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Wire & Cable

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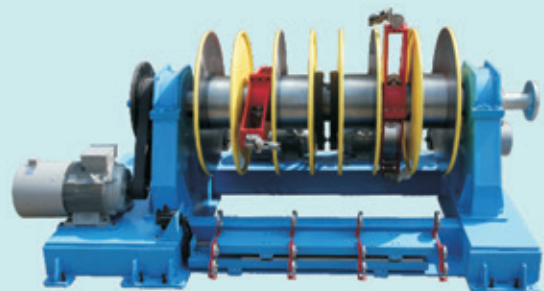
Horizontal taping machine



XBΦ500-Φ2500 Cantilever type single twisting machine



Auto coiling and stacking line



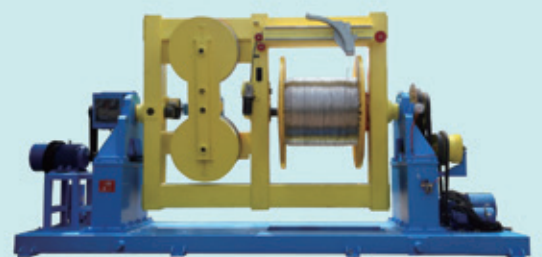
TXJΦ1200 Concentric stranding machine



SJΦ1000-Φ2500 Double twist stranding machine



DJΦ630-Φ2500 A type Single twisting machine



DJΦ1000-Φ2000 Single twisting machine

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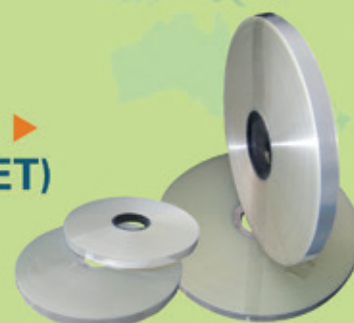
Fire-resistant synthetic mica tape



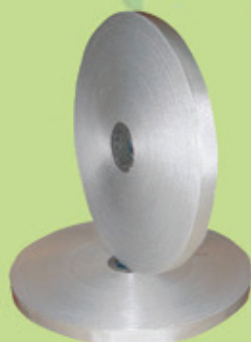
High temperature calcined mica tape



Polyester film tape (PET)



Fiberglass fire-retardant tape
(low smoke non-halogen type)



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om **LESMO**



STIRRUP BENDER

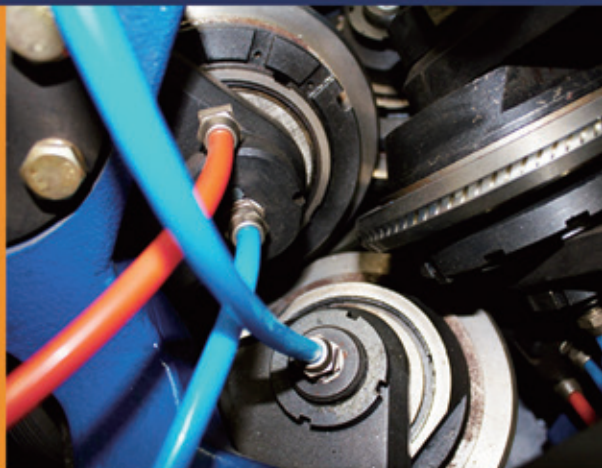


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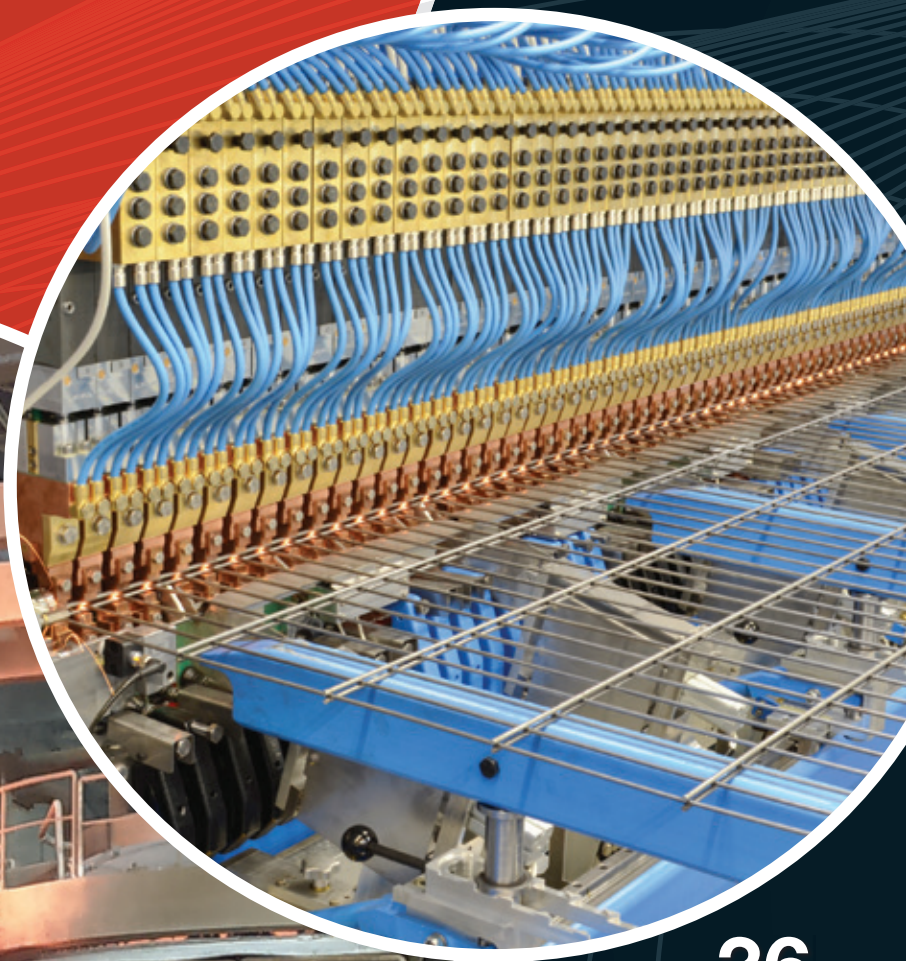
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Five-year plan is a winning formula for UK's Metalube

Politically it has been a tumultuous few months for the UK and many companies are clearly concerned for what lies ahead in a Europe without the UK.

But one UK exporter's vision for the future and re-investing profits into continued business growth is clearly a winning formula.

Manchester-based specialist lubricants manufacturer Metalube, which came under new ownership five years ago, celebrated the milestone by giving me a tour of their newly expanded site, and an introduction into what they have achieved during those years.

With offices in Dubai, Brazil, India, Hong Kong and an ever-expanding presence in China, practically doubling the workforce number, expanding its home base and building a new laboratory, it is an impressive tale of a company that is primarily an exporter, including to the important European market. Find out what the company has achieved on page 22.

Italian company Mandelli Sistemi has recognised the importance of one of its employees. Following the death of mechanical design manager Francesco Mulazzi, the company has named a scholarship after him for students attending the Laurea Magistrale in mechanical engineering during the 2016/17 academic year, and specialising in machine tools and manufacturing systems.

The company wished to maintain the memory of Mr Mulazzi by associating him with the continuous training of young engineers in the machine tool world. The full story is on page 26.

David Bell
Editor



When and where

2017

7-9 March:
AMI Cables –
trade exhibition –
Cologne, Germany
Organisers: AMI
Fax: +1 610 478 0900
Email:
consult@amiplastics-na.
com
Website:
www.amiplastics-na.com

2017

23-25 March:
TEL – trade exhibition –
Istanbul,
Turkey
Organisers:
Voli Fuar Hizmetleri
Fax: +90 212 604 5051
Email:
info@voli.com.tr
Website:
http://tel-fair.com

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 VNIKP
Fax: +7 499 246 9277
Email:
info@wire-russia.com
Website:
www.wire-russia.com



○ The new furnace at the Raigarh Steel Plant in India

The record-breakers!

TENOVA has developed a new furnace concept, the flexible modular furnace, for Jindal Steel and Power Limited (JSPL) Raigarh Steel Plant, in India – and set a new world record.

This innovative technology is designed for steelmakers that currently use a significant amount of hot metal in their charge mix yet are ready to move or return to scrap-based steelmaking.

In the JSPL steel plant, the steelmaker converted the existing electric arc furnace (EAF) into a Tenova FMF. Adopting the new Tenova technology, JSPL gained a saving on the production costs of around US\$15-18 per tons of steel, resulting in a year saving of approximately US\$15-20 million – achieving a ROI in less than four months.

The same new furnace can easily produce 32 heats with 89 per cent guaranteed yield, and has the potential of producing 36 heats with operation excellence. Moreover, it succeeded in producing 42 heats-through on 14th November last year – a world record!

The project was commissioned on 31st August 2015 and successfully

completed in a short span of six months from the effective start of the project. With efficient planning and collaborative teamwork, the project was accomplished in just ten days of furnace shutdown against 28 days as expected.

Thanks to the good performance – a mix of delivery, quality and price parameters – Tenova has been rated as “Grade A vendor” by the customer, and obtained the Final Acceptance Certificate in a record time.

The FMF solution is also suitable for those steelmakers that are looking for a transition from basic oxygen furnace (BOF) to an EAF-based steelmaking and for those EAF steel shops that aim to increase the hot metal percentage in their charge mix.

Tenova FMF is a modular concept of smelting furnace that can be developed from core equipment called base module with specific add-ons and has the flexibility of converting various charge mix of raw material (scrap, DRI, liquid hot metal, pig iron, etc). Each module is designed with specific features in order to fit the requirements of the charge mix.

There are clear opportunities and applications for FMF. A full range of metallic charges can be smelted with capital costs reduced to the minimum level. Flexibility is clearly the greater advantage of this solution for all the markets that are developing toward lower footprint steelmaking operations, and FMF fits certain specific charge mixes becoming even more convenient than classical solutions.

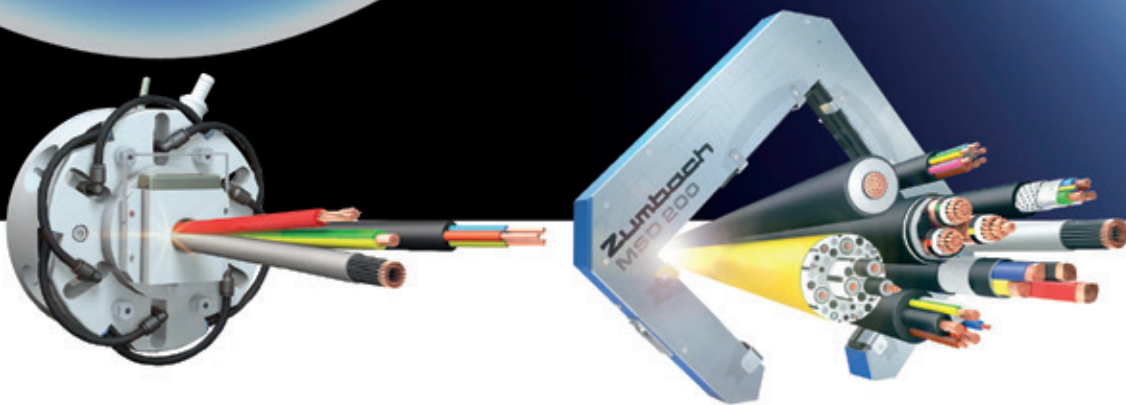
This project marks an important milestone in the launch of FMF in Asian markets. In India, high energy cost and inconsistent/poor availability of raw material has necessitated the industry to explore cost-effective steel making methods.

Alternative methods to build flexibility in furnaces for charging different types of raw materials – such as the one offered by FMF – are the need of the hour, and very much essential to control the cost of steel. In China, FMF can be the first step for the modernisation of oxygen steel plants offering a smoother transition to the scrap era.

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Three-in-one capability

AMETEK Land has developed an innovative new pyrometer that provides high accuracy and a three-in-one capability specifically for aluminium applications, including extrusion press exit, extrusion press quench zone, and aluminium strip mills.

The SPOT AL EQS (SPOT aluminium extrusion, quench and strip) pyrometer is an extremely flexible instrument with pre-configured algorithms that make it especially suitable for use at the extruder press exit and quench position as well as at mill entry and exit positions in hot rolling mills. In addition, the pyrometer's algorithms can be customised and tuned for bespoke applications and specific aluminium grades.

This latest addition to the Land range of SPOT pyrometers was specifically designed to work in low emissivity environments where regular pyrometers might struggle to provide accurate and reliable readings. It has the ability to measure a wide temperature range from 200° to 700°C/392° to 1,292°F.

Utilising the latest, cutting-edge temperature detector design in combination with the most-advanced data processing algorithms, Land has created an extremely accurate and repeatable pyrometer with a fast response time.

Incorporating the latest digital communication capabilities, the SPOT AL EQS can be configured remotely through a dedicated web server, and with Power over Ethernet (POE) capabilities is able to communicate data over Ethernet through a variety of different protocols (TCP-IP, Modbus TCP, DHCP, http, udp and ICMP). This further ensures that, along with the traditional 4-20mA/0-20mA output signal, the SPOT AL EQS can be easily integrated into any plant control infrastructure.

SPOT AL EQS works straight out of the box and can be installed by just a single person, offering greater convenience and ease of use. If the sensor is in an inaccessible location, SPOT AL EQS has a remote viewing capability to verify alignment and ensure a high level of accuracy.



○ The SPOT AL EQS – an extremely flexible instrument with pre-configured algorithms

A built-in camera aids alignment, which, combined with a green LED, allows the user to position the measurement point in an optimal location to avoid ambient lighting reflections. Data from the SPOT AL EQS is available remotely as snapshots using free SPOT Viewer software or standard web browsers.

SPOT pyrometers are designed for high accuracy, high reliability, simple installation, configuration and flexible digital communications. They can be easily interchanged with other Ametek Land pyrometers and other manufacturers' equipment. All processing functions are integrated into a single pyrometer, making them suitable for use in all sized plants.

Designed in close collaboration with industry-leading aluminium producers and plant control system engineers, the SPOT AL EQS pyrometer is helping lead the way in improving aluminium extrusion and strip plant throughput, quality and energy efficiency.

This latest Ametek Land temperature measurement instrument already has demonstrated its ability to provide immediate data for process improvement.

