最大生产速度。

机器可以根据需要配备电子编程器和不同类型的回馈装置、物料收集台、以及其他专用设备。

Delisi Srl – 意大利

网址: www.delisisrl.com

向钢厂投资800万欧元

改进型定制特种钢的需求呈持续增长趋势。为了满足未来客户对线材产品和更大钢卷重量的要求，Swiss Steel已在埃布吕克分厂投资了 850 万欧元。

整个钢卷加工部门现已实现业界领先的技术水平，可为进一步制钢加工以及拉制钢丝装订和封装提供最大的灵活性。

这是为特定客户开发钢产品的重要先决条件。现代化是 Swiss Steel 股份有限公司进一步强化其技术领先地位的方式之一。

客户导向、灵活和安全——这些都是聚焦可持续钢生产的关键词。随着轧钢厂

实现现代化，Schmolz + Bickenbach 集团公司旗下的子公司 Swiss Steel 专门关注线材产品的未来需求。

在生产和客户服务中，除了职业安全，高度自动化和更多操作空间也是钢卷加工的核心要素。加工参数广泛采用电子方式记录，材料物流时刻做到清晰明了。

在定制开发项目中采用智能数据分析支持概念化自主设计——特别是在配置产品属性以满足特定要求及个体客户需求的时候。在钢生产中，Swiss Steel正在工业4.0的道路上迈出关键的一步。

从拉制钢丝验收到双线轧入钢卷，新技术也已应用到轧钢厂。验收测试后，钢丝将被运输至顶级的轧制机，这个垂直运输系统中配有60个托盘和一个小型横钩式输送机。

该技术取代了沿用近40年的水平运输(通过吊钩输送机完成)。结合新型轧制机，现在加工速度更快，质量更一致性，同时使用的能源更少；使用两块轧制板将松散的钢丝轧入钢卷，以防损坏产品。

此过程的轧制力可以根据客户规格要求进行调节。然后将钢卷装订成扁平钢带，适于更紧凑的封装。相比传统的钢丝装订，新方法可随时保障运输安全和表面质量。

由于重点关注交付给客户的产品，客户深加工线材的效率得以提高。通过这种方式，Swiss Steel得以做好准备，应对该领域对更大钢卷重和创新加工理念不断增加的需求。

夏季生产中止期间，Swiss Steel实施了这一措施，同时对第5代Kocks轧机(创始于2002年)进行了现代化。此轧机用于生产Garret尺寸(18-50mm ϕ)和Stelmor尺寸(5.5-17.5mm ϕ)的杆材和线材。

采取上述措施后，交货可靠性持续提升，同时保持最高标准的质量。职业安全也得到了改善，现已符合当前职业健康安全法律法规。

Schmolz + Bickenbach – 德国

网址: www.schmolz-bickenbach.com

○ Swiss Steel 的新型线材加工系统



NENA开放日成功举办

过去20年来, Niehoff Endex北美公司(NENA)每隔两年为其客户和合作伙伴举办一次为期两天的开放日。最近一次开放日的时间为2016年11月,新泽西州斯韦兹伯勒工厂及办公楼举办的展会创纪录地迎来了30家公司约65名客户。

在第一天的活动中,伴随着传统音乐的响起,拉开了德国风情“谷仓节”的序幕,迎接与NENA员工建立了工作关系的客人、来自德国施瓦巴赫Niehoff集团总部的客人、以及来自电线电缆行业的其他同仁。

第二天着重突出四大元素,为到访客人带来最大收益。第一大元素是一组演讲报告,提供有关Niehoff机械、工业、以及行业具体事务的信息。

Integer Research 公司高级分析师 Louisa Winnik的报告名为“Integer对北美电线电缆市场的观点”。然后是对Maschinenfabrik Niehoff工程总监 Stefan Nixdorf的报告“Niehoff的新产品开发与创新”。

紧接着NENA首席执行官Robert Wild报告“铝质多线材拉丝与退火:关键成功因素及挑战”。Schmidt Maschinenbau有限责任公司总经理 Holger Junkereit报告“专业拉丝机和线材工业设备”,随后是Reber Systematic 有限两合公司总经理 Klaus Eichelmann报告“过滤介质:使您的拉丝工艺与众不同的正确选择”。

最后, Baum's Castorine 有限公司销售/市场副总裁 Tom Whitcombe 报告“铝质线材拉丝:油与乳化液”。

第二大元素聚焦Niehoff机械示范工厂参观:一台双捻机D632、两台编织机



○ Niehoff销售与市场行政副总裁Bernd Lohmueller, 开放日演讲期间

BMV、一台NPS双纺机、一套完整的用于铝和铜的杆材分解生产线(包括退火炉)。此外,来宾还看到一块高度20'的黑帘,遮挡住一个多线材生产线。

第三大元素是NENA代表和来自其他公司(Buehler Redex公司、Reber Systematic 有限责任公司、Schmidt Maschinenbau、Esteves Group USA、Baum's Castorine 有限公司和 Howar Equipment公司)的合作伙伴都参加了演讲报告。

作为压轴大戏的最后一个元素,是北美新一代多线材拉丝生产线MMH 112和RM 202的揭幕仪式。隐藏在帘子后面的生产线令人浮想联翩,“揭幕”之后更令人印象深刻,展现出最新发展阶段。这条生产线在生产条件下速度可达8,000 fpm。在进行展示前, Niehoff销售与市场行政副总裁Bernd Lohmueller向观众们进行了详细讲解。

Niehoff为这条生产线使用了所有可能的最新先进技术:独立驱动绞盘模块、用于退火炉的中频技术、模块化设计、以及更多其他技术。此生产线代表着Niehoff新一代多线材拉丝机开发的最新进展,现已进入广泛的实测阶段。

“今年对我们来说非常特别。”NENA首席执行官Robert Wild补充道。“我们为此盛会投入了大量精力和资源。能结识到这么多的客户朋友,并获得积极的正面反馈,这是对我们的最高奖赏。”

我们坚信这类展会能彰显我们的能力,有助于展示 NENA 的内涵。展会也是我们为客户表达感谢的方式,感谢你们的持续信任并花时间和精力参加我们庆祝活动。”

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

用于国内市场的电缆

位于阿联酋的Ducab公司利用阿布扎比国际石油博览会(Adipec)展示其在石油、天然气和石油化工行业的产品优势。

公司为阿布扎比Senaat和Investment Corporation Dubai (ICD) 所有,是技术领先的电缆布线产品制造商,服务于陆地和海上各种行业。

Ducab宣布了阿布扎比哈里发工业区1200万美元的担保订单。此订单包括交付中压/低压电力电缆、控制电缆及

配件。该地区的石油和天然气部门也非常关注公司的PetroBICC系列,当前Ducab正为其提供价值130万美元的订单。

其他最近的重大订单包括为North East Bab油田三期工程(Rumaitha和Shanayel油田)交付价值1000万美元的中压/低压电缆。

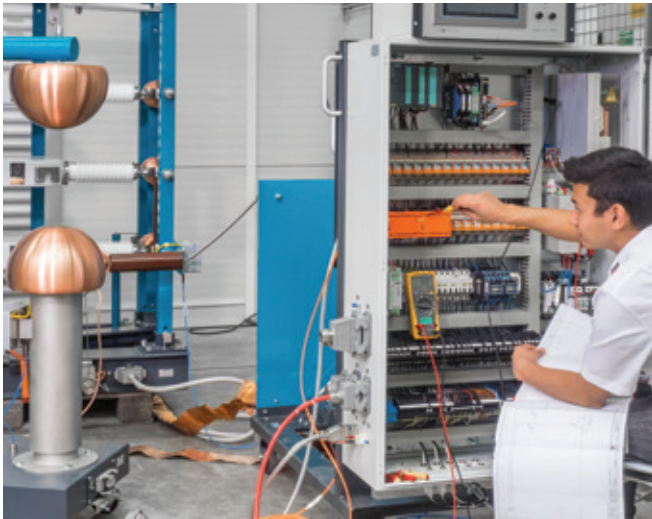
价值6000万美元的阿布扎比岛地面施工项目、以及价值7000万美元的科威特清洁能源项目最近也已完成交付。

Ducab董事长Ahmad Bin Hassan Al Shaikh博士说:“我们的专业产品组合已为不同行业提供单源电缆解决方案,在符合全球最高标准的同时,与阿联酋标准及本地区未来能源愿景保持一致——我们为此感到自豪。”

“Adipec为我们提供了展示产品并与客户探讨商务的理想机会。”他补充道。

Ducab – 阿联酋
网址: www.ducab.com

Highvolt, 努力总有回报



○ Highvolt通过在德累斯顿持续培训服务人员(比如Alex Bernardi, 如图所示)以及教导新产品开发, 确保高质量服务

Highvolt和LPEng的规划已得到回报: 经过两年的运营, 位于巴西圣保罗的Highvolt服务中心已赢得良好的声誉, 下面让我们回顾其首次成功。2015年1月, Highvolt位于巴西的代理商LPEng开设了全球第一家本地Highvolt服务中心。它位于LPEng设在圣保罗的总部。中心最初着重于巴西客户, 以更优质的服务为其带来裨益。

“我们的服务中心在此期间建设得非常顺利, 其活动已成功地走向国门。” Highvolt销售工程师Dan Keller解释说。“比如, 巴西同事已全权委托我们的新系统用于Ecuatran (厄瓜多尔最重要的变压器生产商之一) 的冲击电压试验。我们的客户非常满意。期间技术进展顺利, 员工接受了专业培训, 可以信赖现场随时候命的服务人员, 并按需提供快速响应。”

Highvolt和LPEng已经密切合作长达17年。两家公司的总经理都确信, 在规划高压测试实验室时, 应该增加高质量咨询服务的需求。Highvolt南美客户现在可以直接利用当地服务提供(包括培训)的诸多优势, 从而节省时间和成本。

Highvolt Prüftechnik Dresden GmbH – 德国
网址: www.highvolt.de

CMP Products公司在莫斯科设立分公司, 目标是扩大在俄罗斯的市场

作为电缆接头和电缆夹具的领先制造商, CMP Products公司正巩固其在俄罗斯市场的地位, 在莫斯科设立了分公司, 推出了新的俄罗斯网站并融入俄罗斯文化。

CMP Products有限责任公司在莫斯科设立分公司, 旨在强化其在俄罗斯和独联体(CIS) 10年来的地位, 可以直接分销给客户, 使CMP能更灵活地适应市场需求。

俄罗斯分公司于2017年初正式运营, 首先会进行一系列危险场所专用电缆接头的备货, 比如世界闻名的Triton T3CDS、E1F系列、以及A2F系列; 此外还将推出CMP全系列电缆夹具。

我们在俄罗斯开发了新网站, 以支持大规模进入市场, 包括先进的产品查找器。

新分公司总经理Yuri Savushkin还招募了具有本地市场常识的全新本地团队, 以驱动业务开展。

CMP Products 有限责任公司的 Yuri Savushkin总经理说: “该地区需求不断增加, 新分公司将允许CMP Products为市场提供更灵活的服务, 并具有比以往任何时候更快响应客户需求的能力。通过招募本地CMP Products团队、在俄罗斯构建网站、以及开设新分公司和仓库, 表明我们将全心全意为市场服务。”

CMP Products 的首席执行官 Vince Patterson补充道: “我们继续在全世界寻找增长机会, 确保我们的产品随时可用于六大洲的项目和客户。我们在俄罗斯已累积多年经验, 结合更‘接地气’的运营方式, CMP的俄罗斯团队将在近期有望实现激动人心的增长。”

扩大规模是CMP在全球寻找增长机会的一部分。

今年早些时候在加拿大阿尔伯塔省开设新厂, 就是该行动的最新举措。

CMP Products – 英国
网址: www.cmp-products.com

有四座工厂了!

日本住友电工布线系统公司在罗马尼亚 Petroșani开设了新厂。这是日本制造商在罗马尼亚市场开设的第四座工厂。这一举措是住友在罗马尼亚凝聚其制造能力的长期战略的一部分。2015年, 住友关闭了位于斯洛伐克西部托波尔恰尼的工厂, 并将其产能转移至位于代瓦、阿尔巴尤利亚和Orăștie的三座工厂。住友总部设在日本大阪, 在全世界24个国家设有工厂。工厂员工总数超过60,000名, 其中10,000名员工在欧洲雇佣。住友集团为许多主要汽车制造商(包括通用汽车、马自达、本田)提供产品。

Sumitomo Electric Wiring Systems – 日本 网址: www.sws.co.jp

厂址搬迁!

Allied Wire & Cable 公司将其在新罕布什尔州的办事处从梅里马克搬迁到贝德福德。这次搬迁使公司在新英格兰地区拥有更大的客户群。新罕布什尔分公司经理Mike Reardon说: “非常高兴我们搬迁到贝德福德。这已是我们十年内的第三座工厂, 真是令人难以置信。新工厂将使我们继续成长壮大。持续取得成功是新罕布什尔全体员工的约定。”

Allied Wire & Cable – 美国
网址: www.awcwire.com



○ *Annealer for flat stainless steel wires and profiles*

More demand for high-output plasma heat treatment lines

PLASMAIT from Austria is seeing an increasing demand for its high-output plasma heat treatment lines for stainless steel products. The next deployment of its PlasmaAnnealer will take place in Southeast Asia.

Plasmait sold a 30kW plasma annealer to a renowned stainless steel wire producer, who wants to replace its traditional tube furnace for production of flat ferritic and austenitic product with widths up to 30mm.

The HPA30 plasma annealer with output capacity of 100kg per hour will allow the manufacturer to halve the energy cost per kilogram of output whilst allowing for a considerable cost saving in terms of peak power consumption.

Much lower power connection requirements of plasma annealer also means cheaper cabling installation for connecting power.

The new compact single-line

production will have the same output as the old multi-line furnace and will take about one third of the shop floor space.

A single-line production will also reduce material manipulation and limit the investment into the associated takeups, payoffs and transport system.

A typical plasma annealer installation for stainless steel applications can substitute around ten traditional lines on a conventional strand furnace.

Plasma annealer allows accurate heat input and hence more uniform recrystallisation, which is reflected in homogeneous grain size in the longitudinal and transversal direction.

The HPA30 annealer features also an extended tempering zone to allow for extended dwell time or slow cooling, which is necessary for selected ferritic grades of stainless steel.

The new annealer combines the

advantages of high speed bright annealing and scratch-free surface finish. Processed material does not touch the plasma chamber when at high temperature, which reduces the risk of surface scratching.

This is different to the conventional strand furnace where tubes remain in contact with the furnace guiding supports also during the maximum elevated temperatures when they are most vulnerable to surface damage.

A unique feature of plasma annealing is that heating is conducted in low-pressure inert atmosphere, for which a vacuum installation and accurate material guiding are necessary.

The advantage of a vacuum system is that purging gas (usually hydrogen or forming gas) is supplied at low pressure, which reduces overall purging gas consumption.

Plasmait GmbH – Austria
Website: www.plasmait.com

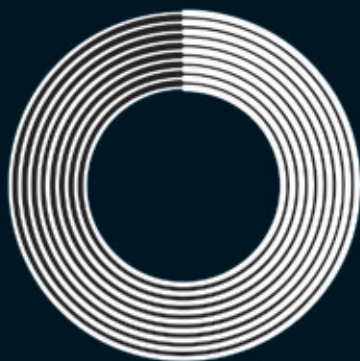
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ROBI low-tension binder for single and dual-end yarns with up to 4,500rpm

ROSENDAHL developed the ROBI high speed cross binder for SZ-stranded fibre optic cable elements.

At 4,500 rpm, it is fast, but at the same time very gentle in its handling. It has an adjustable binding tension to maintain the loose tube shape and the product's quality.

Beyond that, it is specially designed to maintain the very short reversal spots generated by the dynamic drive system of the Rosendahl SZ-strander.

You can achieve a constant yarn tension below 2N with the optionally available active yarn tension control system.

This system keeps the tension constant at all operating conditions even while the binder is ramping up/down and at high production speeds. This allows the user to attain constant and high-precision binding to maintain the product's properties.

Size-wise, ROBI allows large bobbin

dimensions of up to 290mm for the outer diameter. This enables continuous production lengths. The integrated mini twist lock keeps strands perfectly formed and supports immediate binding at the stranding point.



○ The Rosendahl ROBI high speed cross binder

Essential parameters, such as bobbin weight, bobbin diameter and brake curve, are stored in the database.

These parameters are used during line operation to maintain a constant yarn tension at various production speeds.

Rosendahl Nextrom GmbH – Austria
Website: www.rosendahlnextrom.com

Ensuring quality in measurement

There is direct/indirect impact on product quality with tension variation beyond certain limits in processes like extrusion, stranding, bunching, twisting, rewinding, coiling, weaving, coating, inspection, drawing, enamelling or similar.

These processes have a direct impact on the quality of the product, as well as machine performance. This results in the end product quality being compromised in spite of the willingness to give the best quality product by the industry.

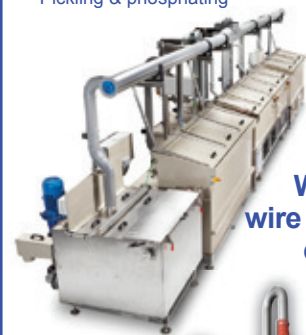
With the help of 25 years' experience, Puretronics is able to introduce a tension measurement system, which is useful in various applications.

In continuous production processes, the quality of the finished products is directly dependent on the accurate measurement and control of the material tension, thus improving finished product quality, reducing waste, increasing processing speeds and minimising machine efficiency and low downtime.

Puretronics – India
Website: www.pureindia.net

www.candorsweden.com

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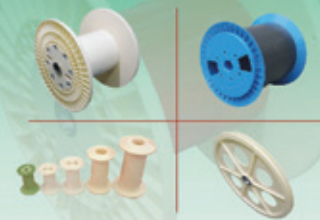


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Email: info@candorsweden.com

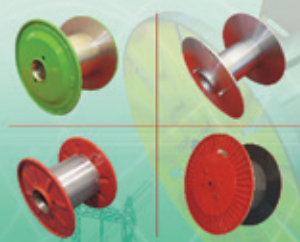
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Issued to Mario Frigerio S.p.A



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MARIO FRIGERIO



FRIGECO



am LESMO

New cutting and feeding machine

TO support low voltage wire and cable processes for insulating applications, Davis-Standard has introduced a new cutting and feeding machine.