Ametek Land – UK
Website: www.landinst.com

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Asia expansion increases



○ *Schmolz + Bickenbach – expanding its services in Asia*

SCHMOLZ + Bickenbach International has invested in another subsidiary as part of the initiative to expand its sales and services activities in Asia.

Effective immediately, the special steel producer with global operations is represented with its own sales location in

Bangkok, Thailand. The aim is to expand the service offerings for existing customers in the automotive and electronics industries, as well as in manufacturing, and to acquire potential new customers in these branches.

Local industries can then profit from informed consulting in the application-specific development of optimum long steel solutions.

The new sales location is headed by Aileen Ng, who has many years of experience and a vast network in the stainless and special steel sector in Asean countries.

Sales activities of the Schmolz + Bickenbach Group subsidiary focus on special steels engineered specifically for machining in the production divisions Deutsche Edelstahlwerke, Steeltec and Ugitech. These products are sold in the technologically advanced automotive and electronics industries in Thailand.

The new location is also to expand the sale in East Asia of special long steel from Deutsche Edelstahlwerke. There is particular demand among specialist suppliers in Thailand for high-quality steel products like those used, for example, in propeller shafts.

The material portfolio of the company also includes tool steel, stainless, acid and heat-resistant steel as well as top-grade engineering steels.

Schmolz + Bickenbach – Germany
Website: www1.schmolz-bickenbach.com

New website for Wire & Cable ASIA

The leading magazine for the wire and cable industries across Asia has a new website from this month. Visitors to www.read-wca.com will be able to read all the latest news from the magazine, take a peek at forthcoming shows and exhibitions, as well as access the responsive site on PC, Mac, tablet and smartphones. The new site will go live on 1st November.



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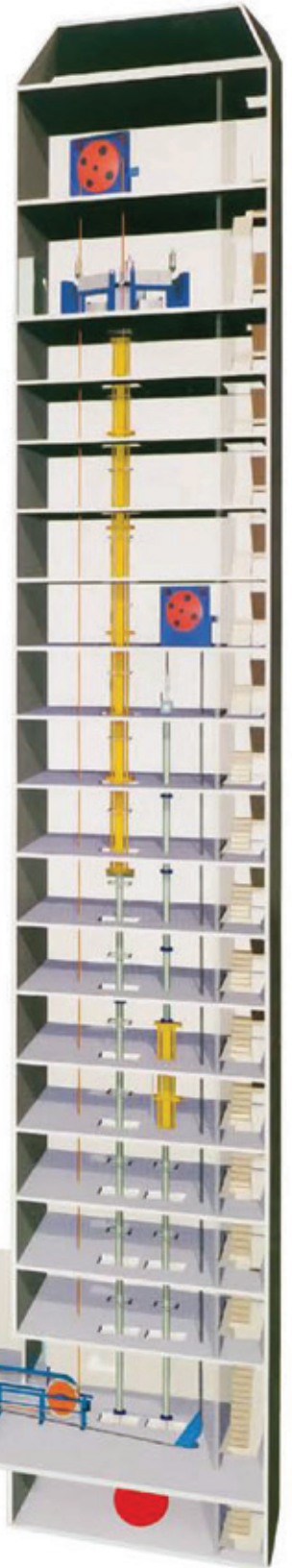


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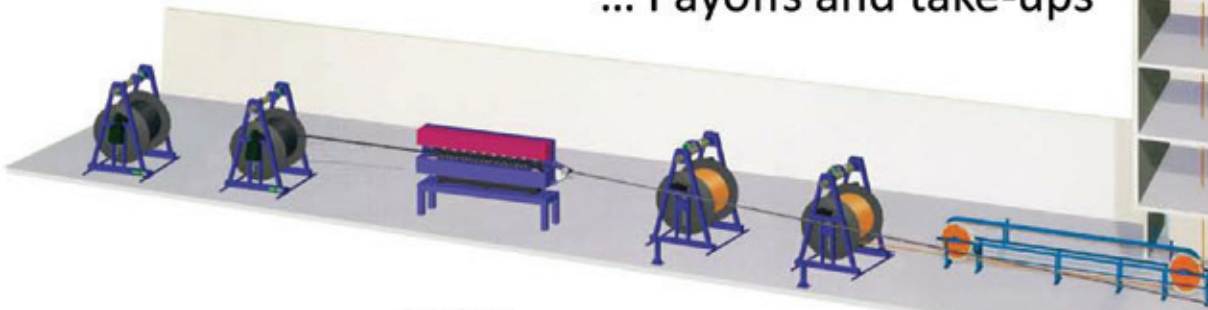
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Ultra-high transmission

ABB has orders worth over \$300 million to supply technology for the world's first 1,100kV ultra-high voltage direct current (UHVDC) transmission link.

The Changji-Guquan UHVDC link will carry power from the Xinjiang region in the northwest, to Anhui province in eastern China, and is believed to set a new world record in terms of voltage level, transmission capacity and distance.

It will be capable of transporting 12,000MW of electricity, a 50 per cent increase in transmission capacity compared with the 800kV UHVDC links currently in operation. This will also extend the transmission distance from around 2,000km to over 3,000km and play a key role in transmitting power over greater distances and facilitating a more interconnected grid.

"China has major load centres in its eastern region, while a significant amount of its energy resources are in the west and northwest. The expansive geography and increased demand over the last decade have prompted the build-up of UHV capacity to transmit larger amounts of power over greater distances with minimum losses," said Claudio Facchin, president of ABB's power grids division.

UHVDC transmission is an advancement of HVDC, a technology pioneered by ABB over 60 years ago, and is said to represent the biggest capacity and efficiency leap in over two decades. In 2010, ABB supported SGCC with the Xiangjiaba-Shanghai project, the first 800kV UHVDC link to go into commercial operation, and was the first to successfully develop and test 1,100kV converter transformer technology.

ABB – Switzerland

Website: www.abb.com

New area sales manager for South America

Alfredo Torres has been working for Niehoff Group as the new area sales manager for the South American countries.

Mr Torres holds an engineering degree in manufacturing processes and has gained vast experience in various industrial areas such as automotive and the wire and cable industry where he has worked among other fields in R&D, engineering and maintenance and in the development of all kinds of cables.

Working as a commercial area manager for Latin America focusing on machinery installation and commissioning, pre and aftersales technical assistance as well as wire and cable manufacturing process development and integral development for wire and cable plants, he has gained an overall knowledge in the industry.

Together with the Niehoff agency in Chile, Rheintek Chile Limitada, Mr Torres will take care of customers in South America, in Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela, marketing the machinery portfolio of Niehoff Germany. His



○ Alfredo Torres – the new area sales manager for Niehoff in South America

second field of activity will be the sales of all machinery built at Niehoff-Herborn Máquinas Ltda, Brazil, supporting them in their sales area.

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Drawing more with less!



The latest addition to a long history of innovation is the new type MSM 86 rod breakdown machine designed for wires made of copper, copper alloys, aluminum, aluminum alloys, and other non-ferrous metals. State-of-the-art technological features and modular design result in dependably high quality wire surfaces and high production output. The real innovative power comes from unprecedented energy efficiency and an energy consumption which is 10% lower than that of its predecessor model MSM 85 and 20% lower than that of conventional rod breakdown machines.

The MSM 86 is designed to be combined with the new R 502 continuous resistance annealer. With an annealing power of 530 kW, the R 502 is the most powerful NIEHOFF annealer to date. Power consumption is reduced by 20% compared to state-of-the-art DC annealers due to the newly developed voltage control system NAC (Niehoff Annealing Controller) and the AC annealing principle.

High efficiency: 2 wires Cu 2.60 mm with 24 m/s = 8,100 Kg/h

NIEHOFF combines outstanding expertise along your entire value chain with customer proximity and reliable service, for the entire lifecycle of your investment. It is just this combination that will make the difference, so you can concentrate on what is most important to you: your decisive competitive advantage.

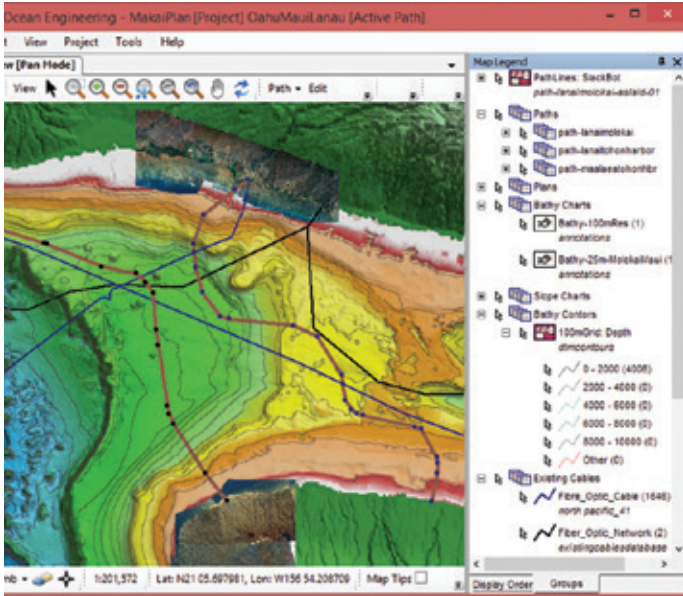
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Cable route planning and installation software increase in sales



○ A screenshot of MakaiPlan being used for a cable route engineering study, showing a cable route near Maui, Hawaii

MAKAI Ocean Engineering Inc has made multiple new sales of its popular software for route engineering, installation planning, and real-time lay control of subsea cables.

“We are pleased to announce multiple sales of MakaiPlan, MakaiPlan Pro, and MakaiLay to existing and new customers,” said Dr Venkata Jasti, Makai’s manager of submarine cable systems.

“We’ve worked hard on improving the functionality and user-friendliness of Makai’s software suite, especially for subsea power cables.

“Helping our customers succeed in their route engineering, installation planning, and at-sea cable laying operations is what drives us.”

Makai’s recent sales include:

- CSCC – China Submarine Cable Construction Co bought a licence for MakaiLay
- KCS – Kokusai Cable Ship Co Ltd (Japan) bought MakaiPlan Pro
- GD – General Dynamics (USA) bought an additional MakaiPlan Pro
- ALDA Marine (France) purchased three additional MakaiPlan licences

Unlike other GIS software, Makai provides clients with a comprehensive set of software tools and training that span the entire cable project, from inception to installation.

MakaiPlan has sold over 300 licences over the last 14 years. MakaiPlan Pro is powerful and precise 3D, dynamic simulation software used to identify installation risks and prepare a detailed installation plan before ever going to sea.

MakaiLay is advanced subsea cable installation software that enables users to lay submarine cables with the highest level of accuracy, speed, safety and reliability, dramatically reducing the risk of cable failures.

The software has been rigorously tested and validated, and has been used by over 75 per cent of the global fleet of cable ships on countless commercial lays and military installations to successfully install well over 400,000km of cable worldwide.

Established in 1973 in Hawaii, Makai Ocean Engineering Inc has been developing submarine cable installation software since 1983.

Makai Ocean Engineering Inc – USA
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INDIA INSIGHT IS ON PAGE 46



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Kabelschlepp expands production site in Slovakia

WITH a grand opening, Kabelschlepp celebrated the reopening of its enlarged facility in Nové Zámky, Slovakia.

The plant premises have been enlarged to about 19,000m² and in just eight months of construction the production facility including storage capacities has been extended by nearly 4,000m².

This investment significantly benefits the economic future of this location. Not least, the expansion secures more than 200 existing jobs and creates new ones.

“Slovakia is a reliable and stable partner within the EU,” said Michael Diebel, vice president conveyor and protection systems at Kabelschlepp. “We have been investing here to deliver competitive and reliable high-quality products and intelligent solutions to our customers.”

Since 1976, Kabelschlepp products have been manufactured in Slovakia, and as of 1990 under its own subsidiary. Expanding the production capacity means that the company continues its strategy of consistently growing the Slovakian site, also within the Tsubaki Group.

Primarily conveyor and protection systems for the global machine tool industry are manufactured at the location in Nové Zámky.

“The plant expansion substantially increases our production capacity and strengthens our position within the European strategy,” said Dušan Strašík, managing director of Kabelschlepp Systemtechnik spol sro.

“Combined with our state-of-the-art machinery we are able to meet our customers’ demands now even more appropriately.”

The prelude to the festivities was a dinner in Bratislava, during which keynote speeches were heard from a board member of the German-Slovakian Chamber of Commerce and Industry as well as from the Director General for Economy and Trade of the Slovakian Ministry of Economics.

New technical brochure from Alloy Wire

The industry publication for round, shaped profile, wire rope and electrical resistance wire has been launched by Alloy Wire International, and is proving a big hit with customers.

The company used its recent appearance at wire 2016 to showcase its new brochure, an 84-page publication listing more than 60 different types of exotic nickel alloys, including Inconel®, Nimonic®, Hastelloy and Ni-Span C902®.

This brochure provides specification data sheets on each alloy, detailing useful information on post heat treatment guidance and mechanical properties, both useful to customers when designing wire forms.

More than 300 copies have been picked up or sent out to existing and potential customers from the automotive, aerospace, defence, oil and gas, medical and nuclear sectors.

The glossy A4 publication is heading across the world too, with destinations ranging from Istanbul, Nairobi, Sydney and Shanghai.

“The Alloy Wire Technical Brochure is always very well received, but this year it has surpassed our expectations,” explained Mark Venables, managing director.

“A number of customers have been waiting for the brochure to be

produced as it gives them such a definitive range of information on all of the alloys we supply in one place.”

Alloy Wire, which is celebrating its 70th year in business this year, supplies 4,000 customers in 15 sectors worldwide in the wire manufacturing market.

The company has recently added high performance alloys Nitronic 50 (0.025 to 5.50mm) and Super Duplex (0.025 to 6.50mm) to its extended range and can now draw from 21mm in many different alloys.

Alloy Wire International – UK
Website: www.alloywire.com



○ Guests await the opening of the expanded plant in Slovakia

This was followed by the actual opening ceremony in Nové Zámky on the next day.

Kabelschlepp Systemtechnik spol sro – Slovakia
Website: www.kabelschlepp.de

BASEC launches CPR large-scale cable fire test facility

THE British Approvals Service for Cables (BASEC) has launched its large-scale vertical ladder fire test used for construction products regulation (CPR), EN 50399, and the full range of vertical ladder tests to the IEC 60332-3-21/25 series to the cable industry. This coincides with the official launch of the European Union's CPR for cables used in construction, which was announced on 10th June 2016.