Designed for efficiency, this unit facilitates timely transfers from one take-up to the other, while minimising operator involvement. This expedites the take-up reel change process during insulation and enables wire and cable manufacturers to boost outputs.

"This machine features a deflection pulley arrangement and helper caterpillar with a cutting system to streamline the insulation process and ensure quality," said John Zachow, vice president.

The machine's deflection pulley arrangement sits between two portal take-ups. It features pulleys for round cables with integrated clamping, feeding and cutting devices. A pre-programmed length of cable can be pulled out of the accumulator, enabling the operator to affix the end of the cable to an empty reel after being cut.

Pneumatic clamping during take-up changeover is delivered via a helper caterpillar. The caterpillar pulls the cable from the accumulator, transferring it from one take-up to the other.


Design advantages include adjustable vertical and horizontal guiding rollers at

the inlet and outlet sides of the machine, and adjustable upper and lower belts on pneumatic cylinders with pressure rollers. An AC gear motor delivers power with an automatic 'off' feature when the winding drives are activated.


Davis-Standard LLC – USA
Website: www.davis-standard.com



○ The new cutting and feeding machine for wire and cable applications


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Diameter gauges determine the wall thickness

MEASURING and control technologies are an industrial standard in cable production lines with focus on quality control, process optimisation and reduction of manufacturing costs.

Directly integrated in the production lines, the systems measure, in real time, product dimensions such as diameter, ovality, wall thickness and eccentricity.

A prevailing method for determining the average wall thickness is the diameter differential method. From the values of two diameter measuring devices the wall thickness is calculated.

40 years ago, the first Sikora wall thickness measuring devices called Isowand, based on the principle of differential measurement, were used in insulating and sheathing lines. Today, the measurement of the average wall thickness as well as the control of extruder rpm and line speed are still attractive methods for quality assurance and process optimisation.

With the diameter differential method, the diameter of the product is measured without contact at coincident points before and after the extruder by Sikora laser gauge heads.

The evaluation is realised in combination with the processor

controlled display and control systems Ecocontrol 1000 or 6000.

A delay time memory controlled by the line speed delays the diameter value measured before the extruder until the point of the measurement reaches the position of the second gauge head after the extruder.

Using the difference between the diameter measuring values, recorded at the identical position, the average wall thickness is determined with high precision.

The material shrinkage is already considered in the displayed wall thickness measuring value. The percentage of the shrinkage value is taken from a recipe or automatically calculated with an additional diameter gauge head at the end of the line from the hot/cold values of the diameter with the hot/cold control module HC 2000.

The differential measuring principle is particularly suitable for production lines where an eccentricity measurement is not required.

This method is also used in tandem lines, in which case both wall thicknesses are calculated from a measurement before the first and second extruder as well as after the second extruder.

For production lines where, in addition to the wall thickness, eccentricity values of the product are required or where a wall thickness determination by means of a differential measurement is insufficient due to the cable construction, the use of the X-ray measuring system X-Ray 6000 Pro is recommended.

This equipment precisely measures in real time the wall thickness, diameter and eccentricity of up to three layers of different material. Control of the measuring values is done in combination with the processor system Ecocontrol 6000.

Sikora AG – Germany
Website: www.sikora.net



○ From the values of two diameter measuring devices the wall thickness is calculated

ANBAO

Steel Wire Rope

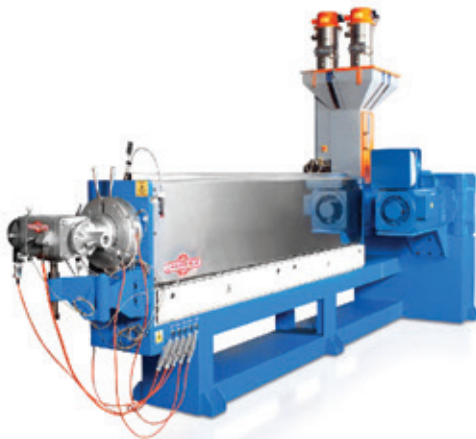
Material: AISI304/ AISI304L/ AISI316/ AISI316L or carbon steel
Construction: 1x7 1x19 7x7 6x19+IWRC etc
Dia: 0.20mm-30mm
Surface: Bright or dull or coated with PVC or HDPE etc
Tensile strength of wire: 1370-1970 or 300-800 MPA

ANBAO QINHUANGDAO INTERNATIONAL CORP.
 Add: No.33 Qinhuangxi Street, Qinhuangdao, P.R.China, 066000
 Tel: +86-335-3893600 Fax: +86-335-3870760
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www.supermacindia.com



Supermac Industries established in the year 1974 is a leader in manufacturing of high end systems and process technology for the cable industries. This ISO 9001 certified company specializes in offering customized solutions, keeping in mind the specific needs of the customers.

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- CCV Line for LV/MV Power Cables upto 132 KVA
- Extruders • Cross-Head • Haul-Off Caterpillar
- Capstan • Take-up and Pay-off



www.micro-weld.com



Based in USA, Micro-Weld is a pioneer in manufacturing of high performance electric-resistance butt and flash welders. Built for over 85 years, these welders are easy to operate and designed specifically to be used in wire and cable industry. There are over 50 models to choose from, for a wide range of applications and capacities.

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E-mail: office@supermacindia.com

UNIT-I :
Plot No. 2, Sector-6, IMT Manesar, Gurgaon, Haryana, INDIA
Ph.: +91-124-4690500 | Fax: +91-124-4690501
E-mail: jasvinder@supermacindia.com

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Gurgaon 122050, Haryana, INDIA

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Capacitance Monitor ADM Series Infrared Diameter Gauge

Spark Tester EPS-1 Talcum Powder Coating Machine

ADD: 3rd floor, 2nd Zhongjian Building, 18 Yanshan Road, Nanshan, Shenzhen, China
 Tel: +86(755)-26420391; +86(0)13682385045
 Fax: +86(755)-26420390
 Email: sales@advantek.com
 Web: www.advantek.com

Delivering production savings

THE Beta LaserMike CenterScan 2010 gauge accurately and consistently monitors the diameter of insulated wire and cable, and eccentricity of conductors within the insulation, during extrusion and insulation processes.

Manufacturers are realising a number of benefits such as improved product quality, reduced material consumption and increased profits.

When the core of insulated wire and cable moves off centre, product quality suffers. If left unchecked, this out-of-tolerance wire or cable eccentricity can leave manufacturers with reels of unusable product.

The CenterScan 2010 gauge solves this problem by using highly sensitive magnetic and optical technology to precisely determine the location of the conductor within the insulation. This non-contact measurement system performs eccentricity, diameter, wall thickness and flaw detection measurements in one gauge head.

Benefits include:

- Easy integration into production environments with built-in flexible communications
- Superior noise immunity for closer placement to line devices



○ The new CenterScan 2010 gauge

- Compact design for installation flexibility on production line
- Simple access, viewing and configuration of gauge functions via optional ultra-bright display

CenterScan 2010 reliably measures diameters from 0.1 to 10mm (0.004 to 0.4") and determines eccentricity and diameter with $\pm 0.0005\text{mm}$ ($\pm 0.00002"$) accuracy. Typical applications include LAN, RF, coaxial, mini coaxial, telephone, automotive and installation wire and cable.

Beta LaserMike (An NDC Technologies Brand) – USA

Website: www.ndc.com/betalasermike

HAVET

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REELS&SPOOLS MANUFACTURER
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<http://www.havet-china.com>
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 Contact Person: Vivian

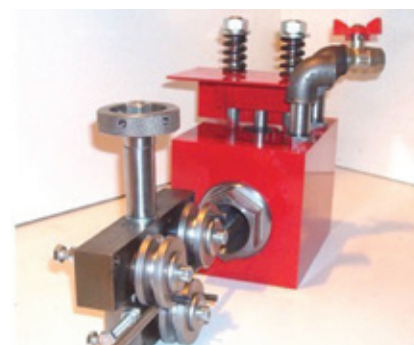
ADD: Fangxiang Industrial Zone, Yangzhou City, China

PDH dies can have infinite life

Unavoidable fines (abrasive particles) generation, the most destructive lubricant contaminants in wire drawing, is no longer an alarming phenomenon since the introduction of the Decalub green and dry rod preparation and wire lubrication including PDH coating system.

In the most demanding applications, the PDH dies' wear is reduced to an unmeasurable level (about 0.2 micron per tonne), meaning the three-body abrasive wear is virtually eliminated. Generation of abrasive particles (fines), continuously liberated from wire surface during drawing, are PDH captured, encapsulated and taken with drawn wire from block to block out of the machine.

The lubricant film created is of such a configuration as to induce a hydrodynamic lubricant activity causing migration of all lubricant contaminants without interference with the die, meaning the removal of



○ Wire coating by PDH system

encapsulated abrasive particles prevents die wear, enabling wire frictionless drawing mode. The PDH high-performance specific coat is about 8 to 15 microns thick, adjustable, and largely sufficient to retain all liberated abrasive particles from the wire surface.

Decalub – France

Website: www.decalub.com



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AC 230-210 High efficiency wire drawing machine
PC 230-210 High efficiency wire drawing machine
PC200-6200 High efficiency reduction line

Horizontal baling machine
H9000-42000 Carbon fiber single baling machine

Auto coiling and stacking line
TVM2000 Composite winding machine

DS9200-42000 Double turn winding machine
DS600-42000 A type single baling machine
DS4000-42000 Single baling machine

LEADING MAGAZINES

for the wire and cable industries



Self-calibration of measuring units

CALIBRATION in measurement technology means establishing the measurement deviations on the measuring unit. During the calibration no technical intervention occurs at the measuring instrument, as opposed to adjusting where a measuring instrument is set or adapted to keep the measurement errors as small as possible or that the number of measurement errors do not exceed the error limits.

The official calibration of a measuring unit is carried out according to the rules and regulations of the examining authority, and the unit is marked with the respective stamp. The examining authority establishes whether the measuring unit fulfils the respective prerequisites.

The validity of a calibration period follows practical requirements such as manufacturer's information, requirements of quality standards or company internal and customer-specific regulations, rather than an official calibration with a fixed time period validity for use.

In order to be able to compare results of measurement, it must be possible to 'feed back' information via a chain of comparison measurements to a national or international master. For this purpose, the display of the measuring unit in use or the material representation must be compared with the masters in one or more stages.



○ Typical ODAC® laser diameter measuring gauge with reference calibration standards

On each of these stages a calibration is carried out with a master which has been previously calibrated with a higher-level master. According to the ranking of the master – of consumption or factory standards via reference masters up to national standards – there is a calibration hierarchy of points to be carried out.

Different standards, regulations and guidelines are valid for the expert carrying out of calibrations.

Standards and regulations, such as the ISO 9000 series, are becoming more important for quality assurance in all industrial nations. Then it may be explicitly required to calibrate all test equipment that directly or indirectly influences the quality of the product.

This includes, for example, test equipment that is used as reference during the production process. Zumbach adheres to different standards and guidelines of quality assurance.

Zumbach measuring units are calibrated using reference standards which were certified by the Swiss federal office for metrology (www.metas.ch) or by accredited laboratories. Each unit is supplied with a detailed calibration protocol.

A regular check for measuring errors along with the corresponding protocol can be carried out according to customer requirements. The regularity of these calibrations is dependent on the customer-specific requirements (internal regulations). The company recommends a check of accuracy every 12 to 24 months.

All the measuring heads of the ODAC® series have a self-calibration function (Patent DE3111356) which makes a subsequent, regular calibration superfluous, except when exchanging components.

All the relevant parameters for accuracy are continuously monitored by the measuring system and automatically compensated when required.

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



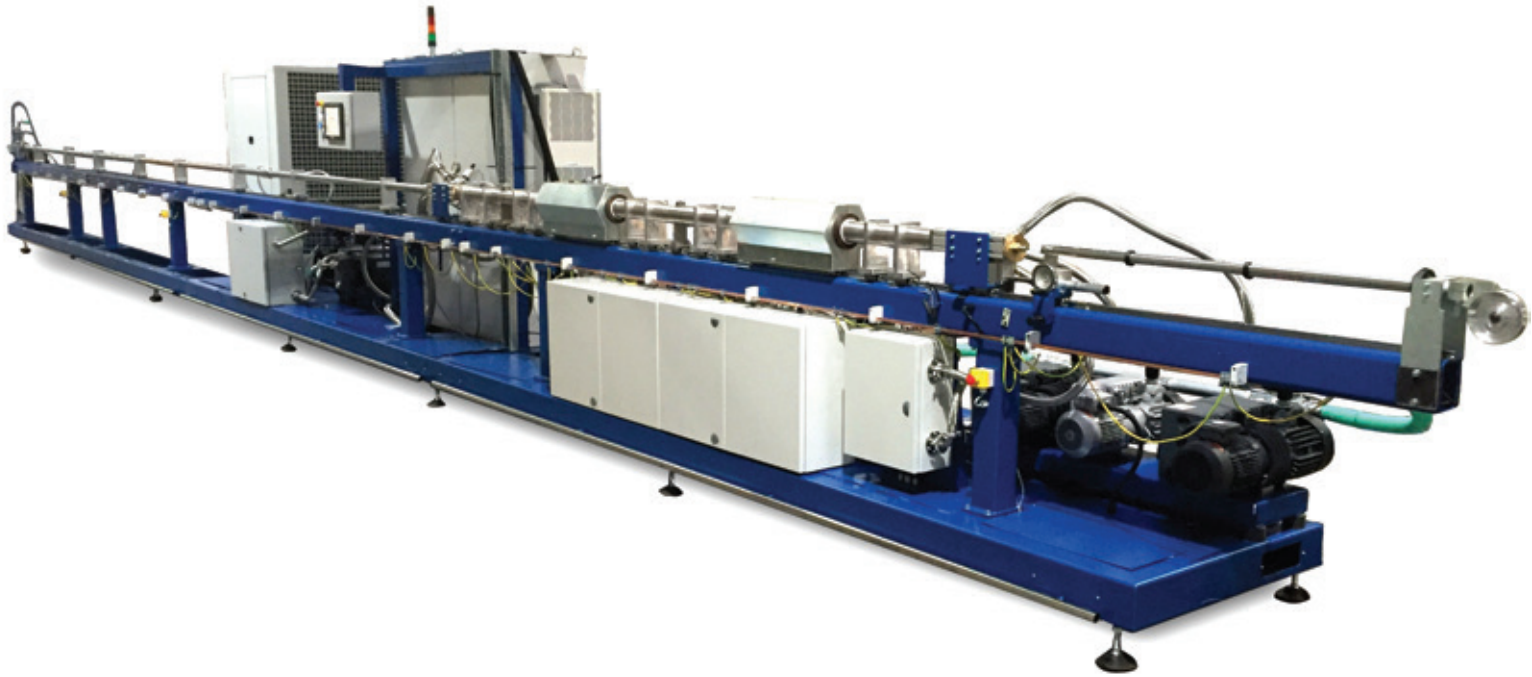
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○ 用于扁平型不锈钢电线和轮廓的退火炉

高产出等离子体热处理 生产线需求不断增加

奥地利Plasmait公司发现用于不锈钢制品的高产出等离子体热处理生产线需求不断增加。公司下一个等离子退火炉将部署在东南亚地区。

Plasmait将30kW等离子退火炉卖给想要替换其传统管式炉的某知名不锈钢丝生产商，用于生产宽度达30mm的铁素体和奥氏体扁平产品。

使用输出容量为每小时100kg的HPA30等离子体退火炉，制造商每公斤产出的能源成本将可以减半，同时在峰值功耗方面可以节省可观的成本。等离子体退火炉的电源连接要求更低，这也意味着电源连接布线安装更加便宜。

与旧式多线管式炉相比，全新紧凑型单线生产具有相同产出，且占用的车间场地大约只有原先的三分之一。

单线生产还可减少材料处理，并限制相关联的拉紧、回馈和运输系统投资。用于不锈钢应用的典型等离子体退火炉装置可以替代传统链炉上大约10条生产线。

等离子体退火炉允许精确的热输入，因此可以实现更均匀的重结晶，这也反映在纵向和横向均匀分布的晶粒尺寸。

HPA30退火炉还扩展了回火区域，允许延长驻留时间或延缓冷却，这对于所选择的不锈钢铁素体等级非常必要。

新款退火炉结合了高速光亮退火和高级无划痕表面抛光的优势。加工材料在高温时不会接触等离子体处理室，从而减少了表面划伤的风险。

这不同于在升温期间仍使管子保持接触锅炉引导支架的传统链炉，此时表面最容易受到损伤。

等离子体退火的独有特征之一是热量在低压惰性气体中传导，这需要真空装置和准确的材料引导。真空系统的优点在于吹扫气体（通常是氢气或天然气）在低压时提供，从而降低吹扫气体的总体消耗。

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

确保测量质量

在诸如挤压、捻股、聚束、加捻、回转、盘绕、编织、涂层、检验、绘图、搪瓷工艺或类似的加工过程中，张力变化超出特定限制会对产品质量产生直接/间接的影响。这会对产品质量乃至机器性能有着直接影响。尽管行业希望提供最优质产品，但这个问题仍会导致最终产品质量大打折扣。拥有25年行业经验的Puretronics引入了张力测量系统，可用于各种应用。在连续生产过程中，成品质量直接取决于精确测量和材料张力控制，进而提高成品质量、减少浪费、提高加工速度、尽可能提高机器效率并减少停机时间。受益于张力测量与控制的应用场合包括绘图、捻股、聚束、挤压、检验/回转、盘绕、编织、制绳、防护、涂层、搪瓷工艺、以及拆包/拆卷。