This substantial investment, which also includes completion of three new re-configurable fire test chambers for fire resistance and circuit integrity testing, expands BASEC's capability as the largest dedicated cable-testing facility in Europe and a world leading cable test and certification body.

The introduction of CPR for cables will have a significant impact on all construction cable manufacturers, importers and distributors supplying any type of cable that is intended to fit permanently into the structure of a building, including power distribution, final circuit wiring, control and instrumentation and data communications cables (copper and optical) to European markets.

The new regulation demands new cable testing/certification as well as CE marking requirements for those supplying cables. With a strict deadline imposed, it is forcing the international

cable industry to review its policies to ensure compliance when the regulation becomes mandatory in July 2017.

In light of this, cable manufacturers will in most cases need to engage with a Notified Laboratory and/or a Notified Product Certification Body.

The CPR training seminars cover the basics of the new requirements that manufacturers, importers and distributors of cable will need to adhere to.

BASEC – UK
Website: www.basec.org.uk



○ The ladder rack being prepared before the test

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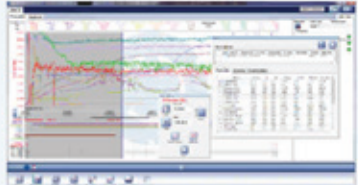
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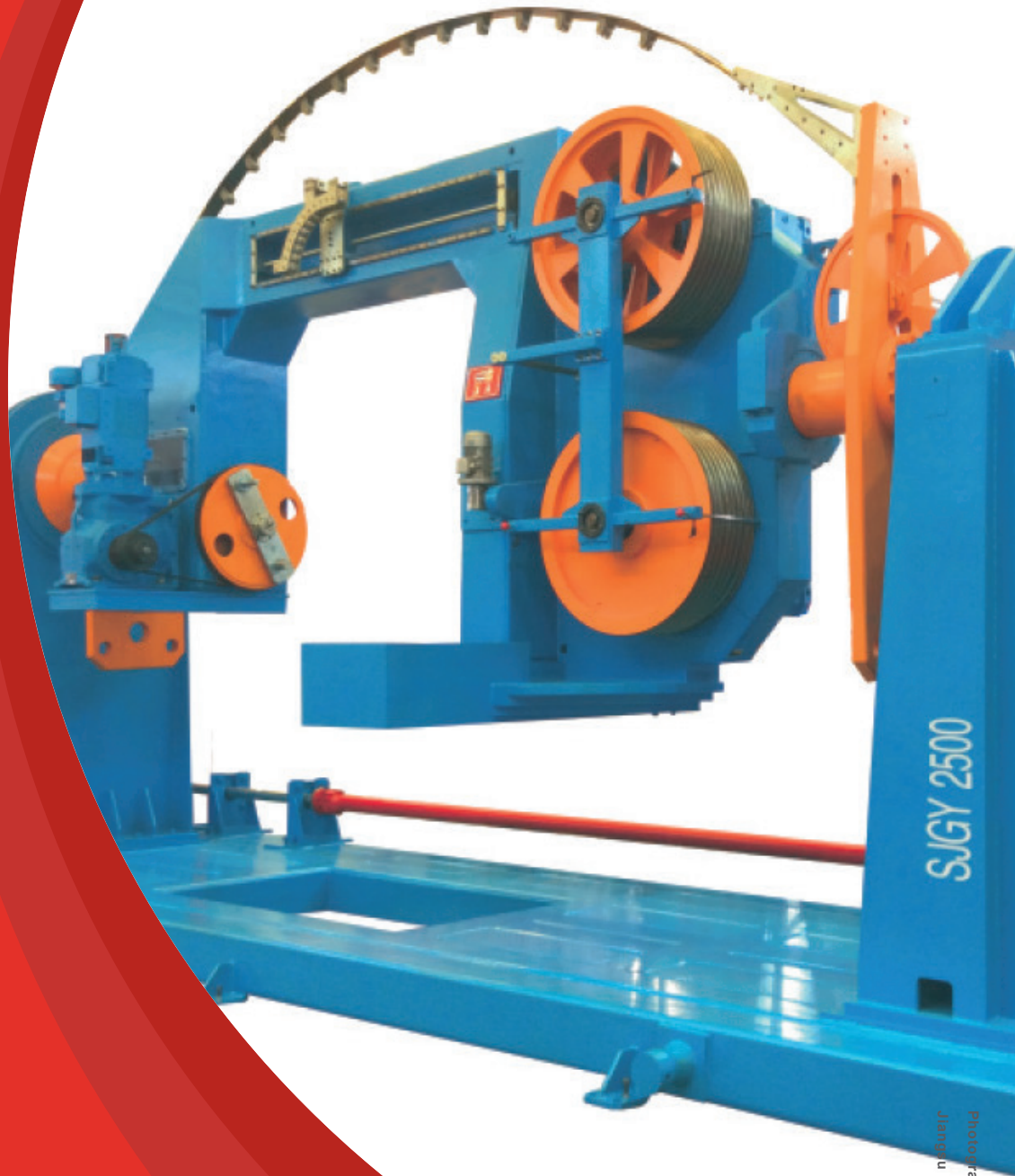
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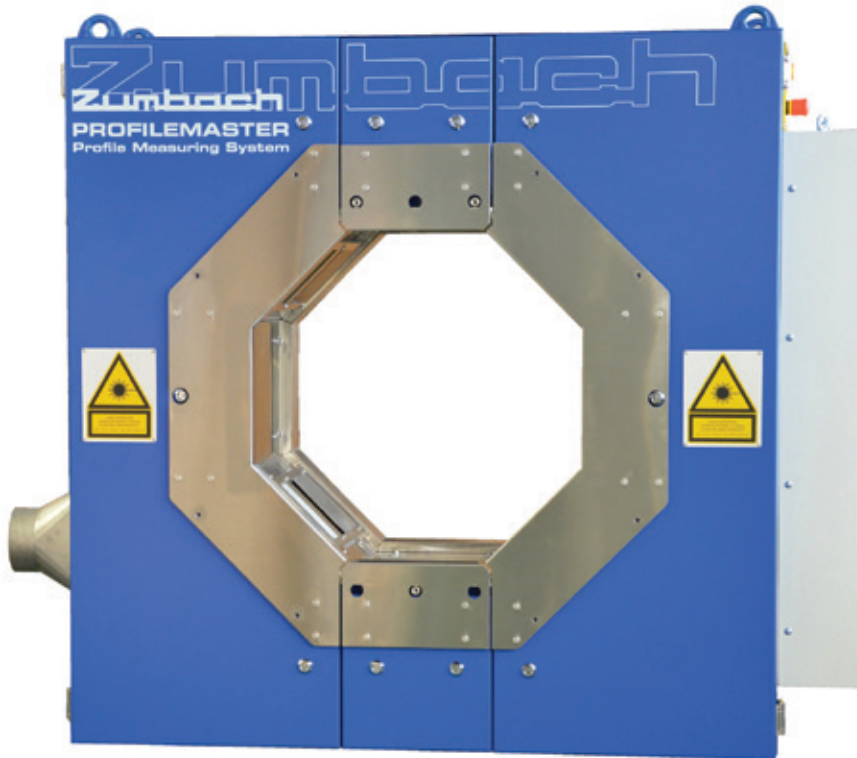
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Chosen for in-line profile measuring system



○ The Profilemaster SPS 400-S4 measuring unit

ZUMBACH Electronic of Switzerland has won a contract from Štore Steel doo in Slovenia for a Profilemaster SPS 400-S4, an accurate in-line profile measuring system based on laser light section technique and machine vision.

The system will be integrated into a hot rolling mill, helping to increase the efficiency of the mill and to assure best product quality.

Štore Steel produces various round and flat steel products for the forging, spring and engineering industries. As a respected steel producer, Štore Steel is modernising its in-line measuring systems in order to gain better and faster control over its production process. A significant efficiency increase is expected by shortening start-up time and reducing downtime.

The ordered Profilemaster SPS400-S4 is equipped with state-of-the-art technology for full profile measurement and surface fault detection. The system is equipped with four high-speed camera/laser modules capturing the full contour of the hot rolled profile.

Scanning the product with up to 500 full contours per second, the measuring system provides continuous dimensional measurements as well as surface fault detection. The sophisticated, engineered construction and the conditioning features of the Profilemaster SPS 400-S4 ensure highly stable and reliable measurements. The commissioning is planned before the end of 2016.

For measurement and control in the cold finishing process, Štore Steel has additionally ordered a non-contact measuring and control system from the Zumbach ODAC® – USYS product line.

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



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Growth, development and expansion

IT has been a busy five years since Robert Brown, Chris Nettleship and Douglas Hunt took over the helm of high-performance lubricant specialist Metalube. This diligent trio has made huge strides into the wire and cable market and evolved into new market sectors, while the infectious ambition has firmly integrated itself across the whole company.

Not only has Metalube grown in size, it has also been awarded two of the UK's highest business accolades with a Queen's Award for Enterprise in International Trade 2013 and a Queen's Award for Enterprise for Innovation 2014. This year it was also awarded the ISO 14001 certification, the international standard for environmental management systems (EMS) and the most widely used in the world.

Managing director Robert Brown said: "Metalube was already in a great position when we bought the business back in 2011 and we are very lucky to have its founder, David Lee, still working with us today. David represents our interests in South East Asia and is a non-executive director. He adds enormous value to the company and we are grateful for his continued input and support."

One of the first priorities back in 2011 was to update Metalube's corporate identity with the launch of a streamlined logo, new barrels and brochures as well as a modern, well-designed website



○ Directors, from left, Doug Hunt, Robert Brown and Chris Nettleship

available in English, Chinese and Portuguese.

The company's 'Global Specialists in High-Performance Lubricants' promise was also unveiled. This new branding is now visible across all the company's literature as well as at the many trade shows it attends worldwide.

The company also invested in SAP ERP, software that is specifically designed for worldwide organisations. SAP now encompasses all areas of the business from accounts, sales and customer relationship management to material resource planning and quality control.

Principally an exporter, Metalube sends over 90 per cent of the lubricant it manufactures in Manchester, UK, overseas. Over the past five years, the company strategy has been to expand via country investment. The existing Shanghai, China, office has grown significantly and there are now new offices in Dongguan and in Hong Kong.

Amit Gupte set up Metalube India in 2011, which has gone from strength to strength with India now being one of the company's biggest markets. A former development chemist in the Manchester laboratory, Mohd Shahrin Abu Bakar returned to his home in Malaysia in 2013 and has proved a valuable addition to the South East Asia team working as a technical sales engineer in the region.

After a long and drawn out process in 2014, an ANP Licence to trade in Brazil was granted with a subsequent office opening in São Paulo led by general manager Ricardo Neves.

This year, Metalube Arabia was also launched with an office in Dubai headed by Nick Pomeroy, and a partnership was made between Metalube and Fusion Chemicals in the USA.

Douglas Hunt, commercial director, said: "We are really pleased by how well our strategy to invest in local people on the ground in our key markets has been. Our customers can now be



○ The new premises at Metalube in Manchester, UK

...in five years

assured that they are receiving a full service from individuals who understand our products, speak their language and understand their business cultures.”

It is the Metalube team that is the backbone of the company and in the past five years the work force has nearly doubled from 21 to 40 staff. The company has a family culture and dedicates considerable time and investment to staff training and investment. It also hosts a variety of social events, which bring people from across the business together.

The company last year made a huge investment opening a brand new Manchester laboratory, which is now fully operational having doubled its capacity to 126m². The space provides a bright and airy workplace for solving tough everyday technical challenges. It is purpose-built and fitted with specialist furniture and equipment. The facility meets all the requirements for a modern lubricant developer.

Alongside the laboratory the company invested £100,000 in new equipment to further enhance development capability. This new apparatus includes a Stanhope Seta 4-ball tester, Mettler differential scanning calorimeter and Liebsch Kesternich cabinet, which all cover the key functional properties of friction and wear, thermal stability and corrosion protection.

With success and growth comes the need for more manufacturing and warehouse space and fortunately this year the site adjacent to the Manchester plant became available.



○ One of the new blending tanks at the site

This increases the space accessible to the company by over 70 per cent and Metalube now occupies a one-hectare site, which includes a 3,000m² covered factory, warehousing and office space alongside its new laboratory.

The company has also purchased four new Jungheinrich forklift trucks to service this new and improved operation. Two new blending tanks have also been purchased, which enhance manufacturing capability, enabling the company to keep up with increased demand.

Robert Brown added: “We are never complacent and are always looking at new ways to grow and improve. As a management team, we have made an on-going commitment to invest profits back into the business, improving the way we work and adding to our productivity. This strategy has proven wise, given the demand we now have for our range of superior quality lubricants.”

Metalube Ltd – UK
Website: www.metalube.co.uk



○ The company built a new laboratory and invested over £100,000 in new equipment

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From beginning to end on the journey

“YOUR success is our passion. Here for you.” That is the vision of RosendahlNextrom. It represents its motivation for offering its business partners, employees and stakeholders added value, not just at selective moments, but over the entire life cycle of its products and processes.

Strategic planning. Everything starts off as an idea and this idea has to be validated. RosendahlNextrom constantly observes the market and trends, because it also wants to know as early as possible where the journey will go. It analyses global mega trends and reacts accordingly. It observes product trends and derives its development plans on this basis.

Business and investment planning. Once the investment decision has been taken, there are further steps that need to be analysed. RosendahlNextrom has a lot of experience in helping to create business plans and can support clients with their presentation or provide them with the information necessary for compiling a business plan. Production capacity estimates, CAPEX estimates and infrastructure needs can be arranged.

Factory planning. The abstract phase then leads to the execution. There are lots of things that have to be taken into consideration and planned. Infrastructure, equipment and – last but not least – the logistics of production, too.

The company has experience and is happy to provide recommendations. This extends to production capacities,



○ The smart product life cycle from RosendahlNextrom

CAPEX planning, process and material flow planning as well as to legally stipulated safety and environmental measures and lots more.

Implementation. This is where production solutions are to be implemented. The equipment, technology and knowhow are conveyed to clients. The facilities are tested thoroughly, put into operation and finally commissioned. Now production can get under way. The team is present on site and concludes the transfer by providing practical training.