Puretronics – 印度
网址: www.pureindia.net

用于单纱和双纱的ROBI低张力扎带机, 可达4500rpm

Rosendahl开发出ROBI高速交叉带机, 用于SZ型(初捻为S捻、复捻为Z捻) 光纤电缆元件。4500rpm确实很快, 不过处理过程非常顺畅。其扎带张力可以调节, 以保持松套管形状和产品质量。此外, 它可保持由Rosendahl SZ捻股机动态驱动系统生成的极短反转点。使用可供选择的有源纱线张力控制系统, 可以实现低于2N的恒定纱线张力。此系统在所有运行情况下保持张力恒定, 即使是在扎带机上升/下降及高速生产时, 也能实现持续高精度扎带, 以保持产品特性。

在尺寸方面, ROBI允许使用大号筒管, 外径可达 290mm, 支持连续长时间生产。集成式微型扭锁保持股线完美成形, 并支持在捻股点直接扎带。筒管重量、筒管直径和制动曲线等基本参数都存储在数据库中。这些参数在纱线运行期间使用, 可为各种生产速度维持恒定纱线张力。

Rosendahl Nextrom GmbH – 奥地利
网址: www.rosendahlnextrom.com



○ Rosendahl ROBI 高速交叉点用扎带机

提高产品质量并节约生产



○ 新型CenterScan 2010测量仪

NDC Technologies 公司的 Beta LaserMike CenterScan 2010测量仪用在挤压和绝缘加工期间, 可连续准确地监测绝缘电线电缆的直径、以及绝缘层内导线的偏心度。随之而来的许多好处, 比如产品质量提高、材料消耗降低以及利润提升, 已获得制造商的认可。

当绝缘电线电缆的内芯偏离中心时, 产品质量受损。如果不予检查, 电线或电缆偏心度超差将导致制造商堆积大量不可用的产品。

CenterScan 2010测量仪通过使用高灵敏磁光技术, 精确测量出绝缘层内的导线位置, 进而解决此问题。此非接触式测量系统使用单个探头执行偏心度、直径、壁厚和缺陷检测测量。

其优点包括:

- 使用内置柔性通信, 可方便地集成至生产环境
- 超强噪音免疫能力, 可安放在更靠近生产线设备的位置
- 紧凑型设计, 可在生产线上灵活安装
- 通过可选超亮显示, 方便地实现测量仪功能的访问、查看和配置

CenterScan 2010能可靠测量从0.1mm到10mm (0.004-0.40") 范围内的直径, 进而测定偏心度和直径, 精度为 $\pm 0.0005\text{mm}$ ($\pm 0.000020''$)。其典型应用包括LAN、RF、同轴、微型同轴、电话、汽车、安装电线电缆、等等。

NDC Technologies – 美国
网址: www.ndc.com/betalasermike

旋转挤压模具速度加倍

Guill Tool公司已发布其高产量旋转成型机的新品设计, 涵盖一字头和十字头两种款式。现在其专利旋转模头和模具设计系列速度已加倍——成型机转速可达1000 RPM, 具体数值取决于应用。

相对熔融材料流旋转模具, 旋转模头增强了挤压的壁板强度, 可适用更薄的壁板和更少的材料, 相应为用户节约了成本。旋转模头的典型应用包括医疗、多腔管、以及用于合模锁紧层或多脱模要求的各种高端挤压。上述新款旋转挤压模具的功能特征包括反向旋转模头与模具、同向旋转模头与模具、使用普通模头的旋转模头、使用普通模具的旋转模头、十字

头或一字头、多层、脱模、特定轮廓、以及可选快速更换加热管(用于最小化清洗时间)。

挤压机通过使用旋转模具, 淘汰二次加工, 增强最终产品美感, 消除了焊缝及分型线、减小或完全消除椭圆度, 实现成本降低。

Guill Tool 公司以完整解决方案提供新型高速旋转成型机, 完成模具台车、工具及所有配件的安装与维护。

Guill Tool & Engineering – 美国
网址: www.guill.com



○ 台车上的十字头, 来自Guill Tool

Hannay Reels新款轻型光纤绕线盘

Hannay Reels最近推出一套新型专用光纤绕线盘，用于解决通信行业的独特需求。

绕线盘套件专门设计用于野战光缆和光电复合缆，包括 Broadcast SMPTE、TAC 和/或 opticalCON。采用轻型金属构造，含有带保护索环的外部及/或内部存储仓，方便接入电缆，同时还提供防尘防污保护。

采用不反光黑色磨砂饰面，足以适应恶劣的户外条件，全新的 AVF-14 和 AVF-18 系列非常适合现场活动、移动广播装置、采矿作业、以及军事通信。

新套件包括：

AVF-14系列：轻型铝质绕线盘，重量小于10磅，设计着眼于方便运输和处理。框架采用模块化设计，把手和支腿损坏时可以轻松替换。绕线盘容量范围从350英尺 SMPTE 电缆到最多3500英尺光缆。

AVF-18系列：铝质/钢质绕线盘经久耐用，重量小于25磅。框架采用独特风格，允许多个绕线盘堆积其上以节省空间。可选择安装结实的4"脚轮，便于大容量摄像机电缆运输。绕线盘容量范围从1000英尺 SMPTE 电缆到最多9250英尺光缆。

Hannay Reels – 美国
网址：www.hannay.com



○ AVF-14系列，来自Hannay Reels

拉丝模具振动带来的优势

由于拉丝点处产生的摩擦，电线和管子拉丝传统方法可能有相当的局限性。Ultraswage International公司开发出使用计算机控制的振动管理系统振动拉丝模具的技术。其结果是真正消除了与模具的摩擦。与现有拉丝方法相比，具有更多生产优势和产品优势。

每道次压下量更佳：由于没有摩擦，标记拉力减少，允许更好的每道次压下量。一般说来，材料越松软，以传统方式克服摩擦的作用力与使材料变形通过模具的作用力之间的比率就越大。这通常可以在单道次内完成，而非传统方法的双道次。

改善表面抛光：可以实现优秀的表面抛光。改善润滑：润滑剂可选择范围更广，这意味着更清洁的产品，在某种程度上避免了退火后的清洗需求。模具更换简单：模具只需拧进传感器单元底座，即可方便地进行更换。大大增加了模具使用寿命：由于真正消除了摩擦，模具使用寿命大大增加。**节约能源：**相比 Ultrasonic 设备使用，模具中消除摩擦节约了更多能源。绞盘能源消耗减少，在经济效益方面降低了能源成本，在生产效益方面提高了拉丝速度。**减少库存：**使用 Ultrasonic 技术获得更好的每道次压下量，使得备货库存量更少，从而减少库存并节约成本。

操作人员控制：结合先进技术，其设计采用简洁控制，不需要操作人员的额外干预。**提高产出：**在旧式机器无法实现高生产效率的情况下，使用 Ultrasonics 所需作用力相比传统拉丝方法减少，进而提高产出。

Ultraswage 2000 Power Source 是独立单机。但通常而言，只需使用装配简单的定制式安装机架，就可以使用传感器/模具装配替换现有模具。系统可以使用湿式



○ 传感器/模具装配至Schumag拉丝机

润滑剂和干式润滑剂，其选择范围更广。拉丝模具是插入不锈钢环的标准碳化钨模具。由于钨本身是适宜振动环境的超硬金属，因此模具适于振动工作。

Ultraswage 2000系统可用于拉丝成形，且适于黑色金属和有色金属。从某种意义上说，该系统用途非常广泛——可以改装至现有拉丝设备，设计用于新设备，或者与回馈绕线盘和拉紧绕线盘、绞盘等一起构成专用拉丝生产线。

Ultraswage International Ltd – 英国
网址：www.ultraswage-int.co.uk

AFC系列扩展

AFC Cable Systems公司及其姐妹公司 Kaf-Tech都是总部位于美国新贝德福德的电气产品制造商，目前正在扩展用于输配电行业的电气金属管 (EMT)、柔性金属 (Flex) 和液封 (Liquidtight) 配件生产线。已经添加了超过150款新型配件。提供新产品是多阶段配件产品扩展的第一阶段，预计今年还会添加更多款型。新产品增加了应用的数量，其配件目前可用。很多新款型已添加至“液封”类别，包括带铝质或铜质接地手柄的可锻造液封配件 (可选绝缘款和非绝缘款)、钢管液封配件 (绝缘和非绝缘)、以及连接液封管道至刚性管道的组合接头。

新型AC/MC电缆Flex产品包括使用绝缘管颈的90° 鞍式连接器，以及双咬合鞍式固定螺纹接头，是连接Flex、AC、MCI、MCI-A和HCF电缆至插座的理想选择。还有连接柔性金属管道至刚性或IMC管道的新款组合接头。对于已从AFC Cable购买电缆的客户而言，配件系列扩展显然是个好消息。现在客户采购电缆和液封产品时，无需从多家供应商分时分时购买，而是可以通过AFC仓库进行广泛的选择——所有选定产品会从仓库发出，进而同时到货。除了方便以外，客户还能节省运费。

AFC Cable Systems – 美国

网址：www.afcweb.com

Mecmesin 新型数字电线压接拉力测试仪

Mecmesin 有限公司出品了新款实用型快速批量测试仪，用于电线端子强度的高质量测试。CrimpTest-1 kN 控制简洁，结合了精确性和易用性，是极其可靠的日常测试仪，将培训和维护需求降至最低。机动化拉力测试仪提高了精度，降低操作人员疲劳程度和损伤。为了增强安全性，这款符合人体工程学设计的水平测试仪拉伸样品远离用户。按下单个按钮便可启动测试，仅使用四个多功能按钮，即可完成所有设置、操作并输出至RS232统计打印机。测试仪还会显示断裂时的最大作用力，并明确给出“合格/不合格”指示。可以设置四种速度：25、50、100、200mm/min——符合所有常规测试标准。作用力单位可选用 N、kgf或lbf。

此基准测试仪设计用于在生产环境中连续使用，其防尘、防污、防水等方面符合IP52 防护等级。以下多种固定装置可用于1 kN 压接拉力测试、焊接或熔接端子、以及电缆扎带：

- 带阶梯环插销的开槽旋转压接插座(标准)
- 自张紧凸轮夹具(标准)
- 用于扁头端子或圆头端子的楔形夹具(可选)
- 电缆扎带固定(可选)

适用的国际测试标准：

ASTM B913: 标准测试方法，用于评估压接电气连接至厚度 16-gauge 及较小直径的绞股线和实心导线

SAE AS39029 和 AS7928: 通用规格，用于端子和手柄：捻接，导线：压接方式，铜 IEC 60352-2: 无焊压接连接

BS 5G 178 (第 1 部分)：用于航空电缆和电线的压接接头

DEF STAN 59-71: 用于铜导线的压接电气连接器

ISO 1966: 用于航空电缆的压接接头

NASA-STD-8739.4: 空间应用、压接、布线和管理

Mecmesin Ltd – 英国

网址: www.mecmesin.com

- 正在Mecmesin位于英国的总部进行压接测试



可永久使用的PDH模具—捕获并去除润滑剂污染

在电线拉丝工艺中不可避免会产生粉尘(研磨颗粒)，这也是对润滑油破坏性最大的污染源。但使用Decalub绿色环保干燥操作杆制备及电线润滑(包括PDH图层系统)可以有效解决这个问题。

在要求最严苛的应用中，PDH模具磨损降低到不可测量的程度(约每吨0.2微米)，这意味着三体磨料磨损已真正已消除。拉丝期间从电线表面不断释放的研磨颗粒(粉剂)由 PDH 捕获、封装并随着拉丝电线在模块间转移，直至移出机器。

按此配置形成润滑油膜，引入流体动力润滑活性，在无需模具干预的情况下转移润滑剂污染——这意味着采用电线无摩擦拉丝模式，去除封装的研磨颗粒并防止模具磨损。

PDH高性能专用涂层厚度约8至15微米(可调节)，足以维持所有来自导线表面释放的研磨颗粒。其应用包括所有普通碳线(含碳量可达1%)和不锈钢合金线



- PDH系统的漆包线涂层

(含铬量可达26%，有涂层或无涂层)，其中PDH高性能专用涂层厚度约8至15微米(可调节)，足以维持所有来自导线表面释放的研磨颗粒。

Decalub – 法国

网址: www.decacub.com

新型切割与供料机

为了支持用于绝缘应用的低电压电线电缆加工，Davis-Standard引入了新型切割与供料机。该系列设备的目的是提高效率，及时从一台拉紧装置转送至另一台，并尽量减少操作人员干预。这加快了绝缘期间拉紧绕线盘更换加工，使电线电缆制造商提高产出。

“此机器配有偏转滑轮装置和带切割系统的辅助履带，用于流水线绝缘加工并确保质量。”副总裁 John Zachow 说道。

“我们一直在为客户寻找改进底部生产线的方法，此机器在短期和长期都能提供显著的生产优势。就像 Davis-Standard 出品的其他机器(比如Thermatic®系列挤压机)，切割与供料工作台稳固耐用，确保使用寿命长且允许快速、高效运行。”

机器的偏转滑轮装置位于入口处两台拉紧装置之间。滑轮适于圆形电缆，用于集成式钳夹、供料和切割设备。预编程长度的电缆可从收集器拉出，操作人员在切割后能将电缆末端连接到空闲绕线盘上。拉紧装置切换期间，通过辅助履带发动气动钳夹。履带从收集器拉出电缆，将其从一台拉紧装置转送至另一台。设计优点包括机器入口和出口位置的可调节垂直/水平导向轮、以及带压力轮的气缸上可调节上方/下方皮带。当绕组驱动激活时，带自动‘关闭’功能的交流齿轮电机用于传递能量。

Davis-Standard LLC – 美国

网址: www.davis-standard.com



- 用于电线电缆应用的新型切割与供料机

India Insight

Developing one of the longest links in the world

ABB and India's Power Grid Corporation of India Ltd will work together on the Raigarh-Pugalur 800kV UHVDC transmission link between Raigarh, in central India, to Pugalur in the southern state of Tamil Nadu.

At 1,830km the link will be among the longest in the world, and with a capacity of 6,000MW is expected to meet the electricity needs of over 80 million people.

The two-way link will integrate thermal and wind energy for transmission of power to high consumption centres located thousands of kilometres away, supporting electricity demands in the south, when wind strength is low, and transmitting clean energy to the north when there is excess wind power.

ABB CEO Ulrich Spiesshofer said: "Delivering reliable electricity to India's energy demand centres is a top priority for the Indian government to support the country's impressive growth momentum.

"With our state-of-the-art UHVDC technology, we enable

the balancing of renewable and conventional electricity supply over long distances in a smart and reliable way." The project, valued at over \$840 million, is scheduled for completion in 2019.

ABB – Switzerland

Website: www.abb.com

LED acquisition

The board of Shilpi Cables Technologies Ltd (SCTL) has approved the 100 per cent acquisition of UAE-based Gulf Aglow LED Lighting FZCO.

The purchase will give Shilpi Cables an entry into the high growth LED market with an established partner, licensed to sell under the Westinghouse brand and its own Galux brand in 54 countries, as well as a vast manufacturing capability.

Shilpi Cables Technologies Ltd – India

Website: www.shilpicables.com

Strategic fibre plans

A key Indian military base overlooking the Malacca Straits will benefit from a telecom connection project by the Indian government. The project will include over 1,300km of undersea cables between the base and the southern city of Chennai.

India has plans to provide fast and reliable telecom connection between the mainland and the chain of Andaman and Nicobar islands. The state-owned Bharat Sanchar Nigam Limited has invited global bids for improving connectivity to this strategically important location in the Indian Ocean region.

The government has given its approval to a direct communication link through a dedicated submarine optical fibre cable between the mainland at Chennai and the six Andaman and Nicobar islands at a cost of \$165 million. By January 2017, construction companies will have been selected.

Besides being a tourist haven, Andaman and Nicobar islands are very close to the Malacca Straits, a narrow but very busy shipping thoroughfare.

Bharat Sanchar Nigam Limited – India

Website: www.bsnl.co.in

Expanding local production

PolyOne is to establish production of speciality engineered materials, aimed especially at automotive applications and manufacturers, at its facility in Pune, India. Production is anticipated to begin in early 2017 and will allow PolyOne to support its customers with engineered materials, complementing its existing Indian output of colour and additive products.

Vikas Vij, managing director for PolyOne in India, said: “India offers many growth opportunities for our customers, and this facility provides room for expansion as well. Based on customers’ high level of interest, future additions may include Therma-Tech thermally conductive formulations and LubriOne wear-resistant materials.”

PolyOne’s Pune plant was opened in 2014 and produces colourants and additives serving multiple end-use markets, including electronics, electrical, wire and cable.

PolyOne – USA

Website: www.polyone.com

Serving Myanmar’s mobile boom

Bharti Airtel has activated an international fibre optic cable link between India and Myanmar, its third international cable hook-up in the Saarc region.

The company has invested an undisclosed sum in a 6,500km (route km) terrestrial fibre optic cable link to boost Internet speeds in Myanmar, which is seeing a sharp upsurge in demand for data services both at the retail and enterprise consumer levels. The cable link will be connected to Airtel’s landing stations in Chennai and Mumbai.

“The terrestrial cable link is a strategic fibre asset for Airtel in the Saarc region. [It] will enable the company to offer robust end-to-end connectivity solutions in Myanmar, which is seeing rapid uptake of digital services,” said Ajay Chitkara, the company’s director and CEO (global voice and data business).

He added that the Indo-Myanmar link would also enable Airtel to meet capacity requirements for enterprise customers in the region, adding that Myanmar presents “a massive business growth and revenue opportunity” for the company as the country is seeing robust growth of Internet and telecom services.

International Data Corporation (IDC) recently revealed that the bulk of the consumer spends in Myanmar this year have been on mobile devices. At present, Norway’s Telenor, Qatar’s Ooredoo and state-owned Myanmar Post and Telecommunications (MPT) operate mobile services in Myanmar.

Bharti Airtel – India

Website: www.airtel.in

Up on the roof

Solar Energy Corporation of India (SECI) is to launch a tender for 1GW of new PV rooftop capacity for central government ministries and departments. The projects will be grid-connected and form part of India’s overall plans for 40GW of rooftop solar power plants by 2022.

Under the terms of the tender, capital cost incentives provided by the Ministry of New and Renewable Energy (MNRE) are to be linked to performance against set targets by relevant ministries and departments. MNRE has allocated 21 ministries and departments to the SECI scheme, including the ministry of human resource development and ministry of urban development.