Operation. The production line is up and running. On top of that, it is “smart”, too. Customers are always informed by the Smart Factory solution and can access live status reports

about production. The customer service centre is always at hand and, if requested, will also actively contact and inform of service and upgrade opportunities. Predictive service reduces the risk of interruption-related downtimes and nothing stands in the way of successful production.

Recycling and re-use. The product life cycles ends here, regardless of whether market conditions or technology are the reason.

Thanks to the Smart Factory, these processes and steps will in future run in a much more automated and real-time manner.

RosendahlNextrom GmbH – Austria
Website: www.rosendahlnextrom.com

New high-strength bainitic steel

A German steel producer has developed a unique steel with a high level of both strength and ductility. After appropriate processing, the steel is excellent for cold forming.

Steel prices are nowadays subject to significant fluctuations. This is mainly due to the variable alloy surcharge which is largely dependent on the nickel content of the steel. The new steel grade 20MnCrMo7, developed by ECM Edelstahlzieherei Mark GmbH, contains only very small amounts of nickel, which means that long-term price stability is guaranteed.

The bainitic steel 20MnCrMo7 not only offers price stability, but also provides important processing advantages.

Despite the steel’s high strength, its fine granularity makes it remarkably ductile – it is not brittle but extremely hard and

exceptionally robust. In rolled or forged form, its bainitic structure ensures a strength of 1,200-1,400 MPa and contraction at break of over 40 per cent. No heat treatment is necessary.

The 20MnCrMo7 steel is also suitable for cold processing after suitable pre-treatment, and is highly versatile. In a tempered state, the steel is applicable wherever particularly high demands on the mechanical properties have to be met. Values are reached which are rarely achieved by other steels, according to the manufacturer. At low tempering temperatures, strengths of up to almost 1,600 MPa and a notched impact strength of more than 50 J are reached.

ECM Edelstahlzieherei Mark GmbH – Germany
Website: www.ezm-mark.de

Exploring the future with copper magnesium

UPCAST Oy has always been very research and development focused and active in seeking to improve existing processes, but at the same time looking at the market needs of the future.

What kind of end products will the customers need and what kind of Upcast® casting process they need in order to produce the perfect cast rod, tube or flat profile for their needs?

Last year was very important for R&D when the second casting line saw its start up at the Pilot Plant. Now in addition to traditional Cu rod and tube, the development engineers in Markku Koivisto's team got their hands on various Cu alloys to develop completely new upwards casting processes with alloys and further develop the ones which were already familiar from the past.

One of the interesting alloys is copper magnesium (CuMg). The requirements for end products are changing and at the same time they become very demanding. All the time the design engineers, for example in the automotive, train or aeroplane industries – where copper products are used for multiple purposes due to their properties, especially for the excellent electrical conductivity – are looking for lighter weight, more durable solutions and stronger raw materials.

CuMg seems very attractive for many reasons. It has good

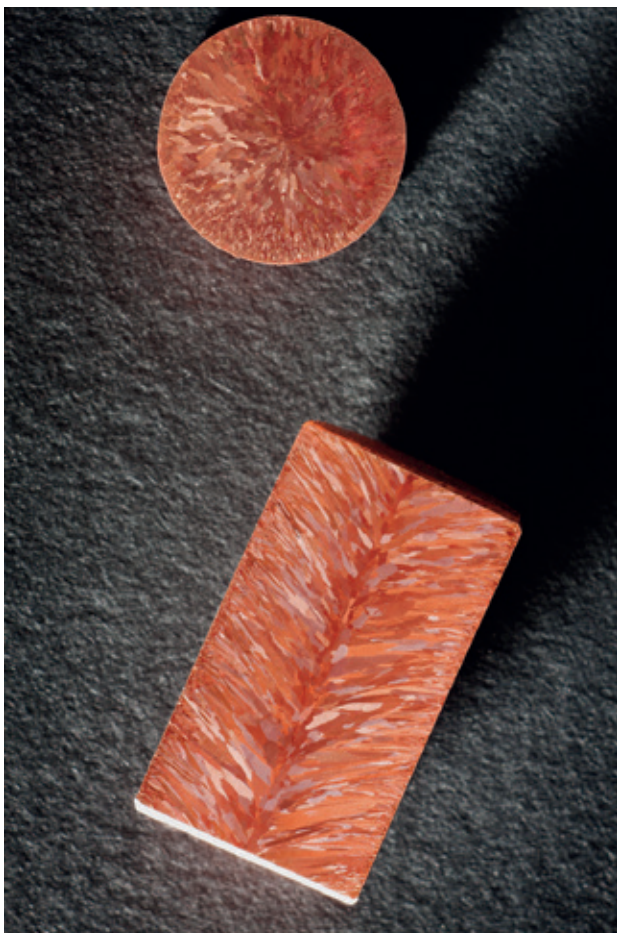
electrical conductivity; excellent formability at medium strength; and with the right composition very high strengths can be achieved. These characteristics are important when further developing the end products where CuMg is used – such as automotive, electrical and electronic connectors, conductor and connector wires, wire harnesses, pins, telecommunication cables, catenary cables and contact wire for high speed trains.

The first challenge was to be able to cast continuously high quality CuMg0.5 cast rod suitable for further processing. Casting copper magnesium is more complicated than that of pure copper.

By tuning equipment, software and other parameters for the new raw material, the company reached its first target before the end of the year and got a full coil of the new alloy, of which the mechanical values as well as the surface quality and grain structure were acceptable. Since then, several good quality coils have been cast with various rod diameters.

The CuMg rod is being further processed and refined into grooved contact wire for high-speed rails and into thin wire dimensions for other industrial applications.

Upcast OY – Finland
Website: www.upcast.com



○ Copper magnesium seems very attractive for many reasons



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Scholarship in memory of design manager

FOLLOWING the death of Francesco Mulazzi, mechanical design manager, Mandelli Sistemi SpA is creating opportunities for study and introduction into the machine tool world for young mechanical engineers.

The company, based in Piacenza, Italy, has named a scholarship after Ing Francesco Mulazzi for students who will be attending the Laurea Magistrale in Mechanical Engineering during academic year 2016-2017, specialising in "Machine Tools and Manufacturing Systems" c/o Politecnico di Milano, Piacenza Branch.

"The student who will be awarded the scholarship, after graduating in Laurea Magistrale, will have the opportunity of dealing with the labour market thanks to the possibility of carrying out a six-month training internship c/o the Mandelli Sistemi Plant in Piacenza for which an allowance will be given," explained Saverio Gellini, the Mandelli CEO.

"Our intention," added Andrea Riello, president of Mandelli Sistemi and of Gruppo Riello Sistemi to which the company belongs, "is that of maintaining in time the memory of our colleague who passed away by associating him to the continuous training of young engineers interested in the machine tool world. This same thought was also shared by Francesco's wife Tiziana and his young daughter Manuela, she too being a

university student, whom I both embrace."

A scholarship will be awarded to the winner of the competition – which has been publicised on the institutional Mandelli websites as well as on that of Politecnico di Milano Piacenza Branch, of MUSP Consortium of Piacenza and of the Unione Costruttori Italiani di Macchine Utensili (UCIMU) – equal to €5,000 divided into two tranches: the first amounting to €3,000 will be assigned according to the grades obtained during the first year of the Laurea Magistrale, whilst the second, equal to €2,000, will be given when the Laurea Magistrale is awarded, which must be within the academic year in question.

This competition will be repeated every year so that the "Ing Francesco Mulazzi" Scholarship will become the occasion for the symbolic handing over of the baton among the students of the second year of Laurea Magistrale in Mechanical Engineering specialising in "Machine Tools and Manufacturing Systems".

Starting from next year, it will be two students who will receive the scholarship: one for students starting the specialisation and the other for those graduating in Laurea Magistrale after specialising in machine tools.

Mandelli Sistemi SpA – Italy
Website: www.mandelli.com



BORSA DI STUDIO/ SCHOLARSHIP
"ING. FRANCESCO MULAZZI"



○ Scholarship for an introduction into the machine tool world

Move meets growing demand

TULSA Power and Reel-O-Matic have moved to a new, larger facility located in Oklahoma City, Oklahoma, USA. The new 100,000ft² building allows for increased manufacturing floor space along with improved workflow and production capabilities.

The two companies will now operate under the name Reel Power Wire & Cable dba Reel-O-Matic and Tulsa Power. Reel Power Wire & Cable is owned and managed by Reel Power International Inc.

Reel Power (Tulsa Power and Reel-O-Matic) serves the wire and cable industry, with a strong focus of continually providing new product innovations.

Reel Power designs and manufactures machinery for reeling, coiling and measuring of wire, cable, pipe, rubber, plastic, tubing, conduit, wire rope, fibre optic material, and any other flexible material. Expertise includes payoffs,

take-ups, re-reevers, winches, spoolers, measurers, coilers, and warehouse solutions that include racking and design capabilities.

Customers include cable and wire manufacturers and distributors, telecom companies, oil and gas companies, automotive companies, crane and plastic pipe companies. The company manufactures and sells both standard and custom-engineered products.

Reel Power International Inc operates one other company, Reel Power Oil & Gas dba Radoil and Tulsa Power Oil & Gas, which services the oil and gas industries. This division recently relocated its manufacturing facility into a brand new, state-of-the-art facility in Houston, Texas, USA.

Reel Power International Inc – USA
Website: www.reelpower.com

Ensuring no internally threaded fastener defects

It is critical to inspect formed metal fasteners to ensure zero defects, whether for safety, mission critical performance or to optimise the manufacturing process. Conventional methods to do this exist, such as sorting mechanically for size or hand sorting with optical comparators. Yet traditionally, it has been difficult to inspect internal threads for tiny defects such as chips, tears and weld splatter, as well as short or missing threads.

Inspecting the vertical walls of a fastener hole and its threads is difficult for the human eye due to its small size as well as lighting and viewing issues. Not only is such an inspection process slow, labour intensive and subject to interpretation, but also prone to human error – particularly over long periods when fatigue can degrade accuracy.

However, even typical cameras and laser-based equipment have difficulty detecting required features inside parts, and the deeper the hole or recess the more challenging this becomes.

To help manufacturers ensure zero defects in their fasteners, a number of advanced high-speed sorting technologies are making slower, less reliable, traditional methods obsolete.

In order to make certain that its couplers, tube nuts and internal female nuts contained zero defects, for instance, H&L Tool turned to a high-speed vision-based measuring machine called the GI-100DT from General Inspection, a developer of high-speed measuring and sorting fastener inspection systems.

The device uses a series of front and backlit cameras to calculate a part's height, profile and inner and outer diameters. As configured for H&L Tool, the device also has a number of advanced options. These include cameras to check for internal threads, an axial viewer that detects surface imperfections on multiple sides of a part at once, and eddy current capability, which enables checking for metallurgical defects along with plating or hardness variations.

With 360° internal thread inspection capability, the General Inspection device incorporates hole inspection optics to specifically image and measure both the bottom of a hole and its vertical walls. This allows great detail of ID threads and the detection of very small defects like weld splatter, torn threads, reamed threads, chips in threads, and short or missing threads, as well as a single damaged thread.

The device's eddy current capability also detects any metallurgical defects, including plating or hardness variations.

General Inspection – USA

Website: www.generalinspection.com

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印度Raigarh Steel Plant炼钢厂的新熔炼炉

Tenova创下新纪录!

Tenova为印度Jindal Steel and Power Limited (JSPL) 公司的Raigarh Steel Plant钢铁厂开发出一种全新概念的熔炼炉，并以这种灵活的模块式熔炼炉创下了一项新世界纪录。

以这项创新技术主要面向的炼钢厂为：目前在炉料中使用大量的热金属，但又做好准备转至或返回废渣炼钢程序。

JSPL钢铁厂已将现有的电弧熔炼炉(EAF)转换成Tenova的FMF熔炼炉。通过采用Tenova的技术，JSPL的生产成本节约达到每吨钢铁约15-18美元，每年节约总计大约1500-2000万美元，相当于该工厂近4个月的利润率。

这种新熔炼炉可以轻松地再进行32炉次的熔炼，确保89%的产量保证，并有潜力实现36炉次熔炼的精益生产。

此外，该熔炼炉还在去年11月14日成功地连续进行42炉次的熔炼，创下一个新的世界纪录!