The ministries concerned have already submitted green energy commitment certificates to MNRE for implementation of grid-connected rooftop PV power plants as part of their clean energy initiatives.

Power generated from the solar systems will be used to meet the requirements of the buildings and any surplus power will be fed to the respective state grid.

Solar Energy Corporation of India

Website: www.seci.gov.in

Knowledge sharing

KEI Industries rose 2.56 percent on the Bombay Stock Exchange after the company revealed it had signed a technical collaboration agreement with Switzerland’s Brugg Kabel AG. KEI Industries has signed the agreement with Brugg Kabel AG to manufacture extra-high voltage cables, above 220kV and up to 400kV, at its manufacturing facility at Chopanki in Rajasthan. Operation of the new production line began in January.

KEI Industries Ltd – India

Website: www.kei-ind.com

Norway becomes the first nation to relinquish FM for digital, with several others preparing to do likewise

Norway early in the New Year was set to start switching off its FM radio network, in what reporters Joachim Dagenborg and Alister Doyle of *Reuters* called “a risky and unpopular leap to digital technology” that would be closely watched by countries mulling whether to follow suit. The shutdown of the Frequency Modulation network, introduced in the 1950s, was to begin in the northern city of Bodø on 11th January.

By the end of 2017, all Norwegian FM broadcasts will be closed in favour of DAB, which supporters say carries less hiss and clearer sound throughout the large nation of five million people cut by fjords and mountains. According to *Reuters* (5th January), critics of the move claimed that the government was rushing it, putting at risk many people who would miss emergency warnings broadcast via radio. Of particular concern were the two million cars on Norway’s roads that are not equipped with Digital Audio Broadcasting (DAB) receivers.

According to the results of an opinion poll published by the daily *Dagbladet*, 66 per cent of Norwegians opposed the loss of FM, with 17 per cent in favour and the rest undecided. But, influenced by the ability of digital networks to carry more radio channels, Parliament in December gave the final go-ahead for the switchover.

Digital radio in Norway provides eight times more radio stations than FM, at the same cost. The current system of parallel FM and digital networks, each of which cost about \$29 million, is seen as sapping programming investment. Messrs Dagenborg and Doyle, writing from Oslo, noted that a smooth transition to DAB could encourage other countries to move ahead. Switzerland plans to give up FM for digital in 2020, and Denmark and Britain are among those considering a similar shift.

Britain reportedly plans to review the need for a switchover once digital listening reaches 50 per cent. According to Digital Radio UK spokeswoman Yvette Dore, that point could be reached by the end of this year.

- Ole Joergen Torvmark, head of Digital Radio Norway, which is charged with easing the Norwegian transition, said that cars were the “biggest challenge”. Mr Torvmark told *Reuters* that a good digital adapter for an FM car radio costs \$174.70.

A comprehensive global survey finds ‘dynamic digital consumers’ everywhere, eager for services powered by artificial intelligence

Between October and November 2016, the Dublin-based management consultancy Accenture conducted an online survey with approximately 26,000 consumers in 26 countries: Australia, Brazil, Canada, China, Czech Republic, France, Germany, Hungary, India, Ireland, Italy, Japan, Mexico, Netherlands, Poland, Romania, Saudi Arabia, Singapore, Slovakia, South Africa, Spain, Sweden, Turkey, United Arab Emirates, the United Kingdom and the USA.

The sample in each country was representative of the online population. Ages of respondents ranged from 14 to 55 and over. The survey, and related data modelling, quantify consumer perceptions of digital devices, content and services, purchasing patterns, preference and trust in service providers, and the future of their connected lifestyles.

In support of its conclusion that “digital disruption is reinventing consumer expectations,” Accenture summarised its findings in “Dynamic Digital Consumers,” available on its website. Here, abridged and lightly edited, are the highlights:

- After dropping to a three-year low last year, consumer purchases of smartphones are expected to

rebound in 2017, fuelled by better security, new functions, improved performance, and device refresh schedules. More than half (54 per cent) of consumers surveyed said they plan to buy a smartphone this year, up from 48 per cent in the previous year’s survey.

Chinese consumers are the main drivers of this upturn, with three-quarters (74 per cent) of respondents in China saying they intend to purchase a smartphone in the coming 12 months, up from less than two-thirds (61 per cent) in last year’s survey. The number of respondents in India and the United States who said they plan to buy a smartphone in the coming 12 months also increased by double digits over last year, to 79 per cent in India (from 68 per cent last year) and 52 per cent in the US (from 38 per cent last year).

- The leading driver of purchase intent is ability to access the newest and most innovative features and functions, cited by 51 per cent of respondents in this year’s survey, compared with only 41 per cent last year. Another reason consumers are opting to buy new smartphones is inadequate performance of their existing devices, cited by 45 per cent of customers this year – up from 33 per cent last year.
- For the first time, the annual survey polled consumers about their intentions to buy digital voice-enabled assistants. Powered by artificial intelligence, the products recognise such human voice commands as “Turn on the light” and “Play music” and answer such questions as “What time is it?” and “What is the temperature outside?” While only four per cent of respondents said they own such a device today, two-thirds of those (65 per cent) said they use the device on a regular basis, showing strong acceptance of this new technology.

As the AI technology powering these services has improved dramatically, younger consumers are leading in the adoption of voice assistants on smartphones, with more than four in five 14- to 17-year-olds (84 per cent) saying they either use this technology already or are interested.

By a hair's-breadth, security-minded consumers trust their device makers over their telecom providers

The Accenture findings summarised above ("Comprehensive global survey") also disclose that many consumers remain uneasy about securing their personal data, much of which is housed in smartphones or in the cloud. Nearly nine in ten respondents (87 per cent) said they are concerned about the security of financial transactions such as online purchases. Some 89 per cent are fearful that unauthorised companies or systems could gain access to their financial information.

The encouraging news for smartphone manufacturers is that consumers trust device manufacturers with their personal data more than they trust telecom providers, banks and search-engines.

More than one-third (37 per cent) said they trust device manufacturers, up from 31 per cent last year. By contrast, 36 per cent trust telecom providers with their data – a drop from 42 per cent last year; and only 13 per cent trust search engine providers, down from 23 per cent last year.

Elsewhere in telecom . . .

➤ The "Right to Disconnect" legislation that came into effect in France on 1st January requires companies and organisations with more than 50 employees to guarantee "as a basic human right" that in the evenings, over weekends, and at various other after-hours times, workers shall not be contacted by their employers by either email or fixed/mobile telephone. Further, staff have the right to switch off their mobile devices when they leave the workplace and not turn them on again until their return.

As noted by Martyn Warwick of *TelecomTV* (London), while France is in the vanguard in defining and ensuring off-duty time, similar policies have been adopted by companies in other countries. Volkswagen, of Germany, has not since 2011 sent emails to its

workforce between 6.15pm and 7am on workdays. Weekends and holidays are also total black-out periods for VW employees.

➤ The European Commission is working on much stricter rules covering the use of computer data code in the form of cookies – the small, often encrypted text files, located in browser directories, that gather information for the website's server. As reported by *Advanced Television* (10th January), the proposal is not new, but the French business newspaper *Les Echos* says the push for a rules change is gathering steam.

The current "opt-in" mode obliges website browsers to click to accept cookies. The EC would move them into "no tracking" mode by default. Two Europe-wide options for the change are available to the EC: regulation, which would afford little room for individual countries to adapt the new rules; and directive, allowing greater flexibility.

➤ Cisco Systems and Juniper Networks (both of the USA), Huawei Technologies (Chinese), and Nokia (Finnish) together generate close to 86 per cent of worldwide revenue from sales of routers and carrier Ethernet switches, *IHS Markit* reports. Respondents to the London-based research company's latest Router and Switch Survey said that these vendors are the market leaders in 100 Gigabit Ethernet, virtual routers, and IP data centre interconnect technology.

As noted by Sean Buckley of *FierceTelecom* (3rd January), Michael Howard, senior research director and advisor for carrier networks at *IHS Markit*, said that the quartet of vendors forms "a top tier separated by a wide margin from other router and switch vendors."

➤ Cooperative intelligent transport systems (ITS) are currently being tested for the sharing of images between connected vehicles on a road (so that the driver in the trailing vehicle can "see through" the vehicle ahead) and timely notification of a potential emergency.

On 4th January, Ericsson (of Sweden) and Orange (of France) and the French automotive manufacturer PSA Group announced their "Towards 5G" connected car partnership for leveraging 4G to 5G technology to address ITS and other connected vehicle requisites.

The partnership is focused on vehicle-to-vehicle (V2V) and vehicle-to-everything (V2X) architecture, as well as the technologies required to deploy real-time ITS and connected vehicle services.

Initial tests will use an end-to-end architecture system based on LTE technology before evolving to LTE-V and 5G technologies.

➤ In its second annual cloud communications survey, No Jitter Research (Oak Brook, Illinois) found continued growth in the USA in the use of cloud-hosted services.

The results for 2016 disclose that two-thirds of respondents already using cloud-hosted communications intend to bring on additional services over the ensuing 12 months. Additionally, year-over-year comparisons by the company, which specialises in enterprise communications, show rising interest in and use of cloud communications in four particular functional areas: cloud PBX, mobile applications like video calling and team collaboration, unified communications, and contact centre services.

➤ Huawei on 16th December announced that Huawei Marine and Ooredoo Maldives had inaugurated the Nationwide Submarine Cable system in the Maldives.

The project is part of Ooredoo's programme for providing high-speed broadband services to all the islands of the archipelago nation off the west coast of India.

With design capacity of up to 3.2Tbps and utilising Huawei Marine's 100G technology, the system stretches across 746 miles and connects the six main islands.

挪威成为首个放弃FM并转型使用数字广播电台的国家，其他一些国家也准备效仿

新年伊始，挪威开始关闭其FM（Frequency Modulation，调频）电台网络，路透社记者Joachim Dagenborg和Alister Doyle称之为“向数字技术迈出的反潮流冒险一步”，有些国家正密切关注并在认真考虑是否效仿。在挪威北部城市博德，20世纪50年代引入的FM网络已于1月11日起开始关闭。到2017年底，挪威将关闭所有FM广播并完全过渡到DAB（Digital Audio Broadcasting，数字音频广播）——支持者称，对于由海湾和大山分隔开的全国500万人民来说，新方式的播放噪音更少，声音更清晰。但据路透社1月5日报道，批评人士认为政府决策过于仓促，会使很多人无法通过广播收听电台紧急通告。特别令人关注的是，挪威街道上有200万辆汽车未配备DAB接收机。根据每日杂志报（Dagbladet）公布的民意调查结果显示，66%的挪威人反对关闭FM，17%赞成，其余不确定。但由于数字网络能承载更多的电台频道，因此议会在12月份最终批准通过。在挪威，相同成本情况下数字广播电台能比FM多提供八倍的电台数量。目前的系统同时采用FM和数字网络，两者成本各约2900万美元，被视为过渡规划投资。Dagenborg先生和Doyle先生在奥斯陆发文指出，平稳过渡至DAB有助于鼓励其他国家跟进。瑞士计划在2020年放弃FM并转型使用数字网络，丹麦和英国也正在考虑类似的转型。据报道，只要数字收听率达到50%，英国就会计划审核是否有必要转型。根据英国数字广播电台发言人Yvette Dore提供的信息，今年年底就有可能达到50%。

▶ 挪威数字广播电台台长 Ole Joergen Torvmark 力图使转型过渡在挪威顺利实施，坦言汽车是“最大的挑战”。Torvmark 先生告诉路透社，一辆FM汽车数字电台适配器成本为 174.70 美元。

全面的全球调查表明，‘动态数字消费者’无处不在，他们渴望使用人工智能为其服务

2016年10月至11月，位于都柏林的埃森哲（Accenture）管理咨询公司对下列26个国家约26,000名消费者进行了在线调查：澳大利亚、巴西、加拿大、中国、捷克共和国、法国、德国、匈牙利、印度、爱尔兰、意大利、日本、墨西哥、荷兰、波兰、罗马尼亚、沙特阿拉伯、新加坡、斯洛伐克、南非、西班牙、瑞典、土耳其、阿联酋、英国、美国。各个国家的调查样本均采用具有代表性的在线人口。年龄范围从14-55岁及以上。此调查及相关数据建模量化了消费者对数字设备、内容与服务、购买模式、对服务提供商的喜好和信任及其未来互联生活方式的认知。为了支持“数字化颠覆正在重塑消费者期望”的结论，埃森哲在其网站上发布了“动态数字消费者”调查结果。其要点概述如下：

▶ 截至去年消费势头连续三年走低之后，受益于更优越安全性、新功能、性能改进和新产品出新速度加快，消费者购买智能手机预计将在2017年触底反弹。超过一半（54%）的消费者接受调查时表示今年计划买一部智能手机，而在去年调查中只有48%。中国消费者是数据回升的主要驱动因素，在中国有四分之三（74%）的受访者表示计划在未来12个月内购买一部智能手机——在去年调查中则只有不到三分之一（26%）。在印度和美国的受访者中，计划在未来12个月内购买一部智能手机的比例较去年也增加了十几个

百分点，印度从去年的68%升至79%，美国则从去年的38%升至52%。

- ▶ 在今年的调查中，51%的受访者表示主要购买动机是为了获得最新和最具创意的特色和功能——此比例在去年仅为41%。今年还有45%的受访者表示，选择购买新智能手机的另一个原因是现有设备性能不足——此比例在去年为33%。
- ▶ 本年度调查首次允许消费者就购买数字语音辅助设备的意愿进行投票。通过人工智能技术，产品可以识别诸如“Turn on the light(开灯)”和“Play music(播放音乐)”等语音指令，并回答诸如“What time is it?(现在几点?)”和“What is the temperature outside?(室外温度多少?)”等问题。尽管只有4%的受访者表示已拥有此类设备，不过有三分之二（65%）的受访者说他们经常定期使用此类设备，表现出对这项新技术强烈的认同感。随着引入人工智能技术的服务显著改善，年轻消费者正率先在智能手机上使用语音助理，超过4/5（84%）的14-17岁年轻人标识他们已使用此技术或对此很感兴趣。

消费者在安全方面更信任设备制造商，略微超过电信运营商

埃森哲在上述全面的全球调查中还发现，许多消费者仍然对其保存在智能手机或云端的个人数据安全感到不放心。近九成受访者（87%）表示很关注诸如在线购物等金融交易的安全性。约

89%的受访者担心未经授权的公司或系统会入侵其财务信息。有一个消息对智能手机制造商而言非常令人鼓舞：相比电信运营商、银行和搜索引擎，消费者在个人数据方面更信任设备制造商。超过三分之一（37%）的受访者表示信任设备制造商，去年为31%。相比之下，36%的受访者相信电信运营商（去年为42%），只有13%信任搜索引擎提供商（去年为23%）。

其他电信咨询……

▶ “断网权”法规于1月1日起在法国生效，要求雇用员工50人或以上的公司和机构保证在晚上、周末、以及下班后的任何其他时段，雇主不得通过电子邮件或固定/移动电话联系其员工，并要求将其作为一项“基本人权”。此外，员工离开工作场所时有权关掉其移动设备，直到再次返回才需要重新开启。正如TelecomTV（伦敦媒体）Martyn Warwick 所指出的，虽然法国在法规和确保下班时间方面走在最前沿，但其他国家的有些公司早已采取类似政策。从2011年起，德国大众汽车公司在工作日下午6:15到上午7点之间不再发送电子邮件。周末和节假日也是大众员工完全“隐身”的时间。

▶ 欧盟委员会（European Commission, EC）正在研究更严格的规定，用于规范以cookie（通常是加密的小型文本文件，位于浏览器目录中，可从网站服务器收集信息）形式使用计算机数据代码。据Advanced Television 1月10日报道，该提案并非新鲜事，但法国商业报纸Les Echos称推动规定变化的趋势正在增强。当前的“事前同意”模式要求网站浏览者点击接受cookie。EC将要求网站将浏览默认设置为“不跟踪（no tracking）”模式。在欧洲范围内现有两种变更方式可供各欧盟国家选择：一种是法规（给予各个国家适应新规则的空间狭小），另一种是指令（允许更大的灵活性）。

▶ IHS Markit的报告显示，在全世界路由器和电信级以太网交换机销售收入方面，美国思科系统（Cisco Systems）公司、美国瞻博网络（Juniper Networks）公司、中国华为技术有限公司和芬兰诺基亚公司共占近86%。IHS Markit是总部设在伦敦的研究型公司，在其最新发布的路由器和交换机调查中，受访者表示以上供应商是100千兆以太网、虚拟路由器、IP数据中心互连技术的市场领导者。正如FierceTelecom的Sean Buckley于1月3日指出的，IHS Markit高级研究主任和电信级网络顾问Michael Howard表示，四大供应商巨头已成为“远远甩开其他路由器和交换机供应商的顶层集团”。

The USA

The start of a new administration finds the American economy in a good place – but will President Trump leave well alone?

The leadership qualities of the mercurial man elected by Americans to be their 45th president are, at this early stage, unknowable. But this much can be stated with certainty: the national economy that President Donald J Trump inherits from President Barack H Obama is very much healthier than the one bequeathed by President George W Bush to Mr Obama in 2008. When Mr Trump took the oath of office on 20th January 2017, the near-term outlook for the economy was bright.

The best standard for evaluating any nation's economy is gross domestic product (GDP), and expert opinion in the USA projects near-term GDP growth rate in the ideal range. Unemployment is seen continuing at the "natural rate" estimated by the Federal Reserve. There is not too much inflation, nor is there too much deflation. Taken together, these are indications of a Goldilocks economy – not too hot, not too cold, just right.

Writing on the personal financial advisory website *The Balance* ("US Economic Outlook for 2017 and Beyond," 29th December), Kimberly Amadeo recalled Mr Trump's pledge to increase economic growth to four per cent, which she noted could stir "the irrational exuberance that creates damaging booms and busts."

But, presuming that bit of candidate's hyperbole is left behind with the campaign detritus, the Federal Open Market Committee (FOMC) – the branch of the Federal Reserve Board that determines the direction of monetary policy – sees USA GDP growth rising to 2.1 per cent in 2017 (up from 1.9 per cent [estimated] for 2016 and the same as the 2015 rate) before flattening to 2.0 per cent in 2018.

The unemployment rate is expected to drop to 4.5 per cent in 2017 and 2018 – better than the 4.7 per cent rate in 2016 and also beating the Fed's own 6.7 per cent target.

While much of the job growth will be in part-time work in service industries, given the permanent disappearance of many high-paying jobs in the era of globalisation the trend is encouraging. In a longer perspective, the Bureau of Labor Statistics (BLS) expects total employment in the USA to increase by 20.5 million jobs over the period 2010-2020. A particularly bright spot is construction, set to add 1.8 million jobs as housing recovers.

Meanwhile, inflation will be 1.9 per cent in 2017 and 2.0 per cent in 2018, according to the FOMC. These rates are higher than the 1.5 per cent of 2016 and 0.7 per cent of 2015 (both dampened by the low oil prices of those years), but the core inflation rate – excluding gas and food prices – will be 1.8 per cent in 2017 and 2.0 per cent in 2018. That meets the Fed's target.

For an additional piece of good-news reporting, manufacturing in the USA is forecast to increase faster than the general economy.

The FOMC expects factory production to grow three per cent in 2017 and 2.8 per cent in 2018, before slowing to 2.6 per cent in 2019 and two per cent in 2020. In the context of the Great Recession of 2008 which greeted his predecessor, even the famously dyspeptic Mr Trump might be inclined to acknowledge that the American economy at the start of 2017 finds the nation – and its new president – in a good place.

Late last year, *CNBC.com* economics reporter John W Schoen posed a pertinent question: "If the recovery continues to build momentum, will history credit Trump or Obama?" ("Obama's Biggest Parting Gift to Trump May Be the Economy," 2nd December). Mr Schoen observed that President Trump will, at least in part, be judged by historians by his stewardship of the USA economy. American voters will also have a chance to weigh in on that when they return to the polls four years hence.

Automotive

Citing the Chinese car website *Autohome* (via *Autoverdict*), Stephen Edelstein of *Green Car Reports* said (3rd December) that General Motors may re-badge a current-generation Chevrolet Volt as a Buick Velite, for sale in China. GM has marketed re-badged first-generation Volts (the Holden Volt in Australia and New Zealand, the Vauxhall Ampera in the United Kingdom, the Opel Ampera elsewhere in Europe), but the Chinese version of the plug-in hybrid would be the first to be redesigned, as well.

At Auto Guangzhou 2016, held in November, GM China unveiled a Buick Velite concept car, featuring a low, aerodynamic hatchback shape but without any accompanying technical details. The company said the car's flowing lines and sculpted rippling curves were influenced by flowing water – a new design language for Buick. The *Autohome* report included photos of a Buick-badged Volt, said to be supplied by the Chinese Ministry of Cars, the regulatory agency that manages approval of new models for sale in China. In Mr Edelstein's opinion the car's styling bore a strong resemblance to that of the Volt available in the USA.

Volkswagen is rebounding from its diesel emissions scandal with an ambitious initiative for blanketing cities with shared self-driving electric shuttles by 2025. As described by Tom Brant on *pcmag.com* (5th December), the German automaker's new Moia subsidiary, which will launch shuttles that urban commuters can hail with a tap on a smartphone, is "part ride-sharing service, part futuristic public transportation provider."

TechCrunch reported that Moia, from headquarters in Berlin, hopes to begin operations in two European cities by the end of this year, with expansion later to China and the USA. Eventually, Moia will build its own autonomous electric shuttles to serve riders on fixed routes during peak demand periods, with Gett – the ride-share company which has received significant investment from Volkswagen – as a backup for passengers who want to go where it isn't practical for a shuttle to take them.

Mr Brant characterised Moia as one of the most ambitious of many such undertakings announced by traditional automakers in 2016. Some other competitors of ride-share leader Uber are focusing on hourly car rentals, with BMW expanding its ReachNow service in several USA cities. General Motors, meanwhile, is strengthening its partnership with Lyft, in which it has invested \$500 million.

- 🌐 Speculation about a future of connected vehicles – in which messaging and other services are made available on-screen to passengers sitting with their arms folded – has centred on the driverless car. On 30th November, Chuck Martin, who writes “IoT Daily” at *MediaPost*, reported on a driverless truck: specifically, one which had just successfully completed a 35-mile test by driving itself at highway speed on a four-lane divided road in Ohio. Later in the week, the truck, owned by the San Francisco-based ride-sharing service Uber, was scheduled to drive on the Ohio Turnpike.

The maker of the self-driving truck is Otto, a company acquired by Uber a few months earlier for about \$680 million. The tests were announced by Ohio’s governor John Kasich, a failed candidate for the Republican nomination for USA president, who characterised the first set of results as “what the future of transportation will look like.” A similar test was run in Colorado in October, with Budweiser shipping a load of beer on a truck that drove itself for a 120-mile stretch of highway. These are closely monitored tests, with backup drivers in the trucks ready to take charge if something goes wrong. But, observed Mr Martin, “So far, all have gone as planned.”

Steel

The vocal champion of the USA steel industry in the White House will now be expected to make good on some extravagant promises

“It will be American steel that will fortify America’s crumbling bridges. It will be American steel that sends our skyscrapers soaring into the sky. We are going to put American produced steel back into the backbone of our country.”

These ringing declarations by Donald Trump, quoted by the *Financial Times* (London), were made during the run-up to election day in the USA. As of 20th January, the date of Mr Trump’s presidential inaugural, he is in a position to start making good on his pledges. What may the steel industry expect?

The *FT* recalls four steel-related commitments made by Mr Trump, and promptly dismisses two of them as unlikely to be very helpful: the easing or simplification of federal regulations; and cutting corporate taxes, which might spur growth in the economy but would only indirectly – and not appreciably – benefit some steelmakers.

But the *FT* considers that two of Mr Trump’s promises hold definite significance for the steel sector: a huge

investment in infrastructure, and a stiffening of USA curbs on steel imports. The proposal for a \$1 trillion outlay for the construction and repair of roads, bridges, tunnels, rail lines and airports would certainly revitalise the domestic construction industry. The *FT* suggests that \$100 billion a year in spending could increase USA steel consumption by six per cent. It notes that, if this were supported by a vigorously applied Buy America programme, American producers of steel long products such as rebar especially stand to benefit.

As to anti-dumping action, blocking imports of low-priced steel, particularly from China, would tackle the global problem of overproduction that weighs on the USA and all steel-producing markets.

Raining on the parade

Reviewing the two policy options selected by the *FT*, Stuart Burns of *MetalMiner* pointed out that, despite widespread enthusiasm for the infrastructure spending initiative, Mr Trump can expect resistance from some Republican leaders in Congress – conservatives uneasy with the prospect of any large increase in government spending. Wrote Mr Burns, “[The new president’s] \$1 trillion headline-grabbing figure may well have to be compromised for the plan to get approval.”

The American market share taken by steel imports rose from 20.9 per cent in 2010 to 29.1 per cent in 2015. Even so, Mr Burns observed, a strong anti-dumping push “may incur opposition through the World Trade Organization that would slow or limit potential action” by Mr Trump. (“The Challenges President Trump Will Face Boosting American Steel,” 5th December)

- 🌐 It is worth mentioning here that Mr Trump will perhaps have an unusual advisor – and ally – in any imports-related initiatives he might launch. Dan DiMiccio, former chairman and CEO of Nucor Corp, the Charlotte, North Carolina-based steel mini mill, headed Mr Trump’s transition team. Mr DiMiccio was, at this writing, believed to be the president’s choice for the office of US trade representative.

- 🌐 Ironically, noted *MetalMiner*, Nucor is the American steel producer that has reacted most effectively to the threat of steel imports. In the face of intense competition from imports, Mr Burns wrote, the firm “has invested and innovated, improving efficiency and reducing the cost of production such that Nucor, today, is better able to cope both domestically and internationally than any other steel producer in the US.”

USA steel-consuming manufacturers warn against potential ‘devastating impact’ of high duties on tool steel imports

The US International Trade Commission (ITC) is considering imposing anti-dumping and countervailing duties on carbon and alloy steel cut-to-length plate from Austria, Belgium, Brazil, China, France, Germany, Italy, Japan, Korea, South Africa, Taiwan and Turkey.

According to a representative of USA steel-consuming manufacturers at an ITC hearing held in Washington in late autumn, such high duties on tool steel imports would have dire consequences for American tool and die manufacturers.

As reported in *Business Wire* (30th November), Mark Vaughn, vice chair of the National Tooling and Machining Association (NTMA) and president of Vaughn Manufacturing Co (Nashville, Tennessee), testified before the ITC on behalf of the NTMA and the Precision Metalforming Association (PMA).

Representing nearly 3,000 metalworking companies, together the NTMA and PMA form a “one voice” advocacy programme to promote government policies that will help ensure a strong manufacturing sector in the USA.

Noting that, because most grades of tool steel are not available from domestic sources, American tool and die manufacturers must rely on imported tool steel, Mr Vaughn said that high duties on these imports would have a “devastating impact on the hundreds of thousands of well-paying US jobs that rely on imported tool steel.”

In a prepared pre-hearing brief, the NTMA and PMA pressed the argument that the vast majority of tool steel imports do not compete with USA-produced tool steel. They told the ITC that the three domestic steel companies petitioning against the duties produce only minuscule volumes of tool steel, in very limited grades, and that even the major USA producers do not produce sufficient quantities or the full range of tool steel grades and types required by American purchasers.

For more than three decades, tool steel – used for cutting, pressing, and extruding metals and such forming tools as dies, moulds, and blades – has been recognised as a separate product from other steel products.

In Mr Vaughn’s view, this critical distinction from carbon and other alloy steel plate, used in load-bearing and structural applications, has enabled the American tool and die industry to remain globally competitive.

Mr Vaughn asked that the ITC continue to observe that distinction, asserting that imposing high import duties on tool steel would force many companies and their customers “to reconsider whether to continue manufacturing tooling in the US.”

Elsewhere in steel . . .

US Steel said that it has reached agreements for the supply of iron ore pellets to third-party customers and is adjusting its production to fulfil the new commitments.

The company’s restart of its Keetac iron ore plant in Keewatin, Minnesota, idled since May 2015, is set for March, employee callbacks having begun in early January. The Keetac plant has an annual production capacity of around six million tons of taconite.

As well as USS, United Taconite and North Shore Mining are also reopening factories in the Minnesota Iron Range. Dee DePass of the *Minneapolis Star Tribune* (29th December) credited the pickup in activity to

anti-dumping sanctions imposed on China, Brazil and Korea by the International Trade Commission.

Telecom

According to new research from J D Power, customer satisfaction with wireless routers rose a total 24 index points last year in the USA, across all ten factors, to 847 on a 1,000-point scale. Customer satisfaction rose most – 30 index points – for ease of use, which includes the installation process. The score for the ease with which users are able to restore service rose 27, from 827 in 2015 to 854.

The California-based marketing information services firm also found that satisfaction with service reliability rose 24 index points; satisfaction with Wi-Fi signal rose 26 points; and download/upload speeds rose 25. Other key takeaways from its research include:

- The percentage of customers who access the Internet via a wireless router in their homes varies by type of device. Most use a wireless router to connect laptops (82 per cent), followed by smartphones (80 per cent); tablets (71 per cent); desktops (55 per cent); gaming consoles (53 per cent); printers (50 per cent); smart TVs (47 per cent); and streaming device/media players (42 per cent).
- The average price paid for a wireless router was \$124 – an increase of \$16 from 2015.
- Lawmakers in both USA major political parties are expected to make amending the Telecommunications Act of 1996 a high priority in their next session, and have expressed hopes of a compromise on altering the Federal Communications Commission’s Open Internet rules.

Meanwhile, FCC members who also belong to President Donald J Trump’s Republican party are defending so-called “zero-rating” plans for mobile data that opponents say violate those rules.

The FCC’s Wireless Telecommunications Bureau on 1st December issued a preliminary conclusion that AT&T is violating net neutrality rules by using data cap exemptions (or “zero-rating”) to favour DirecTV video on its mobile network.

The FCC also launched a similar examination of Verizon’s data cap exemptions. AT&T and Verizon are exempting their own video services from mobile data caps while charging other companies for the same zero-rating treatment.

Republicans, who oppose the net neutrality rules and gained the FCC majority from Democrats when Mr Trump took office, are trying to shield AT&T and Verizon from FCC action.

The two Republican members of the FCC had criticised the agency for investigating the two telecoms, asserting that any action taken before Inauguration Day (20th January) would be overturned under President Trump.

The 'robot revolution'

The economy may be humming, but technological advances threaten ever more American workers with displacement

"The next wave of economic dislocations won't come from overseas. It will come from the relentless pace of automation that makes a lot of good, middle-class jobs obsolete."

This alert, from USA President Barack Obama, sounded a dark note in his otherwise nostalgic and hopeful farewell address on 19th January.

As noted by Claire Cain Miller of the *New York Times*, Mr Obama's successor Donald Trump has tended to blame trade, offshoring, and immigration for the struggles of Americans on the losing end of technological change. While acknowledging that these things have caused economic stress, Mr Obama in his last address to the nation as president held that they divert attention from a bigger culprit. ("In Obama's Farewell, a Warning on Automation's Perils," 12th January)

Economists agree that automation has played a far greater role in job loss, over the long run, than globalisation. And Ms Miller observed that technological change — what she terms "the robot revolution" — will soon be a problem for many more Americans. Fifty-one per cent of their worktime activities involve physical work, data collection, and data processing — all highly susceptible to being automated, according to a report published by the New York-based management consulting firm McKinsey in July 2016.

"Where Machines Could Replace Humans and Where They Can't — Yet" used data from the Bureau of Labor Statistics and O*Net (the online version of the occupational network database published by the Department of Labor) in a detailed analysis of 2,000-plus work activities in more than 800 occupations.

McKinsey found that 28 per cent of these tasks (eg unpredictable physical work or interacting with people), while less susceptible to automation, are nonetheless at risk. Just 21 per cent of tasks can be considered safe for now, because they require applying expertise to make decisions, do something creative, or manage other workers.

As summarised by Ms Miller, the McKinsey report said that no one can know how many people will be in jeopardy, or how soon. It cited various researchers' estimates that from nine per cent to 47 per cent of American jobs could be affected. In the best case, according to Kinsey, workers will have higher wages and more leisure time. In the worst, there will be "significantly more workers in need of assistance and retraining as their skills no longer match the demands of the job market."

In December, the Obama White House released the report *Artificial Intelligence, Automation, and the Economy*, on the ways that AI will transform the USA

economy over the coming years and decades, asserting that the consequences could be dire: "The country risks leaving millions of Americans behind and losing its position as the global economic leader." The Trump administration has been warned. Among the biggest problems confronted by the United States will be the economic consequences of automation.

The surging greenback

An upward run for the dollar is causing anxiety for the USA manufacturing sector as well as the global economy

A more proximate economic worry than artificial intelligence is the strength of the American dollar, driven upward by the day under the prompts of higher interest rates and the prospects of a Trump tax cut. In *BloombergBusinessWeek* (5th January), Peter Coy posed the question, if the dollar's rise — to a 14-year high against a basket of six major currencies — is causing trouble, "imagine how much worse things could get if it went on a serious upward run."

Economists consulted by Mr Coy fear that the dollar's strength will hurt USA manufacturing while triggering capital flight from emerging markets. David Beckworth, a senior research fellow at the Mercatus Center at George Mason University (Arlington, Virginia), said in November that the appreciation "is a real serious noose around the neck of the global economy."

A strong dollar is bad for USA growth, making American goods and services less competitive in world markets. A rule of thumb cited by Brad Setser, a senior fellow at the Council on Foreign Relations in New York, says that a 10 per cent rise in the dollar increases the US trade deficit by one per cent of gross domestic product (GDP), with an associated loss of hundreds of thousands of jobs. Mr Coy reported that USA companies including Boeing, Emerson Electric, 3M, and United Technologies have expressed concern about damage from a strong dollar.

According to a December research report by economists Nikola Tarashev, Stefan Avdjiev, and Ben Cohen of the Swiss-based Bank for International Settlements (BIS), whatever gains in trade competitiveness that emerging-market economies enjoy when the dollar rises against their currencies can be outweighed by the rise in their borrowing costs. That is mainly true of countries whose finances are already fragile.

Of course, not every analyst is worried about the rising dollar — still below historic highs. "We think [it] has pretty much run its course," *BloombergBusinessWeek* was told by Gorky Urquieta, co-head of emerging-markets debt for the New York-based asset management firm Neuberger Berman.

Even so, an educated guess would be that economists everywhere are keeping a close eye on the streaming chart for the USA Dollar Index.