客户于2015年8月31日委托进行该项计划，从项目正式开始动工后仅短短6个月的时间内即成功完成。

通过高效规划和团队协作，该计划在熔炼炉关闭仅10天后即顺利达成，远远早于原计划的28天。

Tenova的高级副总裁Silvio Reali表示：“这项计划显示出Tenova各专业技术中心间整体合作的成果：这是一个由印度、中国和意大利专业人员组成的国际化团队，他们进行了完美的同步合作，将卓越的合作成果带给客户。客户将受益于我们最前沿的技术。此外，它也是在亚洲市场推出FMF解决方案的重要一步。”

正是由于在交付、质量和价格指标方面的超凡表现，Tenova才能获得客户所评选的“A级供货商”称号。公司所获得的“最终验收合格证”也在持续时间方面创下一项记录。

FMF解决方案可以让炼钢企业转变制造方式，从吹氧转炉(BOF)转型为EAF型炼钢流程。同时，该方面也适合那些希望在炉料中增加热金属比例的EAF炼钢企业。

Tenova FMF是一个熔炼炉的模块式概念。该技术的核心设备为“基础模块”，

通过对其添加不同的扩展组件，可以灵活地转换不同原材料的炉料(废屑、DRI、液态热金属、生铁等)。为了满足炉料的要求，每个模块都具有不同的功能特性。

FMF在市场中的机遇和应用非常明确。该技术可以熔炼几乎所有的金属炉料，将资本成本降至最低水平。很显然，对于希望实现炼钢业更低生态足迹的市场而言，这项解决方案最大的优势就在于其灵活性。FMF在某些类型炉料的使用方面，要比传统解决方案更加便利。

该项目是在亚洲市场推出FMF的里程碑式成就。印度炼钢业的能源成本高且原材料供应不稳定/匮乏，因此，该行业一直在探索具有成本效率的炼钢方法。因此，以其它方法实现熔炼炉对不同类型原材料进行加工，使其具有灵活性，比如FMF提供的方法，满足了行业的迫切需要，也是控制钢材成本的重要手段。中国可将FMF作为吹氧钢厂现代化的第一步，更顺利地实现向废钢炼钢法的转型。

Tenova Srl - 意大利
网址: www.tenova.com

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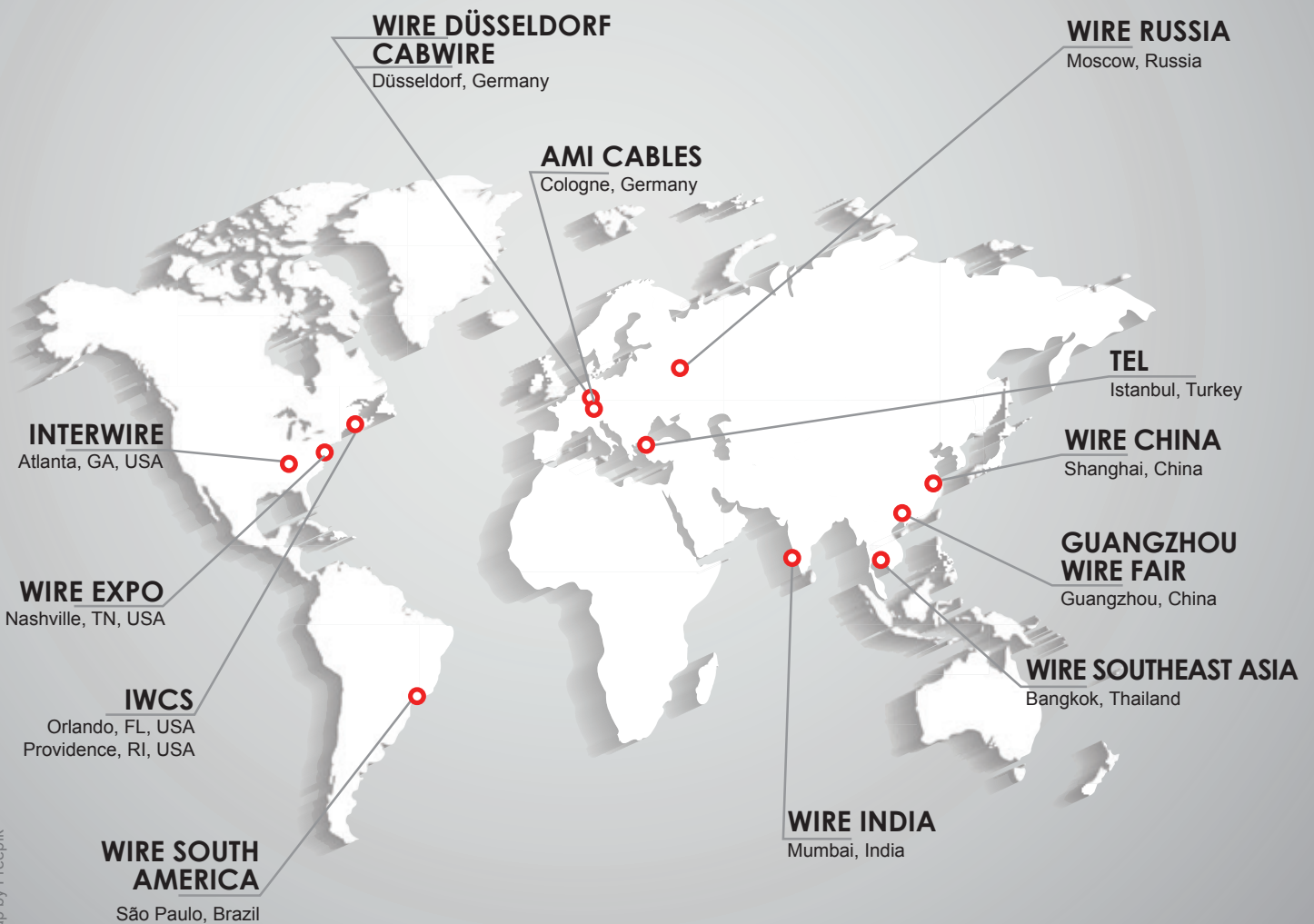
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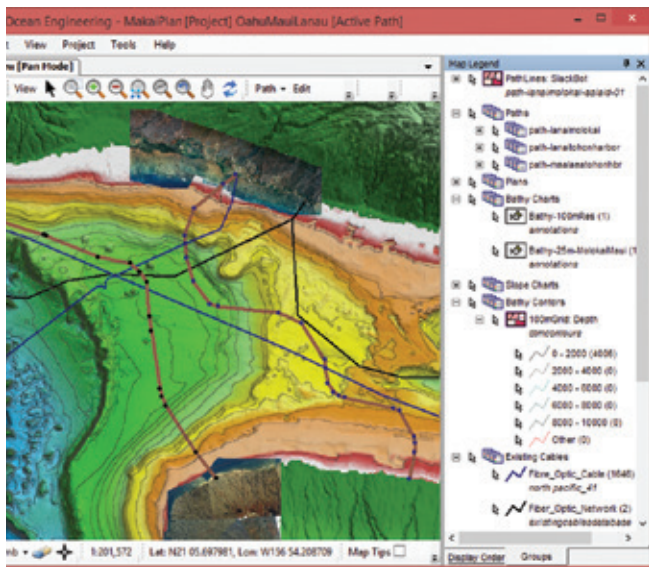
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电缆布线和安装软件的销量提高

Makai Ocean Engineering Inc开发的海底电缆布线、安装、规划和实时放缆软件，自面世以来一直受到客户好评。目前该公司又完成了几笔新交易。

Makai的海底电缆系统经理Venkata Jasti表示：“我们很高兴地宣布，已向多家新客户推出MakaiPlan、MakaiPlan Pro和MakaiLay产品。我们一直致力于提高 Makai软件套件的功

○ **MakaiPlan** 在一次电缆布线功能研究中的屏幕截图，显示的是夏威夷毛伊岛附近的电缆布线情况



能性，特别是在海底电缆方面。帮助客户成功地进行布线设计、安装规划和海上放缆操作，是我们不断向前发展的推动力。”

Makai 近期签约的客户包括：

- CSCC – 中国海底电缆建设有限公司，购买了MakaiLay许可
- KCS – Kokusai Cable Ship Co Ltd (日本) 购买了MakaiPlan Pro
- GD – General Dynamics (美国) 购买了MakaiPlan Pro
- ALDA Marine (法国) 购买了三个附加MakaiPlan许可

与其它GIS软件不同的是，Makai向客户提供的是全套软件工具和培训，贯穿了从启动到安装的项目整个过程。

MakaiPlan在过去的14年中已经销售了300多份许可。MakaiPlan Pro是一款强大而准确的3D动态模拟软件，用于在下海作业前识别安装风险，并帮助制定一份详细的安装计划。

MakaiLay是一款先进的海底电缆安装软件，可以确保用户在海底布线的过程中，实现目前所能达到的最高精准度、速度、安全性和可靠性，大幅减少电缆故障的风险。该软件已经进行了严格检测和验证。目前全球超过75%的海底电缆铺设船使用该公司的软件，进行了无数次商业布线和军事安装任务，在全球成功安装了超过40万公里长的海底电缆。

Makai Ocean Engineering公司1973年成立于夏威夷，自1983年起开始开发海底电缆的安装软件。

Makai Ocean Engineering Inc – 美国
网址: www.makai.com

三合一能力

Ametek Land 开发出一种创新型全新高温计，可为铝应用领域提供高准确性和三合一能力，包括挤压出口、挤压淬火区和铝轧机。SPOT AL EQS (SPOT 铝挤压、淬火和轧制) 高温计具有极高的灵活性，预配置算法令其更适用于挤压出口和淬火位置以及热轧机的进料和出口位置。此外，还可根据特别应用和铝材级别，对这种高温计算法进行定制和调整。

作为SPOT高温计Land系列中的最新产品，该高温计专用于常规高温计难以提供准确可靠读数的低辐射率环境。这种产品测量的温度范围极广，从摄氏200°至700°/华氏392°至1,292°F。Land系列以最先进的最新温度检测器和数据处理算法相结合，打造出具有超高准确度、可重复使用的高温计，其反应时间达到行业领先水平。

采用最新的数字通讯技术，可通过一个专门的网络伺服器对SPOT AL EQS 进行遥控配置。以太网供电技术(POE)让设备可在不同协议下(TCP-IP、Modbus TCP、DHCP、http、udp和ICMP)通过以太网进行数据通讯。在这些新功能的帮助下，SPOT AL EQS不仅可提供

传统的4-20mA/0-20mA输出信号，还可以轻松地与设备控制基础设施进行整合。SPOT AL EQS为即装即用式设备，只需单人即可对其进行安装，提供更大的便利性，使用非常简单。如果传感器位于无法接触的位置，SPOT AL EQS还可以提供远程查看功能，验证校准情况，确保高水平的准确度。内置照相机可辅助校准。用户还可以通过绿色LED屏将测量点置于优化位置，避免环境光反射。使用免费的SPOT Viewer软件或标准网络浏览器，还可以通过远程快照的形式获得SPOT AL EQS数据。

SPOT高温计的设计具有极高准确性和可靠性，安装和配置非常简单，可进行灵活通讯。该产品可便捷地与其它Ametek Land高温计及其它制造商的设备交换使用。所有处理功能全部整合到单一高温计之中，可用于不同规模的工厂。SPOT AL EQS高温计在设计的过程中，与行业知名铝材生产商和工厂控制系统工程师进行了密切合作，在提高铝材挤压和轧制工厂产量、质量和能源效率方面，达到行业领先水平。Ametek Land最新推出的温度测量设备提供的即时数据，还可以帮助用户改善加工流程。



○ SPOT AL EQS – 超灵活的预置算法设备

Ametek Land – 英国
网址: www.landinst.com

亚洲拓展加速



○ Schmolz + Bickenbach – 拓展亚洲服务领域

Schmolz + Bickenbach International 投资成立了另外一家分公司，作为公司在亚洲拓展其销售和服务行动的一部分。

这家跨国特种钢制造商在泰国曼谷成立了自营销售机构，即将正式运营。此举措的目的是，进一步拓展向汽车、电子和制造行业现有客户提供的服务，同时也在这些行业中争取潜在的新客户。

与此同时，在优化长材解决方案的应用开发领域，公司可向当地行业提供专业

化的信息咨询。新销售机构的负责人 Aileen Ng 是一位经验丰富的专业人士，在东盟国家的不锈钢和调整钢领域拥有广泛的关系网络。

Schmolz + Bickenbach Group 分公司销售的产品，主要是 Deutsche Edelstahlwerke、Steeltec 和 Ugitech 钢铁厂生产的特种钢材。

这些产品将面向泰国技术领先型的汽车和电子行业进行销售。

新销售部门还负责在东亚地区推广 Deutsche Edelstahlwerke 公司生产的特种钢材。在高品质钢材产品方面，泰国市场还有一些特别的需求，比如需要用于传动轴部位的钢材。

该公司的材料产品系列中，还包括工具钢、不锈钢、耐酸耐热钢和最高级别工程用钢材。

Schmolz + Bickenbach – 德国
网址: www1.schmolz-bickenbach.com

BASEC推出全新 CPR大规模电缆火灾检测设备

英国电缆认证机构 (BASEC) 推出用于建筑产品规定 (CPR) 和 EN 50399 的大规模直梯火灾检测以及电缆行业 IEC 60332-3-21/25 系列的全套直梯检测。于此同时，欧盟还在 2016 年 6 月 10 日正式推出了建筑行业中的电缆 CPR。

这项重大投资中，还包括已完成三个可重构的新火灾实验箱，用于耐火性和电路完整性测试。作为欧洲最大的专业电缆检测部门以及世界领先的电缆测试和认证机构，这些新举措进一步提高了 BASEC 的能力水平。

CPR 在电缆中的运用将对相关产品的建筑电缆制造商、进口商以及供应商产生重要影响，供应种类包括面向欧洲市场的永久安装于建筑结构中的任何类型电缆、配电、最终电路布线、控制、仪器以及数据通讯的电缆 (铜芯电缆及光纤)。

新规定要求供应电缆的企业必须进行新电缆测试/认证，并符合 CE 认证的要

求。新规定中还限制了严格的截止日期，要求国际电缆行业必须在 2017 年 7 月新规定强制性执行前，检查其政策以确保合规。

为了实现这个目标，大部分电缆制造商都需要与授权实验室和/或授权产品认证机构合作。在欧洲市场中进行电缆批发和零售的企业，也必须确保所合作的产品制造商完成这项测试。

电缆安装企业也要注意这些新规定，因为其中还包括在欧盟进行建筑产品营销的统一政策。在未来几年中，欧洲电缆供应行业的环境可能会面临挑战和不确定性。

CPR 培训讲座涵盖了电缆制造商、出口商和经销商应该遵守的基本内容，此外还包括新分级方案、制造商可选项目以及技术要求和程序概述。

BASEC – 英国
网址: www.basec.org.uk



○ 在检测前准备梯架

Profilemaster串联式剖面测量系统

斯洛文尼亚企业Store Steel d.o.o 向瑞士公司Zumbach Electronic公司购买了Profilemaster SPS 400-S4设备,这是一种以激光剖面技术和机器视觉技术打造的串联式精确截面测量系统。

该系统将被整合到一个热轧机中,帮助提高热轧机的效率,确保实现最佳产品质量。

Store Steel主要生产用于锻件、弹簧和工程行业的圆钢和扁钢产品。作为一家享有卓越声誉的钢铁制造企业,Store

Steel目前正在对其内嵌测量系统进行现代化升级,从而更快更好地控制生产程序。预计该升级工作可以缩短启动时间,减少停工时间,从而大幅提高效率。

该公司购买的Profilemaster SPS400-S4以行业最先进的技术打造,可以进行完整的断面测量和表面缺陷检测。

该系统配备了四个高速照相机/激光模块,可以捕捉热轧钢材断面的完整轮廓。

这个检测系统每秒可对产品进行最高500次完整轮廓扫描,提供连续的空间测量和表面缺陷检测。

Profilemaster SPS 400-S4具有精密的设计结构和调节功能,可确保高度稳定和可靠的测量。计划将在2016年底之前进行试运行。

为了应用于冷加工程序的测量和控制,Store Steel还额外订购了一个无触点测量和控制系统,是著名企业Zumbach ODAC®生产的USYS系列产品之一。

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

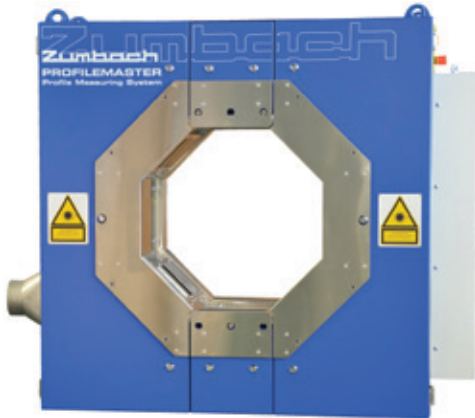
超高压输电

为了建设世界上首个1,100kV超高压直流(UHVDC)输电链,ABB已经签下超过3亿美元的技术供应订单。昌吉-古泉UHVDC输电链将把西北的新疆地区的电力传输到华东安徽省,在电压、输电能力和距离方面将创下世界新纪录。