Dorothy Fabian — Features Editor

美国

特朗普即将走马上任，美国经济开始好转——但景气是否会延续到他卸任？

美国民选出的第45任总统能言善辩，但其领导能力在任期之初尚不可预知。但有一点可以肯定：相比乔治·W·布什在2008年留给奥巴马的“烂摊子”，候任总统唐纳德·特朗普从总统贝拉克·奥巴马继承的国民经济情况要好得多。当特朗普2017年1月20日宣誓就职时，经济短期前景很乐观。

评估任何国家经济的最佳标准是 GDP (gross domestic product, 国内生产总值)，美国专家认为短期GDP增长率处于理想范围内。目前失业率正维持在美联储估算的“自然水平”下。在通货膨胀或紧缩也不存在严重问题。上述迹象表明美国正进入所谓“金发经济”时期——不冷不热，刚刚好。

12月29日发表于个人理财咨询网站“The Balance”的文章《US Economic Outlook for 2017 and Beyond (2017年及以后美国经济展望)》中，Kimberly Amadeo回顾了特朗普拉动经济增长四个百分点的承诺，她指出这可能引发“非理性快速增长并导致破坏性繁荣然后破灭”。

不过竞选尘埃落定后，有理由认为候选总统的承诺稍显夸张——决定货币政策方向的美联储委员会下属机构FOMC (Federal Open Market Committee, 联邦公开市场委员会) 已预计2017年美国GDP增长将提高到2.1% (相比2016年的1.9% [估计] 和2015年的1.9%有所提升)，并在2018年回落至2.0%。

2017年和2018年失业率预计将下降至4.5%，好于2016年的4.7%，当然也低于美联储6.7%的目标。在这个鼓励全球化的时代中，很多高薪工作永远小时，因此，大部分增加的就业岗位都位于服务行业，且以兼职形式存在。从长期角度来看，美国劳工统计局(BLS) 预计2010-2020年间美国将总体增加2050万个就业机会。特别亮点之一来自建筑业——房地产市场回暖新增了180万个就业岗位。

与此同时，根据FOMC预测，2017年通货膨胀将为1.9%，2018年为2.0%，均高于2016年的1.5%和2015年的0.7% (这两年受低油价压制影响)；但剔除汽油和食品价格后的核心通胀率将在2017年达到1.8%，2018年为2.0%。这符合美联储预期目标。另一则利好消息报道称，美国制造业增长速度要快于美国经济增速。FOMC预计工厂生产在2017年增长3%，2018年为2.8%，2019年放慢至2.6%，2020年为2%。相比2008年奥巴马接班时的大衰退背景，即使是擅长哗众取宠的特朗普，也会愿意承认美国经济在2017年、也就是他任期之初呈现了良好势头。

CNBC.com财经记者John W Schoen在去年年底提出了一个有意思的问题：“如果经济复苏继续加力，历史会将功劳记在特朗普身上还是奥巴马身上？”(12月2日《Obama's Biggest Parting Gift to Trump May Be the Economy (奥巴马送给特朗普的最大告别礼物可能是经济)》)。Schoen先生认为至少在某种程度上，历史学家会将美国经济归功于任内的特朗普。美国选民在四年后重新投票时将有机会重新权衡做出决定。

汽车业

Green Car Reports的Stephen Edelstein在12月3日中提到了中国汽车网站汽车之家中的一条信息 (发表在Autoverdict中)，通用汽车公司可能将当前一代的雪佛兰沃蓝达重新命名为别克Velite在中国出售。通用汽车公司第一代沃蓝达在海外

出售时曾适用过不同新名字 (在澳大利亚和新西兰名为霍顿沃蓝达，在英国名为沃克斯豪尔Ampera，在欧洲其他地方名为欧宝Ampera)，但中国版插电式混合动力车将会是首个重新设计的版本。

11月份举行的2016广州车展上，通用汽车(中国)展示了别克Velite概念车，采用个性突出的气动掀背造型，不过没有公布任何技术细节。公司表示这款车线条流畅，流畅的曲线造型灵感源自流水，展示出别克独特的创新设计水准。

汽车之家文章中还刊登了别克重新命名沃蓝达的照片，据称信息来源于中国工信部内管理批准在中国出售新款车型的监管机构。在Edelstein先生看来，这款车造型与美国市场上的沃蓝达非常相似。

大众汽车公司深陷柴油车排放丑闻后重新振作，推出宏伟的2025战略，其中重要的一项就是覆盖各城市的共享式自动驾驶电动班车。正如Tom Brant 12月5日在on pcmag.com上所说，德国汽车制造商新成立的子公司Moia将推出城市上班族只需轻击智能手机功能即可召唤的新型汽车，“既是共享式乘车服务，也是新颖时尚的未来公共交通提供方”。

据TechCrunch报道，Moia总部设在柏林，今年年底有望率先在两座城市开展业务，然后扩展到中国和美国。最终，Moia将构建自主型电动班车网，在高峰期按固定路线为乘客提供服务；乘客如果需要去班车难以到达的地点，则可使用共享乘车公司 Gett (其投资主要来自大众)。

Brant先生说，在2016年诸多传统汽车制造商给出的承诺中，Moia是最宏伟的计划之一。共享乘车业务的其他竞争对手中，优步专注于小时汽车租赁服务，宝马则在一些美国城市扩展其ReachNow服务。与此同时，通用汽车公司正在加强与Lyft的合作伙伴关系，并已向其投资5亿美元。

在联网汽车(即车上的乘客无需动手即可从屏幕上获取消息和其他服务)的未来发展领域，无人驾驶汽车已经成为新焦点。Chuck Martin于11月30日在MediaPost上发表了IoT Daily一文，报导了一种无人驾驶卡车，它刚刚在俄亥俄州四车道高速公路上成功完成了35英里自动驾驶测试。这辆卡车由总部位于旧金山的共享乘车服务商优步所有。这星期的周末，优步计划在俄亥俄州收费公路上实现驾驶。

自动驾驶卡车的制造商是Otto，几个月前优步以6.8亿美元完成收购。俄亥俄州州长John Kasich (一位提名失败的共和党美国总统候选人) 宣布了此次测试，并称第一组结果是“未来交通的榜样”。

10月份在科罗拉多州进行了类似的测试：一辆装载百威啤酒的卡车在高速公路上自动驾驶了120英里。上述测试得到了严密的监控，卡车上乘坐着备用司机，出现差错时可以随时采取行动。但是根据Martin先生的观察：“到目前为止，所有事情都在按计划顺利进行。”

钢铁业

总统对美国钢铁工业的口头承诺到了兑现的时刻

“加固美国损坏桥梁的将是美国钢铁，让摩天大楼耸入云霄的将是美国钢铁。我们将让美国生产的钢铁重新成为国家的脊梁。”伦敦金融时报(Financial Times)报道，唐纳德·特朗普在竞选演说中，做出了上述振奋人心的承诺。随着1月20日特朗普总统就职日期临近，也到了需要兑现其竞选承诺的时刻。钢铁工业对新一届政府能有怎样的期待？

金融时报回顾了特朗普做出的有关钢铁的四项承诺，并排除了其中不大可能有帮助的两项：放宽或简化联邦法规以及企业减税——这可能刺激经济增长，但也只会间接（且并不明显）使一些钢铁制造商获益。不过，金融时报认为特朗普先生的另外两项承诺对钢铁行业确有意义：对基础设施投入巨额资金、以及加大对美国钢铁进口的限制。

经费高达1万亿美元的道路、桥梁、隧道、铁路和机场建设及维修提案，无疑会重振国内建筑业。金融时报预计每年支出1000亿美元，美国钢铁消费就会增加6%。报道还注意到，如果能辅以大力推广“购买美国货（Buy America）”计划，那么对美国钢铁长材产品（比如钢筋）生产商特别有益。阻止低价钢材进口（尤其是来自中国）的反倾销行动，将会解决重压于美国 and 所有钢铁生产市场产能过剩的全球问题。

前景并不乐观

仔细查看了金融时报选定的两项政策之后，金属矿产媒体（MetalMiner）的Stuart Burns指出，尽管基础设施建设消费倡议引发了广泛的热情，特朗普可能会遭受国会中部分共和党领袖的抵制——任何大幅增加开支的举措都会引发保守派的不安。Burns先生写道：“[新总统] 1万亿美元的数据太庞大了，很可能需要妥协才能获得批准。”

进口钢材在美国的市场份额已从2010年的20.9%上升至2015年的29.1%。即便如此，Burns先生指出，特朗普力推反倾销“可能遭到世界贸易组织的反对，这将减缓或限制可能的行动”。（12月5日的The Challenges President Trump Will Face Boosting American Steel（提振美国钢铁——特朗普总统将要面临的挑战））

值得一提的是，特朗普口中所有进口相关倡议的背后，可能都有一位不同寻常的顾问兼盟友的影子。北卡罗莱纳州夏洛特纽柯钢铁公司（其前身是不起眼的小钢厂）前任主席和首席执行官Dan DiMicco，他也是特朗普过渡团队的领头人。这篇文章认为DiMicco先生是总统选定的美国贸易代表办公室负责人。

有一点耐人寻味，MetalMiner注意到，面对进口钢材的威胁，纽柯钢铁公司做出了美国钢铁制造业中最有效的反应。面对进口产品的激烈竞争，Burns先生写道，“纽柯公司通过投资和创新，提高效率并降低生产成本，比任何其他美国钢铁公司都更有效地应对如今的国内国际需求。”

美国钢铁消费厂商警告，对工具钢征收进口高关税存在潜在的‘灾难性影响’

美国国际贸易委员会（ITC）正在考虑对来自奥地利、比利时、巴西、中国、法国、德国、意大利、日本、韩国、南非、台湾和土耳其的碳钢与合金钢定尺板征收反倾销和反补贴关税。但深秋时节在华盛顿召开的 ITC 听证会中，一名美国钢铁消费厂商代表表示，工具钢进口高关税将对美国工具和模具厂商带来严重后果。

据美国商业资讯（Business Wire）11月30日报道，Mark Vaughn（美国模具和加工协会（NTMA）副主席及田纳西州纳什维尔市沃恩制造有限公司主席）在代表NTMA和美国精密金属成形协会（PMA）参加ITC前证实了上述说法。NTMA和PMA组织中共有3000家成立较早的金属加工公司，两者携手开启一项“目标一致”的宣传计划推动政府政策，这将有助于确保美国构建强大的制造业。需要注意的是，由于大部分等级的工具钢都无法在国内采购，美国工具和模具制造商必须依靠进口工具钢——Vaughn先生表示，进口高关税将对“美国成百上千依赖进口工具钢的高薪工作产生毁灭性影响。”

在提交的听证前陈词中，NTMA和PMA表示绝大多数进口工具钢与美国生产的工具钢都不存在竞争。他们告诉ITC，提请高关税的三家国内钢铁公司生产的工具钢产量小、等级非常有限，即使是美国大型生产商，也无法提供美国买家所需的足够产量或全系列等级及类型的工具钢。三十多年来，工具钢用于金属切割、冲压、挤压、以及用作模具、铸模和刀片的成形工具，已被认为是独立于其他钢铁产品的不相关产品。在Vaughn先生看来，工具钢明显有别于用在承重和结构应用中的碳钢板及其他合金钢板，这种钢材也是美国工具和模具行业得以保持全球竞争力的重要部分。

Vaughn先生要求ITC继续考察上述区别，并表示对工具钢征收高关税将迫使许多公司及其客户“重新考虑是否继续留在美国制造工具”。

钢铁行业其他资讯……

美国钢铁公司称已就向第三方客户供应铁矿球团达成协议，正在调整生产以履行新的承诺。该公司定于今年3月重启旗下位于明尼苏达州基威丁的Keetac球团厂（自从2015年5月起临时关闭），已从1月初开始召回员工。Keetac厂的铁燧岩年产量可达约600万吨。除了美国钢铁公司，United Taconite and North Shore Mining公司也正在重启位于明尼苏达州的铁产品工厂。明尼阿波利斯星论坛报（Minneapolis Star Tribune）的Dee DePass于12月29日报道称，ITC对中国、巴西和韩国实施反倾销制裁活动的趋势有所回升。

电信业

J D Power 的最新研究表明，在1000为满分的十项评测中，美国无线路由器客户满意度去年总体上涨24点，达到847分。易用性（包括安装过程）客户满意度上升最为明显，达到30点。方便用户的还原服务得分上涨27点，从2015年的827分上升至854分。位于加利福尼亚州的营销信息服务公司还发现，服务可靠性满意度上涨24点，Wi-Fi信号满意度上涨26点，下载/上传速度满意度上升25点。此研究其他要点包括：

通过自己家中无线路由器上网的客户比例与设备类型有关。绝大多数使用无线路由器连接笔记本电脑（82%），其次是智能手机（80%），然后依次是平板电脑（71%）、台式机（55%）、游戏机（53%）、打印机（50%）、智能电视（47%）、以及流媒体设备/媒体播放器（42%）。

用于无线路由器的平均支付价格为124美元——相比2015年上涨了16美元。

美国两个主要政党的立法者预计在下届会议中提高1996年电信法修订的优先级，并就联邦通信委员会（FCC）“开放互联网”规则更改事宜表达出妥协愿望。与此同时，FCC的成员（与总统唐纳德·特朗普同属共和党）正在捍卫移动数据所谓的“零收费（zero-rating）”计划，反对者称这违反了上述规则。

FCC下属的无线通信局12月1日发布了初步调查结论，AT&T（美国电话电报公司）通过使用不限量数据套餐（即“零收费”）违反网络中立规则，以利于其移动网络推广DirecTV视频。FCC对Verizon不限量数据套餐也开展了类似的调查。AT&T和Verizon对自有的视频服务提供不限量数据套餐，迫使其他公司不得不推出相同的零收费措施。随着特朗普上任，反对网络中立规则的共和党人已从民主党人获得FCC多数席位，正试图在FCC开展行动保护AT&T和Verizon。FCC两名共和党会员已经批评了调查这两家电信公司的机构，声称在1月20日就职典礼前的任何行动都将在特朗普总统的领导下予以推翻。

专题编辑 Dorothy Fabian

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The International Wire and Cable Trade Fair in Russia



Krasnaya Presnya Expo fairgrounds Moscow, Russia 5th-8th June

MORE than 200 companies from over 25 countries will be on show when wire Russia throws open its doors from 5th to 8th June at the Krasnaya Presnya Expo Center, Moscow.

The centre will once again play host to three international trade fairs, covering wire and cables, tubes and metallurgy.

The focus will be on technical highlights in the metal industry, the wire and cable industry as well as tubes, tube accessories and new tube technologies.

wire Russia 2017 will be showing plants and machinery for the production and finishing of wire, metal forming, spring manufacturing, cable and wire machines, tools and other resources for process engineering, measurement and control engineering and all types of wire, wire rod, bare wire, bars, sheet metal and special wires and cables.

The trade fair trio is organised by Messe Düsseldorf GmbH, Messe Düsseldorf Moscow and the Russian partners, the joint-stock company VNIIPK.

Technical and conceptual support for the three trade fairs is provided by leading international trade associations from industry and commerce.

Despite the persistent global steel crisis, a massive drop in the price of oil and a generally strained economic situation in Russia, expectations towards the trade fair trio are high.

For international and Russian companies it is currently more important than ever to show their presence and to place their products on the Russian market.

In 2015, at the last wire Russia, innovations were presented by 196 companies from 25 countries, including national pavilions from Austria, Germany, Italy and China.

On the four days of wire Russia 2015, the trade fair attracted 2,900 visitors, while Tube Russia and Metallurgy Litmash jointly received 4,100 visitors.

Exhibitors in 2015 largely rated the quality of trade visitors as positive, and meetings at the stands were marked by a high level of decision-making powers.



Visitors primarily came from Russia, other CIS regions and neighbouring European countries.



Photos courtesy of Messe Düsseldorf GmbH

2017 INTERWIRE TRADE EXPOSITION

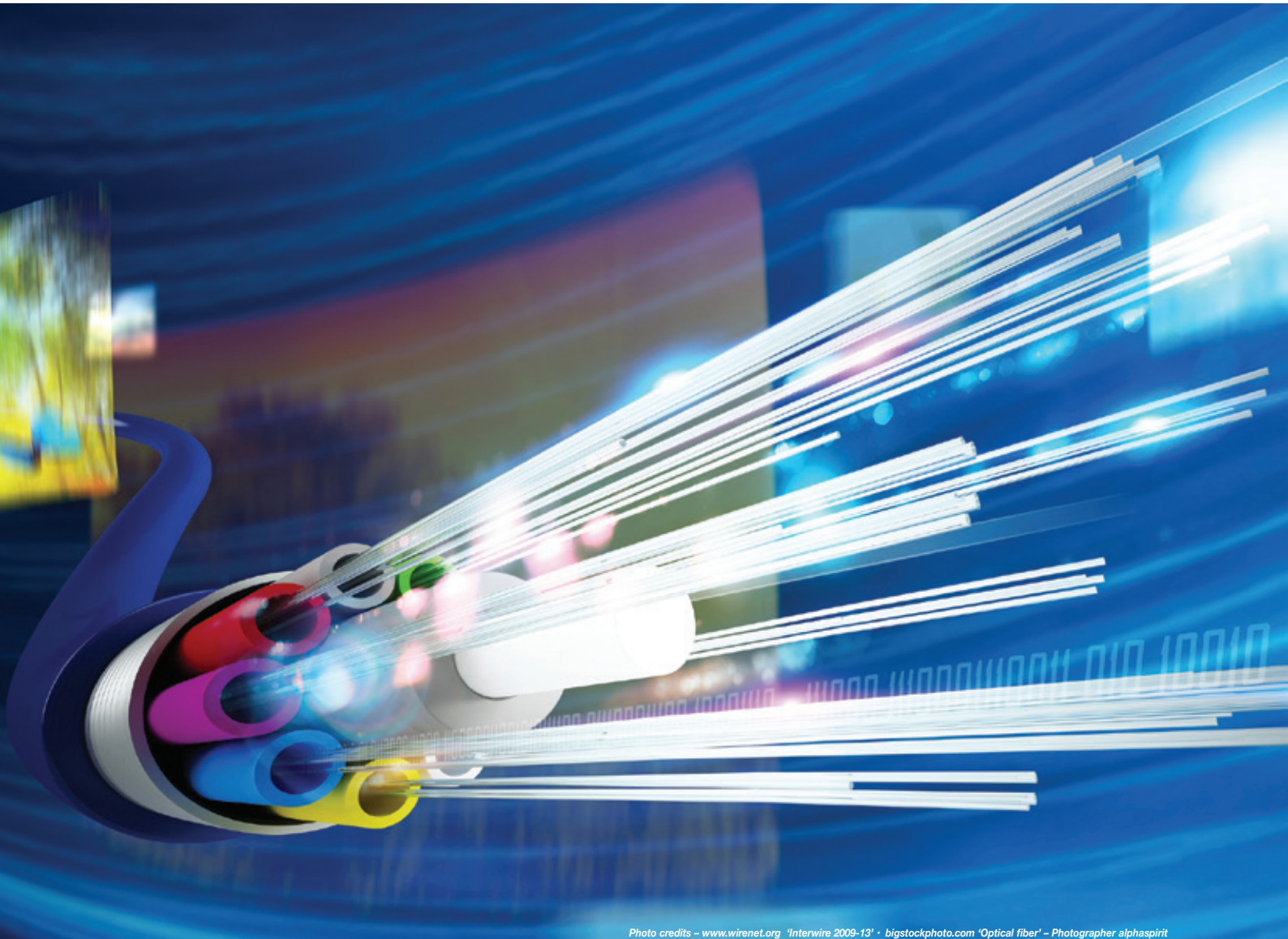
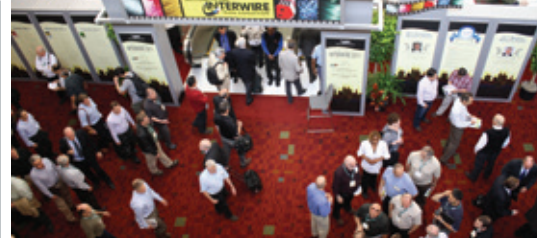


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Staged since 1981, Interwire is the largest and longest-running wire and cable marketplace in the Americas.

Hosted biennially and organised by the Wire Association International, exhibitors, speakers and visitors from more than

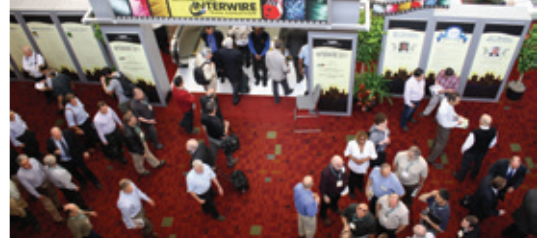
50 countries will be in Atlanta, Georgia, USA, from 8th to 11th May. This forum is the perfect opportunity to see first hand new machinery in a range of industries including automotive, construction, aerospace, transportation and communications.



Alphabetical list of Exhibitors

Accuracy Technical Services LLC	555	Chengdu Centran Industrial Co Ltd	205
Ace Metal Inc.....	851	Chhaperia International Company.....	1361
Advaris GmbH.....	552	China Council for International Trade.....	1611
AESA SA.....	965	China Council for International Trade.....	1614
AFI Systems LLC.....	110	China Council for International Trade.....	1615
Agape Industrial Inc.....	1000	China Council for International Trade.....	1616
AIM Inc	1111	China Council for International Trade.....	1617
AITMAC Inc	323	China Council for International Trade.....	1623
All Wire Forming Machinery Inc.....	1762	China Council for International Trade.....	1706
Amacoil Inc.....	812	China Council for International Trade.....	1710
America Bybon Corp.....	1602	China Council for International Trade.....	1712
American and Efird LLC	1517	Cimteq.....	1607
American Kuhne.....	1556	Clifford Machines and Technology	1727
Appleton Manufacturing.....	118	Clinton Instrument Co	1001
ATE Applicaziomio Termo Electroniche Srl	1173	CM Furnaces Inc	755
AW Machinery LLC.....	1700	CMEC International Exhibition Ltd	1311
Aztech Lubricants LLC.....	854	CMEC International Exhibition Ltd	1323
B & H Tool Co Inc	551	CN Wire Corp	1523
Baloffet Die Corp	1300	Cobre Y Aleaciones Escocia AS.....	117
Baum's Castorine Co Inc.....	1839	Commission Brokers Inc	719
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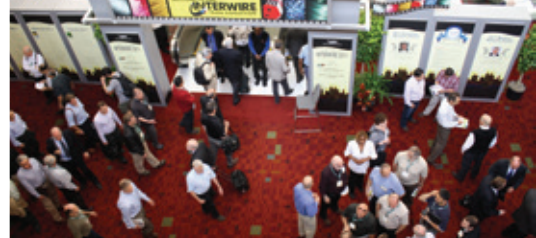
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Investigating effects of freezing conditions on micro-duct air-blown cables

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Abstract

In some cold areas, freezing conditions are a potential threat to micro-duct air-blown cables. In order to study the effects of freezing conditions on the transmission performance of optical fibres in micro-duct air-blown cables, two different experiments were designed and carried out in this paper.

The test results reveal that both freezing in micro-ducts and that around end caps have insignificant influence on the transmission performance of the fibres and no visual physical damage to the cable has been detected after the experiments.

1 Introduction

With the development of FTTx network construction, micro-duct air-blown cables are more frequently used due to the lack of duct resources, even in some cold regions. In this case, the water permeated into the micro-duct will be frozen under such low temperatures.

Some concern such as the cable performance deterioration will discourage the wide application of micro-duct air-blown cables all over the world.

In order to study the effects of freezing conditions on the transmission performance of optical fibres, freezing tests were designed to simulate the cold climate with the aid of a temperature cycling chamber.

During the tests, the attenuation change of the fibres was monitored, and the appearance of the cable was checked. The test procedures are described in detail and the test results are carefully analysed.

2 Freezing test conditions

Two experiments were designed to simulate the conditions of water frozen in the micro-duct and around the end caps

Cable type	Stranded loose tube structure with G.652D fibres
Fibre count	96
Cable OD	6.1mm
Micro-duct type	HDPE
OD/ID of micro-duct	10/8mm
TCT cycles	2

○ **Table 1:** Common test conditions

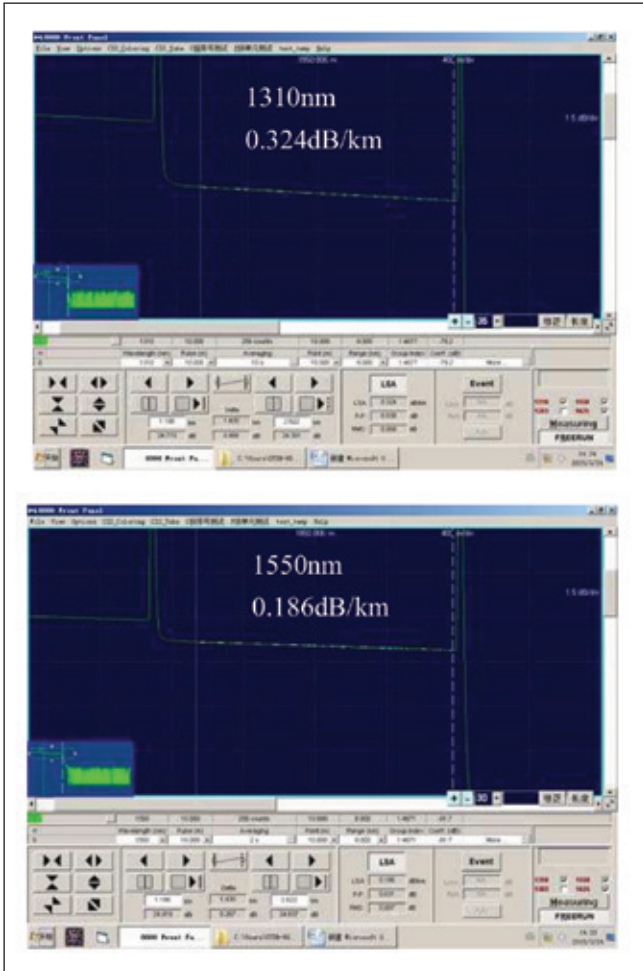


○ **Figure 1:** Micro-duct with cable soaked in water

respectively with the aid of a temperature cycling chamber. The common test conditions in two experiments are shown in *Table 1*.

3 Test for water frozen in micro-duct

This experiment is designed to study the impact of freezing conditions on fibre attenuation while water is frozen in the micro-duct, and performed in accordance with IEC60794-1-22 Method F15: cable external freezing test.



○ **Figure 2:** OTDR graphs of the fibre with largest attenuation values at -2°C

A 1.8km-long micro-duct air-blown cable and 80m-long micro-duct are used in this experiment.

3.1 Test procedures

First, rewind the micro-duct onto a cable drum and blow the cable into the duct.

Then, soak the 80m-long micro-duct (with cable inside) in a pool for 24 hours to make sure that the duct is completely filled with water, as shown in *Figure 1*.

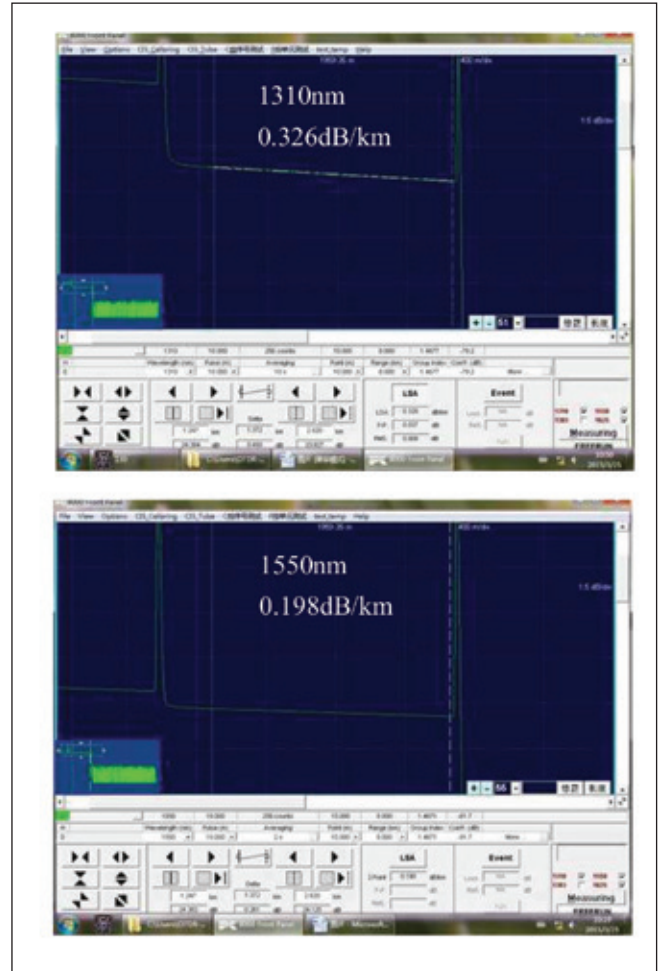
After that, seal the duct with end caps before taking the cable drum out of the pool. Finally, put the cable drum into the temperature cycling chamber to perform the temperature cycling test.

Before that, record the attenuation of each fibre at room temperature (23°C).

3.2 Temperature cycling programme

The temperature cycling programme is set as follows (one cycle):

- 1 Lower the temperature from 23°C to 3°C within 30 minutes and hold this temperature for eight hours.
- 2 Then lower the temperature to -40°C within 30 minutes and hold it until the water is completely frozen and the ice temperature is -10°C or lower (by using a temperature monitoring device).
- 3 Raise the temperature to -2°C and hold this temperature for one hour.



○ **Figure 3:** OTDR graphs of the fibre with the largest attenuation values at -40°C

- 4 Raise the temperature to 65°C. Maintain the temperature until the water reaches 15°C. Then, return the temperature to 23°C and hold the temperature until the water reaches 23°C ±5°C.

At every stage of temperature cycling test, record the attenuation of each fibre.

3.3 Results

After the test, attenuation changes of all fibres are really small. The largest attenuation values at -2°C are shown in *Figure 2*, at 1,310nm and 1,550nm wavelengths respectively.

3.4 Additional test

Considering extremely cold weather conditions, the temperature cycling programme is changed and the above test is repeated.

3.4.1 Temperature cycling programme (for extremely cold weather)

- 1 Lower the temperature from 23°C to -40°C within 30 minutes and hold this temperature for 12 hours. Perform attenuation measurement
- 2 Raise the temperature to 65°C within 30 minutes and hold it for 12 hours. Perform attenuation measurement
- 3 Return the temperature to 23°C within 30 minutes and hold this temperature for 12 hours. Perform attenuation measurement

3.4.2 Results (for extremely cold weather):

During the test, attenuation changes of all fibres are also small and the OTDR curves are very smooth. The test results at -40°C should be the worst. Therefore, the largest attenuation values at -40°C in Figure 3 are displayed, at 1,310nm and 1,550nm wavelengths respectively.

3.5 Analysis

After data process, it can be demonstrated the largest fibre attenuation values in each loose tube at different temperature points during the above two tests, at 1,310nm and 1,550nm wavelengths respectively, as illustrated in Figure 4.

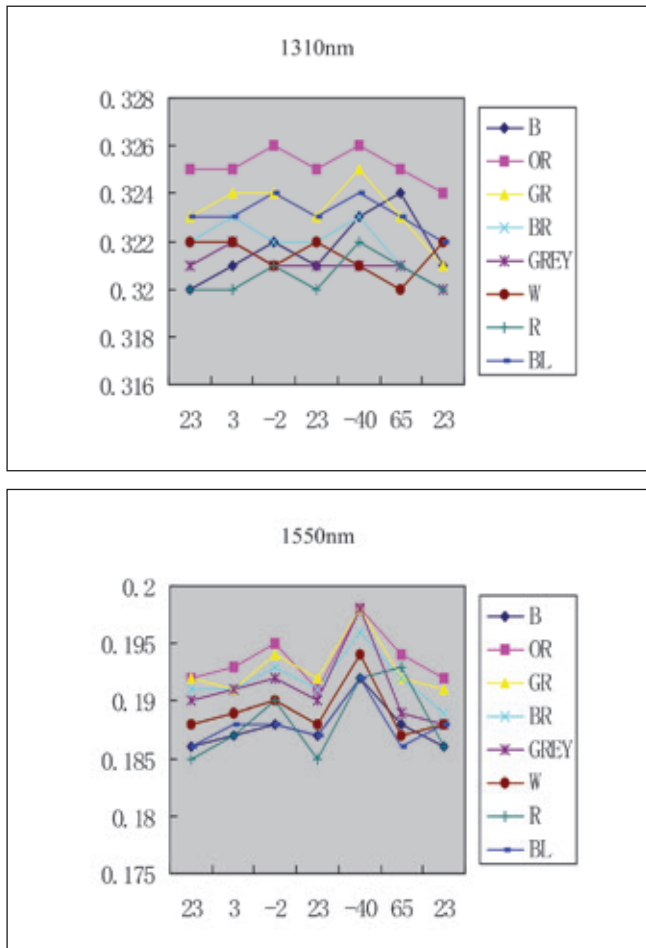
Considering the micro-duct is rarely full of water and the actual temperature change rate is much slower than that in the experiments, the impact of ice in micro-ducts on air-blown cables can be regarded as insignificant.

Until all the above tests have been finished, the cable is blown out of the duct by compressed air. It shows that the blowing performance of the cable is still good and no visual damage to the cable sheath has been found.

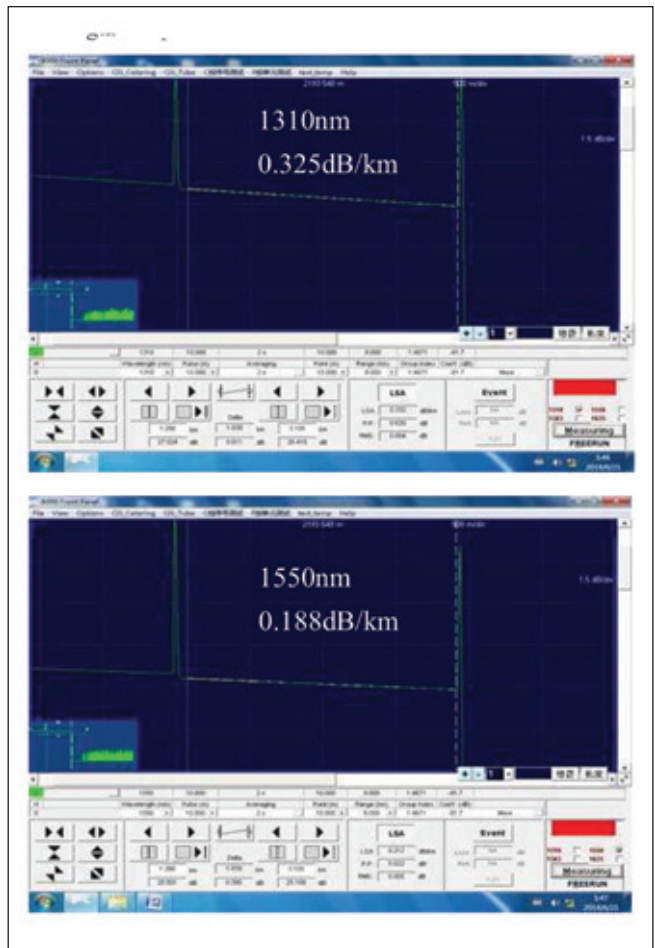
4 Test for water frozen around end caps

This experiment is designed to study the impact of freezing conditions on fibre attenuation while water is frozen around end caps. A 1.8km-long micro-duct air-blown cable and 6m-long micro-duct are used in this experiment.

○ **Figure 4:** Largest attenuation values in each loose tube at different temperature points



○ **Figure 5:** Water frozen around end caps



○ **Figure 6:** OTDR graphs of the fibre with the largest attenuation values at -40°C during the end cap test

Move the micro-duct to the middle of the cable and record the distance from the test end of the cable to the micro-duct.

4.1 Test procedures

First, seal one end of the micro-duct with an end cap and fill water into the duct until it is full of water.

Then seal the other end of the duct with another end cap and keep two end caps at the same height.

Before the experiment, record the attenuation of each fibre at room temperature (23°C).

After that, put the cable into the temperature cycling chamber to perform the temperature cycling test.

4.2 Temperature cycling programme

- 1 Lower the temperature from 23°C to -40°C within 30 minutes and hold this temperature for 12 hours. Perform attenuation measurement
- 2 Raise the temperature to 70°C within 30 minutes and hold it for 12 hours. Perform attenuation measurement
- 3 Return the temperature to 23°C within 30 minutes and hold this temperature for 12 hours. Perform attenuation measurement

4.3 Results and analysis

Check the end caps at -40°C. Some ice can be found around them.

Therefore, the experiment has successfully simulated the situation where water freezes around end caps, as shown in *Figure 5*.

Pay much attention to the positions where the end caps are located on the attenuation curves during measurement.

All the OTDR curves are very smooth.

Figure 6 shows the largest attenuation values at -40°C, at 1,310nm and 1,550nm wavelengths respectively.

After the test, attenuation changes of all fibres are really small and no visual damage to the cable sheath has been found.