该输电线路将输送12,000MW的电力,与目前正在使用的800kV UHVDC输电链相比,其输电能力提高了50%。此外,这项工程还将目前约2,000公里的输电距离,增加到3000多公里,是更远距离输电项目中的重要环节,可以实现一个相互联系更紧密的输电网络。ABB电力部门董事长Claudio Facchin说:“中国主要的负载中心集中在东部地区,但大量资源都集中在西部和西北部。由于中国的面积辽阔,加之过去几十年中用电量大幅走高,中国开始修建UHV设备,实现在更远距离传输更多电量的目标。”

UHVDC输电是HVDC输电技术的进一步发展。这项技术是60多年前由ABB率先研发,在过去的20多年中,被誉为输电能力和效率领域最重要的突破发展。2010年,ABB在国家电网公司的向家坝-上海项目中提供了技术支持,首个800kV UHVDC输电链正式投入商业运营。此外,公司还首次成功开发并测试了1,100kV换流变压器技术。

ABB - 瑞士
网址: www.abb.com



○ Profilemaster SPS 400-S4 测量单位

确保无内螺纹紧固件缺陷

对成型金属紧固件进行检查,确保零缺陷,这项工作对于安全、关键环节成效或优化生产流程而言,都有着至关重要的作用。进行这项工作的常见方法包括:以机械方式进行尺寸挑选或以光学比较仪进行手动挑选等。但是使用这些传统方式,难以检查内部螺纹的小瑕疵,比如碎片、裂口、焊瘤以及螺纹缺失等。

由于紧固件孔的直壁及其螺纹非常细小,加之照明和观察条件的限制,因此很难以肉眼进行检查。这样的检查过程不仅进展缓慢、耗费人工、易受干扰影响,而且易受到人为误差的影响,特别是在长时间工作的情况下,疲惫会导致准确率下降。

H&L Tool公司的运营副董事长Chuck Abbate说:“对于客户而言,我们很多零件的品质必须100%达标,比如汽车行业使用的小燃油接头和连接件。因此,我们仔细检查关键部位,包括内部螺纹。我们需要一种检测方法,可以确保所有内部特征完美无缺,并且符合标准。”

然而,即使是标准的摄像机和激光类设备,对零件内部进行检测也会遇到困难。此外,螺孔或凹口越深,这项工作的难度就越大。

Abbate补充道:“在查看机器的内部特征时还会遇到一个问题,那就是镀层颜色和光照各不相同。这里的重点是,要让机器决定需要检查什么,且其检查的就是目标零件本身,而不是反光或阴影。”

如今,为了帮助制造商实现紧固件零缺陷的目标,又出现了很多高科技快速筛选技术,将那些速度慢、可信度低的传统方法逐渐淘汰。

为了确保其生产的耦合器、管螺母和内螺等产品零缺陷,Abbate引进了一种名为GI-100DT的高速视觉测量设备。该设备由General Inspection出产,该公司主要研发检测紧固件的高速测量和挑选系统。

该设备采用一系列前置和背光照相机,计算零件的高度、剖面以及内外直径。

如同为H&L Tool所配置的一样,该设备还拥有很多先进的功能选项。包括检测内部螺纹的照相机,以及可以立刻检测一个零件多个面可能存在的表面瑕疵和涡电流容量的轴向观察器,实现了对冶金缺陷以及镀层和硬度变化的检测。

General Inspection的设备可进行360°内部螺纹检测,通过螺孔检测光学件对螺孔及其竖壁进行准确成像和测量。这种方法可以清楚看到标志螺纹的细节,检测极微小缺陷,比如焊瘤、断纹、螺纹增大、螺纹内碎片、螺纹短缺以及单一螺纹受损。

Abbate先生表示,轴向观察器还能立刻对零件六个面中任何一个表面的断点进行检测。由于具备这种功能,照相机也有了更卓越的能力,比如可以同时“看到”紧固件的顶部和侧边。

设备的涡电流容量也会检测所有冶金缺陷,包括镀层和硬度的变化。

General Inspection - 美国
网址: www.generalinspection.com

Kabelschlepp在斯洛伐克扩大制造工厂的规模



○ 来宾们准备参加斯洛伐克扩建工厂的开幕式

为庆祝公司在斯洛伐克新扎姆基的工厂扩建后再次投入运营，Kabelschlepp 举行了一场盛大的开幕典礼。扩建后的工厂面积达到近19,000平方米，工厂的建设工作仅用了8个月即告竣工，包括面积增加了近4,000平方米的仓库。这项投资将大幅推动当地经济未来的发展。不仅如此，这次扩建将在原有200多个职位的基础上，增加更多的岗位。

Kabelschlepp的输送及保护系统副董事长Michael Diebel说：“在欧盟国家中，斯洛伐克是一个稳定而值得信赖的合作伙伴。我们在这里持续进行的投资，确保能够向客户提供具有竞争力、值得信赖的高品质产品和智能解决方案。”

自1976年以来，Kabelschlepp的产品一直都在斯洛伐克生产。1990年，公司在当地拥有了一家子公司。生产能力的进一步扩大，说明公司继续遵循其在斯洛伐克地区和在本集团内部的持久发展战略。

新扎姆基工厂主要为全球机床工业生产输送系统和保护系统。Kabelschlepp Systemtechnik spol sro的总经理 Dušan Strašík表示：“工厂扩建大幅提高了我们的生产能力，夯实我们在欧洲战略中的地位。我们还配置了最先进的机械设备，能够更好地满足客户的要求。在布拉迪斯拉发市举行的晚宴拉开了本次庆祝活动的序幕。晚宴期间，由德国-斯洛伐克工商会的一位董事会成员和斯洛伐克经济部的经贸局长分别进行了重要讲话。正式开幕典礼于第二天在新扎姆基正式举行。”

Kabelschlepp Systemtechnik spol sro – 斯洛伐克
网址: www.kabelschlepp.de

为纪念设计经理设立奖学金



BORSA DI STUDIO/ SCHOLARSHIP
“ING. FRANCESCO MULAZZI”

为纪念公司已故的机械设计经理 Francesco Mulazzi, Mandelli Sistemi SpA决定向年轻的机械工程师创造学习机会并推荐进入机床领域。

这家位于意大利皮亚琴察的公司推出一项以Ing Francesco Mulazzi命名的奖学金。

申请该奖学金的条件为：2016-2017 学年在米兰理工大学皮亚琴察分校中攻读机械工程硕士学位，专业为“机床和制造系统”。

Mandelli的CEO Saverio Gellini表示：“获得奖学金的学生在硕士学位毕业后，将可以在Mandelli Sistemi Plant的皮亚琴察工厂进行六个月的实习，提高其在劳动市场中的竞争力。在此期间，公司将向实习的学生提供补贴。”

Mandelli Sistemi和Gruppo Riello Sistemi的董事长Andrea Riello补充道：“该奖学金是为了向对致力于机床事业的年轻工程师提供持续培训。

“我们用已故员工的名字命名这项计划以表达我们对他的缅怀。Francesco

的妻子和小女儿Manuela也有着同样的想法。Manuela目前也是一位在校大学生，我们也同样欢迎她。”

这项奖学金将授予在评选中脱颖而出的获胜者。评选的具体内容将在Mandelli官网、米兰理工大学皮亚琴察分校、皮亚琴察的MUSP集团以及意大利机床制造商联合会（UCIMU）的官网中发布。

奖学金价值总计5,000欧元，分两期提供：第一期为3,000欧元，将根据学生第一年硕士学位学习的成绩进行分配；规定学年内获得硕士学位后，将提供第二期的2,000欧元。

这项评选将每年进行一次，让Ing Francesco Mulazzi奖学金能够像接力棒一样，在攻读“机床和制造系统”专业机械工程硕士学位的学生中传递。

从明年起，将有两名学生获得奖学金：一名为刚刚开始专业学习的学生，一名为机床专业硕士学位的毕业生。

Mandelli Sistemi SpA – 意大利
网址: www.mandelli.com



○ 向机床专业学生提供的奖学金

成长、发展和拓展的五年计划



○ 董事, 左起: Doug Hunt、Robert Brown和Chris Nettleship

Robert Brown、Chris Nettleship和 Douglas Hunt Metalube加入高性能润滑油专业制造企业Metalube的领导班子后, 如今已带领企业走过五年忙碌的历程。在这个优秀三人组的带领下, 公司在电缆和线缆领域进行了大跨步迈进, 拓展到更多市场新行业中。他们鼓舞人心的雄心壮志, 已牢固地与公司结合成一个整体。

Metalube 不仅实现了规模上的拓展, 还斩获两项英国的最高企业荣誉, 包括2013年的国际贸易企业女王奖和2014年的创新企业女王奖。今年, 公司还获得了ISO 14001认证及环境管理系统国际标准(EMS), 目前在世界范围内得到了最广泛的应用。总经理Robert Brown表示: “Metalube 在 2011年进行企业回购之时, 已具有极佳的市场地位。企业创始人David Lee目前仍与我们合作, 对此, 我们深感幸运。David目前负责公司的东南亚市场, 也是一名非执行董事。他为公司带来了重大的价值, 非常感谢他持续不断的努力和支持。”

在2011年, 公司的首要任务之一就是提升Metalube的企业形象。为此, 我们设计出一个流线型外观的徽标、全新包装桶和宣传手册, 此外, 还开发出一个设计精良的现代网站, 提供英语、中文和葡萄牙语三个版本。公司还推出了“高性能润滑油全球化企业”的发展承诺。如今, 这一全新品牌化举措已落实在公司所有的印刷品中, 出现在公司参加的全球各大贸易展览之中。公司还投资引进了为全球化企业量身打造SAP ERP软件。SAP软件现将企业的所有领域囊括其中, 从财务、销售和客户关系管理, 到材料采购计划和质量控制。

Metalube最初是一家出口企业, 其在英国曼彻斯特生产的润滑油超过90%都销往海外。在过去五年中, 公司实行了在各国进行本土投资拓展企业发展的战略。在中国地区, 现

有的上海分部发展迅猛。在东莞和香港还成立了新分部。自2011年由创始人Amit Gupte在印度创立以来, Metalube与印度实现了同步发展, 该国也是公司最大的市场之一。Mohd Shahrin Abu Bakar曾是曼彻斯特实验室的一名开发化学家, 他在2013年回到自己的祖国马来西亚, 加入公司在东南亚的团队, 任该地区的技术销售工程师, 成为团队中价值非凡的重要成员。

2014年, 经过漫长的申请批准程序后, 公司终于在巴西获得了ANP交易执照, 随后在圣保罗开设了一个分支机构, 由总经理Ricardo Neves负责。今年, Metalube阿拉伯半岛地区分部在迪拜开设了一家分支机构, 负责人为 Nick Pomeroy。该机构也是 Metalube 与美国Fusion Chemicals公司合作所有。

商务总监Douglas Hunt说: “在核心市场, 我们实施了在当地投资本土人才的战略, 此举获得的成效令我们深感欣慰。我们的客户现在可以放心的是: 我们的员工在向他们提供全方位服务时, 这些员工不仅非常了解企业的产品, 还与客户语言相通, 理解客户的商业文化。”

Metalube的团队就是公司的强大支柱。在过去的五年中, 该团队人数几乎翻了一倍, 从21人增加到40人。公司还构建了独一无二的家庭式企业文化, 投入大量的时间和财力进行员工培训和发展。公司经常举行形式多样的社会活动, 将企业的所有成员汇聚一堂。

公司去年斥重资成立了一家全新的曼彻斯特实验室, 目前已经全面投入运营, 其面积为126平方米, 扩大了近一倍。这个实验室配备了明亮通透的工作场所, 是每天解决各种技术难题的理想环境。这是一个专业性实验室, 配备了专用的办公家具和设备。实验室可以满足当代润滑油开发企业的所有需求。除了实验室, 公司还投资10万英镑购买新设备, 进一步提高企业的开发能力。新购置的设备包括: 一台Stanhope Seta四球检测机、Mettler差示扫描量热仪和Liebisch Kesternich实验柜。这些设备可以进行摩擦和磨损、热稳定和腐蚀保护等重要功能性能的实验工作。

技术总监Chris Nettleship说: “作为一家曾荣获大奖的创新企业, 我们也需要相应地更新我们实验设施的能力。近几年来, 我们的化学家队伍人数增加了25%, 新实验室为他们提供了无以伦比的21世纪现代工作环境。”

在实现成功和发展的同时, 对生产和仓储空间的需求也不断加大。幸运的是, 今年我们购入了我们曼彻斯特工厂旁边的那块土地。这让工厂的可用空间增加了70%。如今, Metalube现有工厂面积达到1公顷, 包括一个3,000平方米的遮蔽式厂房以及仓库、办公区和新实验室。

公司已购买四辆Jungheinrich牌新铲车, 为扩建后的新场址提供服务。公司还购买了两个全新的混合槽, 以更强大的生产能力满足不断增加的需求。



○ 场地中一个新的混合槽



○ 曼彻斯特工厂中准备装货的油桶

Robert Brown补充道: “我们从未对获得的成就沾沾自喜, 我们始终都在寻找新的发展和提升方法。作为一个管理团队, 我们坚持将利润继续投资企业的策略, 改善我们的工作方式, 提高我们的生产力。如今, 我们超高品质的润滑油系列产品所产生的市场需求, 证明这是一个非常明智的战略。”

Metalube Ltd – 英国
网址: www.metalube.co.uk

新任南美地区销售经理

Alfredo Torres是Niehoff Group公司新任的南美国家区域销售经理。

Torres先生拥有制造加工专业的工程学位，在多个行业中积累了丰富的经验，包括汽车以及电缆行业。在电缆行业，他曾效力多个部门，比如研发、工程和维护以及所有类型电缆的开发。