5 Conclusion

When micro-duct air-blown cables are used in cold areas, the influence of freezing condition on optical fibre transmission should be taken into consideration.

In order to study this subject, two experiments are designed to evaluate such influence.

Based on the test results in this paper, it can be concluded that the effects of frozen water on micro-duct air-blown cables are insignificant.

However, the long-term effect during the cable lifetime should be also considered and further investigated.

Thus, protective measures to avoid the penetration of water into micro-ducts should not be ignored.

6 References

- 1 IEC 60794-1-22 Optical fibre cables – Part 1-22: Generic specification – Basic optical cable test procedures – Environmental test methods
- 2 IEC 60794-5-10 Optical fibre cables – Part 5-10: Outdoor microduct optical fibre cables, microducts and protected microducts for installation by blowing

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冻结条件对微管道气吹电缆的影响研究

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摘要

在一些寒冷地区，冻结条件对微管道气吹电缆而言是一大潜在威胁。为了研究冻结条件对微管道气吹电缆光纤传输性能的影响，本文中设计并进行了两种不同的实验。试验结果表明：微管道及端盖周围的冻结对光纤的传输性能无明显影响，实验后未检测到可见物理损坏。

1 概述

随着光纤接入 (FTTx) 网络的发展，由于管道资源缺乏，微管道气吹电缆的应用越来越频繁，包括一些寒冷地区亦是如此。

在这种情况下，渗透进微管道的水在低温下会冻结。这样的现象引发业内人士的关注，比如担心电缆性能下降，会阻止微管道气吹电缆在全世界范围内的广泛应用。

为了研究冻结条件对光纤传输性能的影响，本研究采用温变箱来模拟寒冷的气候条件，进行冻结试验。在试验过程中会对光纤的衰减量变化进行监测，并检查电缆的外观。以下详细描述了试验过程，并仔细分析了测试结果。

2 冻结试验条件

通过温变箱，本研究进行了两个实验，模拟了水在微管道及端盖周边区域的冻结。表1中所示为两个实验相同的试验条件。

3 水在微管道中冻结的试验

本实验用于研究当水在微管道中冻结时，冻结状态对光纤衰减量的影响，并参照IEC60794-1-22中方法F15：电缆外部冻结试验来进行。A本实验中使用1.8km长微管道气吹电缆及80m长微管道。

3.1 试验过程

首先，将微管道倒绕至电缆盘上并将电缆吹进管道。接着，将80m长微管道(电缆位于管道内)浸泡在水池中24小时，确保管道全部充满水，如图1所示。

然后，在将电缆盘取出水池前，用端盖将管道密封。最后，将电缆盘放进温变箱来进行温变试验。在这之前，在室温下(23°C)记录每根光纤的衰减量。

3.2 温变过程

温变过程设置如下(1个过程周期)：

- 1 在30分钟内将温度从23°C降至3°C，并保持该温度8小时。

电缆类型	G.652D 光纤的两股光纤保护管结构
光纤芯数	96
电缆外径	6.1mm
微管道类型	高密度聚乙烯
微管道外径/内径	10/8mm
温度循环周期	2

表1: 通用试验条件



图1: 将带电缆的微管道浸入水中

- 2 接着在30分钟内将温度降至-40°C并保持该温度直至水完全冻结，冰温为-10°C或以下(使用一个温度监测装置)。
- 3 将温度升至 -2°C 并保持该温度1小时。
- 4 将温度升至65°C。保持该温度直至水温达到15°C。然后，将温度还原至23°C并保持该温度，直至水温达到23°C ±5°C。

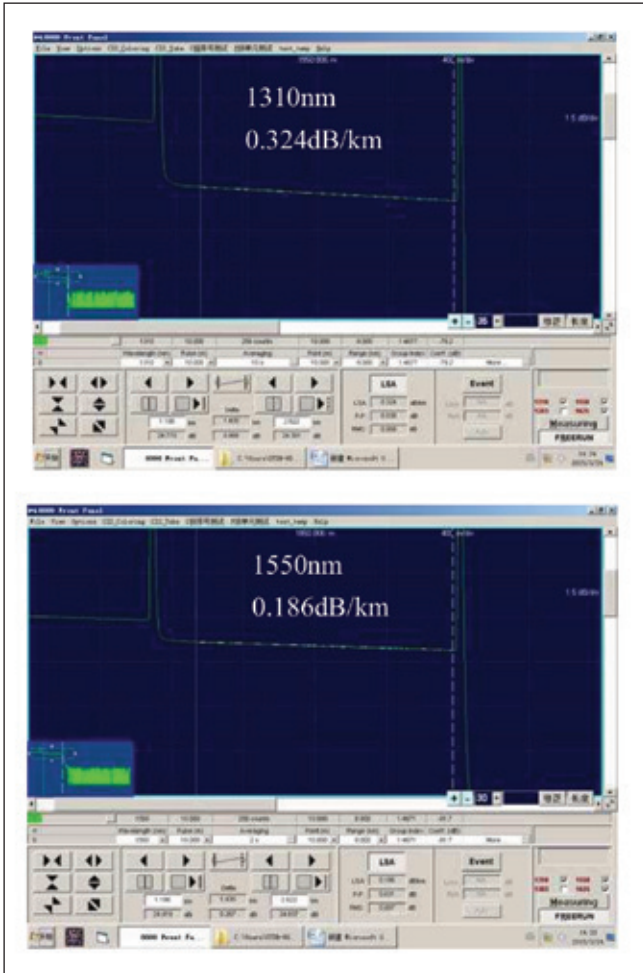
在温变试验的每一步骤，记录每根光纤的衰减量。

3.3 结果

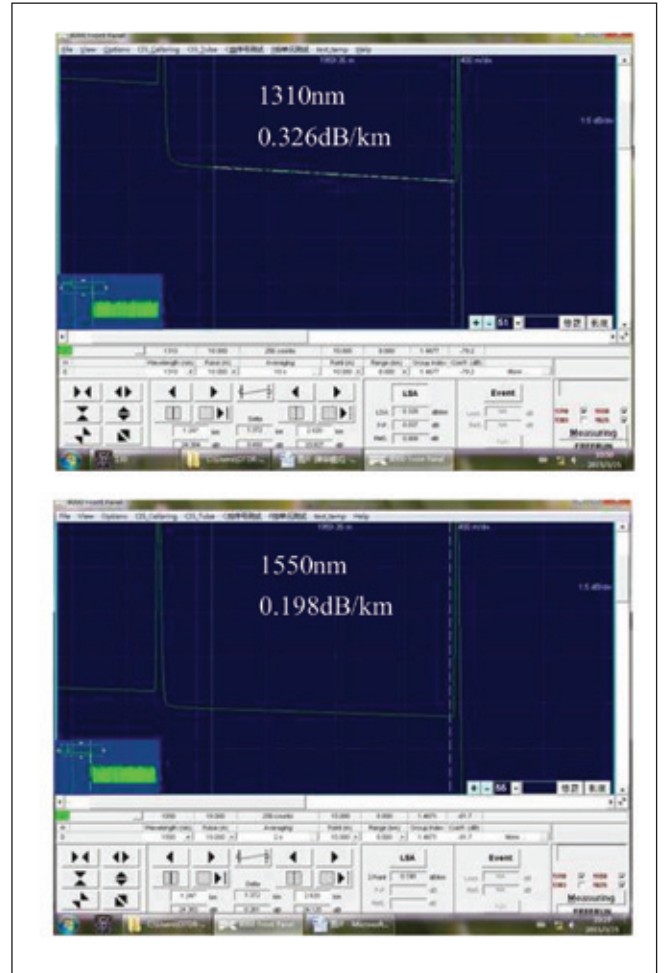
试验后，所有光纤的衰减量变化均非常小。在温度为-2°C时，最大的衰减量如图2中所示，分别在1310nm和1550nm波长位置。

3.4 附加试验

考虑到极端寒冷的天气条件，改变温变过程并重复上述试验。



○ 图2: 温度为-2°C时光纤最大衰减值的OTDR曲线图



○ 图3: 温度为-40°C时光纤最大衰减值的OTDR曲线图

3.4.1 温变过程(极端寒冷天气)

- 1 在30分钟内将温度从23°C降至-40°C, 并保持该温度12小时。测量衰减量。
- 2 在30分钟内将温度升至65°C, 并保持该温度12小时。测量衰减量。
- 3 在30分钟内将温度还原至23°C, 并保持该温度12小时。测量衰减量。

3.4.2 结果(极端寒冷天气)

在试验中, 所有光纤的衰减量变化也相当小, OTDR曲线非常平滑。在温度为-40°C时, 试验结果最差。因此, 在温度为-40°C时, 最大的衰减值如图3所示, 分别在1310nm及1550nm波长的位置。

3.5 分析

如图4所示, 在对数据进行分析后, 可得出如下结论: 在上述两个试验中, 在不同温度点, 每个光纤保护管中的最大光纤衰减值是在1310nm及1550nm波长位置。

由于微管道很少全部充满水, 实际温度变化速率也比实验中慢, 因此风吹电缆的微管道中冰的影响可忽略不计。结束上述试验后, 用压缩空气将电缆从管道中吹出。本实验表明, 电缆的吹制性能仍然良好, 电缆护层无明显可见损坏。

4 端盖周围的水冻结试验

本实验用于研究当水在端盖周围冻结时, 冻结状态对光纤衰减的影响。A本实验中使用1.8km长微管道气吹电缆及6m长微

管道。将微管道移动至电缆的中间位置, 记录电缆试验端到微管道的距离。

4.1 试验过程

首先, 将微管道的一端用端盖密封, 并向管道中灌水, 直至其全部充满水。接着, 用另一个端盖将管道的另一端密封, 保持两个端盖在同一高度。实验前, 在室温(23°C)下记录每根光纤的衰减量。然后, 将电缆放进温变箱进行温变试验。

4.2 温变过程

- 1 在30分钟内将温度从23°C降至-40°C, 并保持该温度12小时。测量衰减量。
- 2 在30分钟内将温度升至70°C, 并保持该温度12小时。测量衰减量。
- 3 在30分钟内将温度还原至23°C, 并保持该温度12小时。测量衰减量。

4.3 结果及分析

在温度为-40°C时, 检查端盖。端盖周围可见一些冰块。因此, 本实验成功地模拟了端盖周围的水冻结状态, 如图5所示。

测量过程中更关注端盖位于衰减曲线上的位置。所有的OTDR曲线都非常平滑。当温度为-40°C时, 最大的衰减值如图6所示, 分别在1310nm及1550nm波长位置。

试验结束后, 所有光纤的衰减变化都相当小, 电缆护层无明显可见损坏。

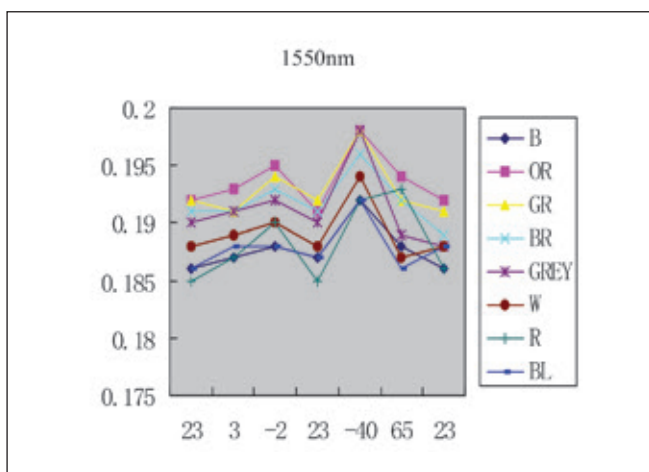
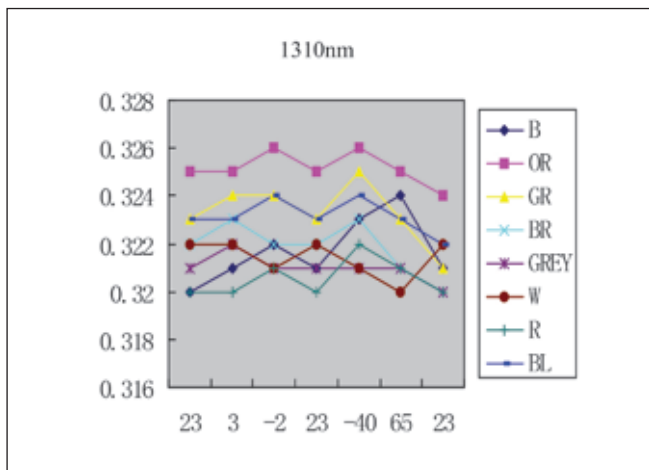


图4: 不同温度点时每个光纤保护管的最大衰减

5 结论

当微管道气吹电缆用于寒冷地区时, 应考虑冻结状态对光纤传输的影响。为了研究该课题, 本文中进行了两个实验来评估所述影响。基于本文中的试验结果, 可推断出冻结水对微管道气吹电缆的影响可忽略不计。

但是, 应考虑电缆使用寿命中的长期影响, 并进一步研究。因此, 应该采取保护措施, 避免水进入微管道。

图5: 端盖周围的水冻结

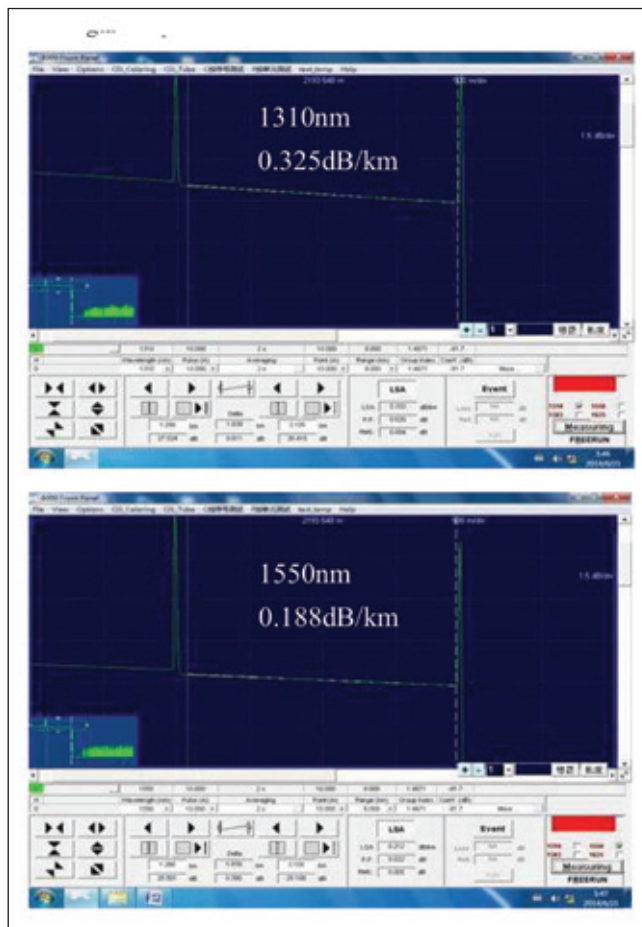


图6: 在端盖试验过程中, 温度为-40°C时光纤最大衰减值的OTDR曲线图

6 参考文献

- IEC 60794-1-22 光纤电缆 - 1-22 节: 通用规范 - 基本光缆试验过程 - 环境试验方法。
- IEC 60794-5-10 光纤电缆 - 5-10节: 户外微管道光纤电缆、微管道及通过吹制保护安装用微管道。

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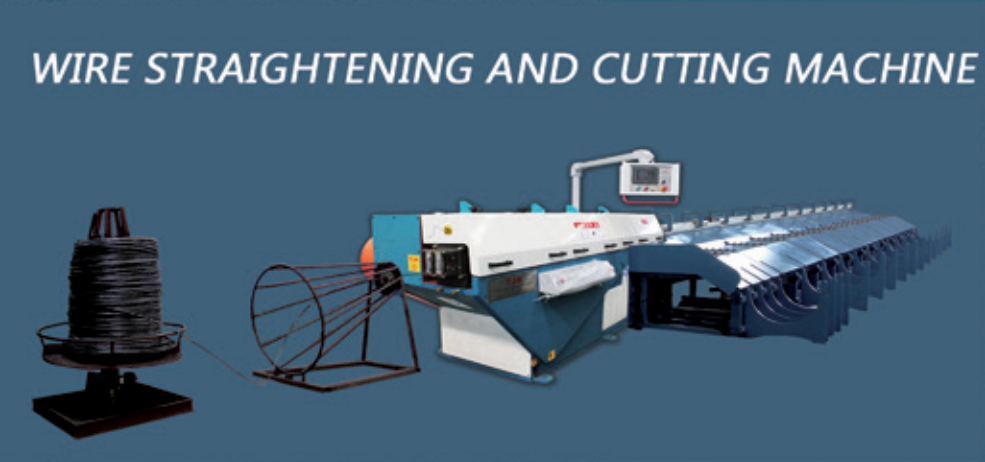


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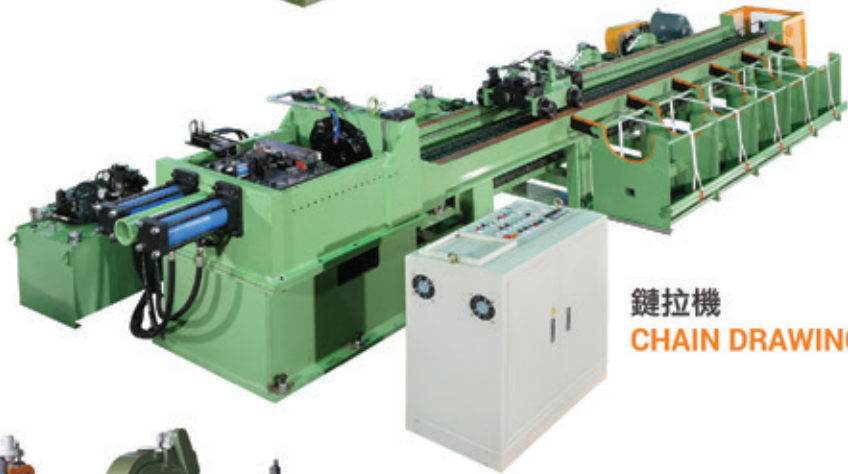
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