在担任拉丁美洲区域商业经理期间，他主要负责机械安装和试运行、售前和售后技术支持、电缆和线缆生产程序开发以及电缆和线缆工厂的内部开发。这样的工作经历进一步增加了他在行业方面的总体知识水平。

Torres先生与Niehoff在智利的分支机构Rheintek Chile Limitada携手，向包括玻利维亚、智利、哥伦比亚、厄瓜多尔、秘鲁和委内瑞拉在内的南美地区的客户，宣传德国Niehoff公司的系列机械设备产品。他负责的另一块工作是，负责销售巴西Niehoff-Herborn Máquinas Ltda公司生产的机械设备，在其销售区域中对这些产品提供支持。

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



○ Alfredo Torres – 新任南美地区销售经理

全新高强度贝氏体钢

一家德国钢铁厂研制出一种特殊钢材，在强度和延展性方面均达到全新高度。在经过适当的加工后，这种钢材具有卓越的冷成型性能。

如今钢材价格的波动幅度很大。这主要是由于合金附加费的变动，而这项费用的高低很大部分取决于钢材中镍的含量。

这种新钢种 20MnCrMo7 由 ECM Edelstahlzieherei Mark GmbH 公司开发，镍含量非常低，这就意味着可以在长时间内保持价格稳定。

钢种为 20MnCrMo7 的贝氏体钢不仅价格稳定性，在加工方面还具有其它优势。

尽管这种钢材强度很高，但精细的粒度却令其具有极佳的延展性。其脆性低，硬度极高，耐用性表现极佳。无论是轧制或锻造，其贝氏体结构均可实现 1,200-1,400 MPa 的强度，断裂收缩超过 40%。无需进行热处理，节省时间、能源和资金。这种全新钢种极具成本效益优势。

20MnCrMo7 钢材在进行适当的预处理后，也非常适合进行冷加工。其用途非常广泛。在回火状态中，这种钢材可以充分满足对机械性能的超高要求。它实现了其它钢材几乎从未达到的价值新高度。在低回火温度下，可以实现最高近 1,600 MPa 的强度，缺口冲击强度超过 50 J。

这一全新产品在德国和海外市场中获得了广泛的高度肯定。EZM Edelstahlzieherei Mark 的管理董事 Kai Eck 博士说：“我们这种贝氏体钢材的优势会让越来越多的行业受益。其中价格稳定性优势当然会非常受欢迎。这一点同样适用于加工调质和非调质钢材。”

“20MnCrMo7 钢材可以替换更昂贵、价格敏感度更高的表面硬化钢和可热处理钢，比如 18CrNi8，绝不会破坏产品的工艺性能。”

ECM Edelstahlzieherei Mark GmbH – 德国 网址: www.ezm-mark.de

以拓建满足需求

Tulsa Power 和 Reel-O-Matic 公司已迁至面积更大的新场址，位于美国俄克拉荷马州俄克拉荷马市。新厂房面积 100,000 平方英尺，不仅扩大了生产车间的面积，工作流程和制造能力也得到进一步提升。两家公司将以 Reel Power Wire & Cable dba Reel-O-Matic and Tulsa Power 的企业名称进行运营。Reel Power Wire & Cable 归 Reel Power International Inc 公司所有并进行管理。

Reel Power Wire & Cable 的销售和营销高级副董事长 Don Moreau 说：“通过联合两家公司工程、运营和销售团队的专业能力，将提高这两个团队的反应能力，更着重于客户服务，通过管理实

现大踏步发展。这些部门之前的工作地点已面临空间不足的问题，也凸显了这项投资的重要意义。新厂址的设计可以充分改善工作流程，让我们能够提高产量，满足不断加大的需求。”

Reel Power (Tulsa Power and Reel-O-Matic) 主要服务电线和电缆行业，着重于新产品的持久创新。

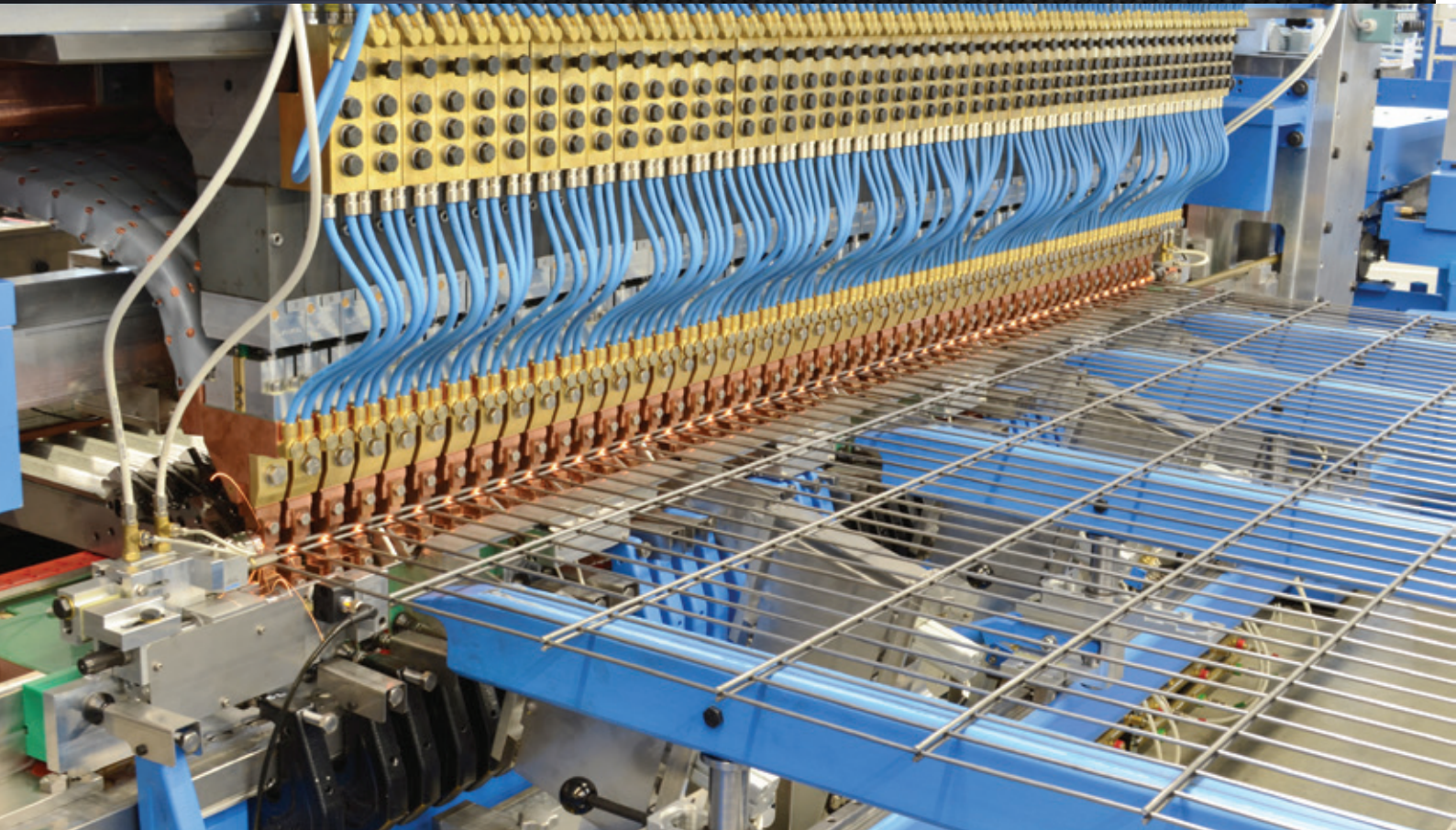
Reel Power 设计和制造的机械设备，主要用于线缆、电缆、管道、橡胶、塑料、管材、导管、钢索、光线材料和其它挠性材料的卷绕和测量。该公司的专业技术领域为放线、紧线、重复穿线器、较缆、盘缆、测量、卷绕以及仓储方面的解决方案，包括配线架和设计能

力。公司的客户包括线缆和电缆的制造商、经销商、电信公司、石油和天然气公司、汽车公司、起重机和塑料管线公司。公司制造和销售标准和定制设计产品。

Reel Power International Inc 还运营另外一家名为 Reel Power Oil & Gas dba Radoil and Tulsa Power Oil & Gas 的公司，该公司服务于石油和天然气行业。

该公司最近将其工厂迁至配备先进技术的新场址，位于美国德克萨斯州休斯顿市。

Reel Power International Inc – 美国 网址: www.reelpower.com



○ FSD fence line welding portal

Innovation and progress

SINCE 1923, Ideal has stood for innovation and progress in the production of welding machines and automation, including custom-made machine solutions according to customers' specific requirements.

The German company manufactures mesh welding machines, coil joining of wires and stranded conductors, as well as welders for grating, fencing and the production of wire articles such as cable trays, covers, frames, rings, etc.

In the procurement of welding machines for the production of fences, high-quality welding, automation, resource-saving production, as well as flexibility and minimal set-up are at the top of the requirement profile.

The company offers various manufacturing concepts and configurations:

- GA-Series wire mesh welding machines for the production of small to large lot sizes, from simple to complex fencing mesh for single

and double wire fencing mesh and 3-5-8 security fencing mesh

- CSR Versaweld™ jig welding machines for the flexible production of small batches and special mats for a variety of fencing mesh and decorative fencing
- Accessories for the individual configuration of the machines
- Bending presses for automated V-shaped bends in 3D fencing mesh
- FSD production lines for the fully automated production process, available in different versions depending on the product portfolio; for the manufacturing of complex products and large quantities (eg, for single and double wire fencing mesh, 3-5-8 security fencing mesh, 3D fencing mesh, decorative fencing, as well as customised solutions)

One of the most important aspects of the modular design is the fact that modules in existing installations can be retrofitted.

An adaptation to the welding task is realised by way of complex welding

cylinders, different transformer versions (AC alternate current, DC single-phase current, 1,000Hz medium frequency technology), as well as the possibility of direct and indirect welds and a variety of process-related options.

The classic cross wire weld is subject to much higher quality requirements. In a 'bad' weld with a burr that is too pronounced, moisture collects at the cross point. A subsequent powder coating creates bubbles in which trapped moisture causes the cross point to rust. Subsequently, the hydrogen-induced cracking causes corrosion of the welds and consequences similar to those of material fatigue.

To rule out such errors and in order to meet the required quality standards, Ideal offers not only the appropriate hardware and software, but also the individual welding expertise based on almost 100 years of experience.

Ideal-Werk C+ E Jungeblodt GmbH + Co KG – Germany
Website: www.ideal-werk.com

Joining forces for a new drawing line

SCHMIDT Maschinenbau from Germany and Austrian company Plasmait have integrated machinery to develop a new drawing line for fine stainless steel and nickel alloy wires with an inline annealer.

Annealing of stainless steel and nickel alloy wires has until recently been done almost exclusively in traditional tube furnaces in a multi-line setup.

This is not the case anymore. PlasmaAnnealer can now be installed in-line with a fine wire drawing machine from Schmidt that produces fine stainless steel wires (diameter 1mm to 0.1mm) at a speed of up to 4-15m/s.

Such an integrated fine wire drawing line can avoid the need for 10-20 lines in a traditional tube furnace, ie abolishing the need for expensive multi-line take-ups and payoffs and associated material handling and manpower needs.

The installation in the layout drawing features a line with a horizontal annealer configuration and double-head take-up with automatic spool changeover functionality.

The integrated line can be offered also in a compact design with vertical annealer, which is suitable for smaller fine wire diameter ranges.

The new integrated drawing-annealing line has been initially offered in Europe and Asia, and will soon also be available in North America. PlasmaAnnealer can also be used in a combination with rolling mills or stranders.

The new integrated drawing-annealing line can be used in a wide range of applications and for different types of materials used in applications such as fine wire for mesh and textile, filter wire, brush wires, EMS mesh wire,



○ The integrated line on display in Düsseldorf, Germany, this year resistance wires, heating element wires, medical, jewellery, aerospace, automotive and similar applications.

Plasmait GmbH – Austria
Website: www.plasmait.com

Schmidt Maschinenbau GmbH – Germany
Website: www.schmidt-maschinenbau.com

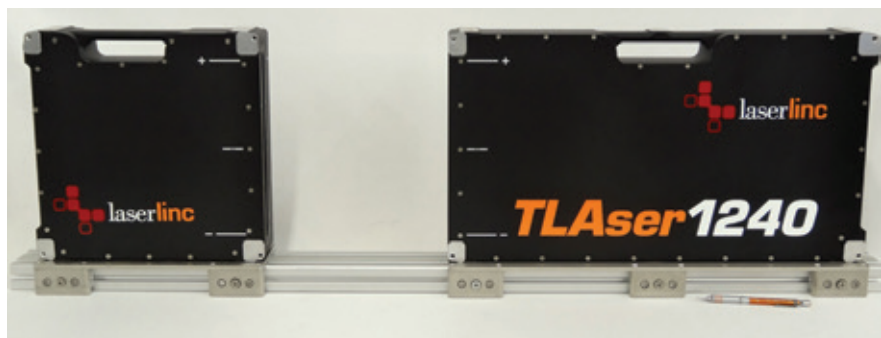
TLAser1240 – quick and accurate

LaserLinc has introduced the TLAser1240™ scanning laser micrometer, a new single-axis diameter gauge for the inspection of large products, quickly and accurately without contact.

The TLAser1240 micrometer measures diameter, height or width up to 9.1" (231mm) and is designed for use in industries such as metal, glass, wire and cable, and plastics and rubber extrusion. For metals and glass, the transmitter and receiver components can be separated to keep away from moving product or equipment, as well as heat sources.

Features include:

- Measure any material, even if transparent
- Fast inspection – 1,600 measurements per second. At 50ft/minute, a measurement is made every 0.007" of product for virtual 100 per cent coverage



○ The new TLAser1240

- Repeatability (two second) – $\pm 0.00008''$ [$\pm 2\mu\text{m}$]
- Separate transmitter, receiver and rigid mounting rail – mount in any orientation and out of the way of moving product and equipment
- Use two units together to get dual-axis (XY) inspection, or three for three-axis diameter and accurate ovality measurement
- Integrate with the Total Vu™ HMI using a standard Ethernet connection for complete product and process monitoring and control
- Integrate with line control PLCs using the SmartLinc™ processor and industrial communications such as EtherNet/IP
- Four-year warranty

LaserLinc Inc – USA
Website: www.laserlinc.com

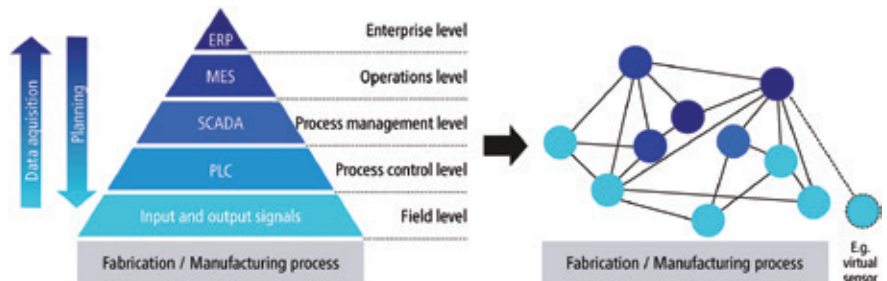
Zumbach measuring instruments with OPC UA standard

ZUMBACH equips its powerful instruments with the recognised OPC UA standard. With this key technology, measurement solutions provide easy, scalable and secure information exchange with different systems in the production line – platform and manufacturer-independent data exchange.

Prepare your dimension, profile and diameter measurement field data for new Industry 4.0 services. Instruments with the new OPC UA standard meet the technical requirements for intelligent data networking.

Zumbach has equipped its powerful measuring instruments with OPC UA which ensures a simple, scalable and secure information exchange between different production line systems – regardless of platform or manufacturer.

One software enables all M2M (machine to machine) or M2H (machine to human) measurement data obtained to be interconnected on one output platform, collected, displayed and analysed. The OPC UA standard facilitates horizontal and vertical integration across various levels of the automation pyramid. This means that the requirements for



Source "Geberich Consulting"

○ Data output, diagnosis and reactive actions occur on one platform. The transparency generated shortens the reaction times in case of deviations and ultimately results in important quality gains

industry automation along with future semantic communication scenarios from Industry 4.0 and the Internet of Things (IoT) have already been met.

OPC has broad circulation in the field of automation, but is technologically industry-neutral and can be run on all operating systems. Communication between plant equipment takes place reliably, securely and independent of the manufacturer.

As one of the first equipment manufacturers for inline measurement and monitoring, Zumbach integrated OPC UA into its PC-based stems with host communications protocol (eg in the Profilemaster® profile measuring systems series, in measurement

systems for hot rolling mills and Steelmater cold processes as well as in the USYS IPC series for universal data recording, processing and display systems and many more).

The OPC UA server is additionally available as external gateway software for measuring devices with microprocessor and host communications protocol (ODAC® laser diameter measuring instruments, MSD diameter and ovality measuring systems, spark testers, computer interface boxes, and more).

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

FTTx outdoor cable with 288 fibres from Datwyler

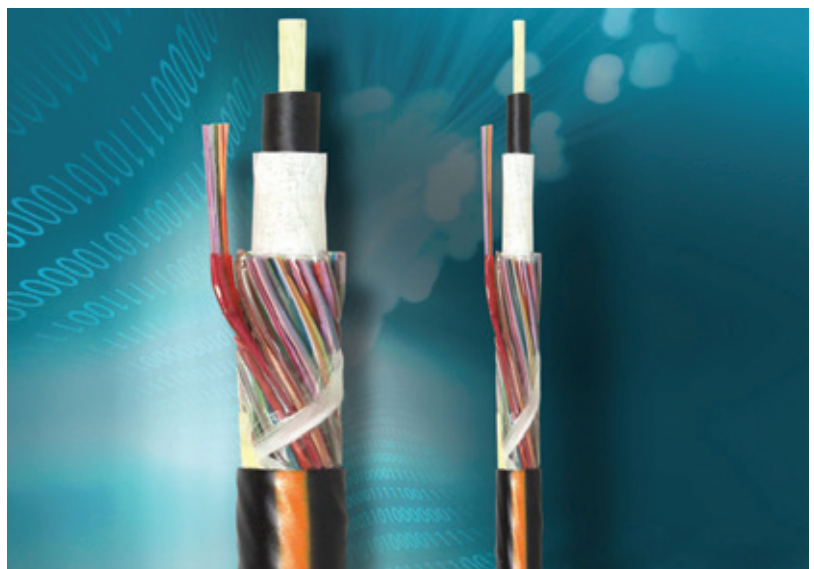
Datwyler Cabling Solutions has added a product with 288 fibres (G.652.D) in stranded loose tubes (12x24) to the “FO Outdoor wbKT S-Micro” fibre optic cable family.

The diameter of this FTTx outdoor cable is only 10.4mm. This is a suitable size for blowing into microducts of 12mm or more internal diameter.

The compact, non-metallic cable with its dry interstices makes for a design which is easy to install and remove.

Users also benefit from its attenuation figures – 0.21 dB/km at 1,550 nm, for example – and good mechanical properties, which are reflected in an increased tensile strength (2,900 N) and very long blowing distances.

Datwyler – Switzerland
Website: www.datwyler.com



○ A new addition to the fibre optic cable family from Datwyler

NPS with increased production speed

NIEHOFF manufactures machines which cover nearly all processes of wire and cable production and handling. The Niehoff Package System NPS is an efficient, safe and economical handling system for automotive wires. It consists of specially developed SV type spoolers and collapsible ABS plastic multi-way spools.

At the latest Niehoff in-house exhibition at the headquarters in Schwabach, Germany, held immediately after the wire 2016 trade fair, the latest version of the SV 402.D type double spooler was on display.

Niehoff engineers have achieved a 20 per cent increase in production speed, which is now up to 1,800m/min with original NPS spools. One more advantage of the system is that original NPS spools provide highest production safety and a very safe operation.

The SV spoolers are foreseen to operate in line with extrusion lines. They spool the insulated wire coming from there with a particular conical wire laying technology onto the spools. Changeover from full to empty spools is carried out at full production speed, allowing for non-stop production and enabling the highest cable pay-off speeds into the downstream processes.

The Niehoff standard range consists of



○ The SV 402.D type double spooler from Niehoff

six NPS spools in different sizes. Empty NPS multi-way spools can be fully dismantled and nested into each other. Dismantled spools take up only a third of the space of comparable conventional spools and require much less return shipping space than traditional spools.

For applications where no regular spool exchange takes place, the NPS 400 one-way spool is offered. The successful NPS concept has resulted in a worldwide pool of more than three million NPS multi-way spools, all compatible with each other.

No matter which spools are returned, their components always fit together. To protect the NPS spools from foreign spools which are not compatible with the NPS and are a safety risk, Niehoff has protected the system for a long time.

One of the measures is an RFID transponder system with which all new original NPS multi-way spools are equipped. By this transponder NPS users can identify if a spool belongs to the system and is compatible with it or not. The transponder also simplifies spool labelling: as the spool identification is stored in RFID, no label is needed.

The NPS is claimed to be the world's only packaging system for automotive wires made of copper, copper alloys and aluminium, which allows trouble-free and tangle-free paying-off at highest speeds. Even signal cables made of copper alloys with a cross-section of 0.13mm² can be processed without any problems.

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

Wire green cleaning for plating finish

The PWC-S system performs wire cleaning and polishing in-line with a wire drawing machine at 6 to 12m/s (1,200 to 2,400ft/min).

Exceptional cleanliness obtained permits wire direct brass coating, copper coating, galvanising and wire cleaning prior to heat treatment and coating applications including patenting, annealing, painting, plastic coating, etc.

The system incorporates new technology that enables normal cold plant water to be converted into a unique cleaning medium, generating high pressure wetting/contaminants extreme pressure extrusion/hydrodynamic cavitations displacement, and contaminants flush out,



○ Wire cleaning by PWC-S system

used to clean drawn wire at high-speed in a completely green application, providing a glossy wire finish in plating quality.

The PWC-S system effectively

removes lubricant residue from the base material and is particularly recommended for cleaning applications with wires drawn upon severe conditions resulting in increased heat and burned lubricant tightly bound to the wire surface and embedded in micro-cavities.

For decorative mirror reflective wire applications, the system can be used with an emulsion including a new rust preventive additive diluted at 3-5% concentration.

The PWC-S unit is compact and can be easily installed on the finishing/last block of a wire drawing machine.

Decalub – France
Website: www.decalub.com

Measuring devices that provide FFT analysis and SRL predictions

THE production of state-of-the-art cable products, eg data cables, requires a constant monitoring of the cable diameter, concentricity and/or cable capacitance with regard to smallest, periodically occurring cable parameter fluctuations.

These fluctuations may occur from irregularities such as a “pumping” of the extruder, imbalance of rotating parts, periodic fluctuations of the line speed, cyclic fluctuations of the foaming degree and/or periodical fluctuations of the conductor preheating.

The most commonly used method for the quality control of data and high-frequency cables is the measurement of the return loss of a certain cable length as a function of the operation frequencies which are supposed to be transmitted on the cable.

The Structural Return Loss (SRL) represents the relation – expressed in dB – between a fed signal and the re-reflected signal fraction along the complete cable length towards the entry.

While reflections caused by smaller, randomly occurring fluctuations may be neglected, reflections caused by periodic re-occurring cable parameter fluctuations should be detected and eliminated.

It becomes clear with the following estimation: Caused by irregularities of the production process, periodic re-occurring “dents” are pushed into the cable insulation with a gap of 10cm in between. If a reflection of 0.1% of the fed signal is taken as a basis at each imperfection, a maximal total reflection of $1,000 \times 0.1\% = 10\%$ can be estimated (neglecting the cable attenuation at 1,000 impurities at a cable length of 100m). This complies with a return loss of 20 dB. This value sums up when the signals of all single reflections at the cable entrance are added up in phase.

In order to optimise the cable quality as well as to reduce the scrap rate it is essential to search for the root cause



○ The Capacitance 2000 range from Sikora

of periodic fluctuations on the return loss of the finished cable at an early stage and to eliminate those by adjusting the production parameter. The online prediction of the return loss from short-term cable capacity data offers necessary information.

Sikora offers a variety of measuring systems for quality control of telephone wires, data cables and coax cables (eg Centerview 8000 for measuring diameter, ovality and concentricity, Capacitance 2000 for capacitance measurement).

Regarding the measurement accuracy, the measurement resolution and the measuring rate, all of these devices meet the requirements for providing FFT analysis and SRL predictions.

Powerful digital signal processors are by default integrated in the gauge heads. On the basis of the computing power of the gauges, Sikora is able to realise a digital spectrum analyser as well as a prediction of the return loss directly in the gauge head.

This means that the online calculation of the spectrum of cable parameter fluctuations as well as the online prediction of the return loss are executed at the same place where the input data (that is diameter, eccentricity or cable capacitance measuring values) is available with high chronological and amplitude

resolution as well as high precision with minimal measuring value noise. A problematic (normally analogue) transmission of high-rate single measuring values is not necessary.

For the cable manufacturer the complex installation, configuration and cabling of several single devices is not required. Furthermore, the risk of a distortion of the analysis results caused by the coupling of electromagnetic disturbances is reduced to a minimum as no broadband data transfer is necessary.

Prof Dr Ing Werner Blohm, professor for engineering sciences at the Jade University, Wilhelmshaven, Germany, and free consultant of Sikora, said: “The usage of the FFT frequency analysis offers not only advantages for the production of communications cables.

“The manufacturer of other cables also benefits from this modern control tool if it is used to detect periodical occurring diameter fluctuations and if these fluctuations are eliminated in order to optimise the production process regarding material savings.

“The consumption of the insulation material can be decreased to a minimum while a constant wall thickness is guaranteed.”

Sikora AG – Germany
Website: www.sikora.net

Trendseal – a variable endseal system for CV lines

THE Trendseal variable endseal eliminates the requirement for seal changes during product changes in all types of CV lines and decreases tool-changing times.

Each CV tube is equipped with one or more endseals in order to keep the cooling medium in process while the cable proceeds. Depending on the cable diameter to be processed, it is necessary to change the applicable sealing and support ring sets per cable type. In order to avoid operator errors and to minimise product-changing times, Troester has developed a variable endseal system, Trendseal.

A concave shaped roller pair, driven by AC motor, can be easily adjusted to seal a wide range of different conductor and cable diameters. The rolls are coated with a highly resistant rubber compound to ensure a perfect sealing behaviour in abrasion-proof design. Vulkollan seals or silicone lamellas and corresponding pressure and support ring sets are not required any more.

Trendseal is used in all types of CV lines (CCV, VCV and rubber CV lines) for universal sealing applications during the production of medium and high voltage cables. One Trendseal replaces the conventional endseal system like single end seal, double end seal and lead wire seal.



○ Troester's variable endseal, Trendseal

“Trendseal minimises scrap at start-up and eliminates complex handling and costs by having only one universal endseal device,” said Dirk Schmidt, sales director cable machinery division at Troester.

“Having approved its capabilities in

long-term operation for more than two years in several cable plants, it is now ready for supply in new CV lines with water and/or nitrogen cooling circuits and for upgrade of existing CV lines.”

Troester GmbH & Co KG – Germany
Website: www.troester.de

New in the range for cut and strip

Schleuniger has launched the new EcoStrip 9380, the latest innovation in its cut and strip product family.

One of the highlights of the EcoStrip 9380 is that it can be configured with rollers or belt feeding and the configuration can be quickly and easily changed by the operator. The unique three-position design of the optional belt feeding system further enhances the customer's capabilities. The belt feeding can be set for normal mode, roller mode or short mode processing, depending upon the application. Thanks to the strip-boost control of the feeding units, additional stripping force can be added, if required.

The manufacturer states that the EcoStrip 9380 is an economically priced machine with an excellent price-performance ratio. In terms of performance, it exceeds previous

models by approximately 20 per cent. The EcoStrip 9380's low production costs are derived from features such as its design and the ability to process two wires in parallel. It is also compatible with a full range of pre- and post-processing accessories for pre-feeding, marking (inkjet on-the-fly), stacking, coiling and tying, which turn the stand-alone machine into a fully automatic processing line. Owners of the original EcoStrip 9300 can save money by using their current blades and guides with the new EcoStrip 9380.

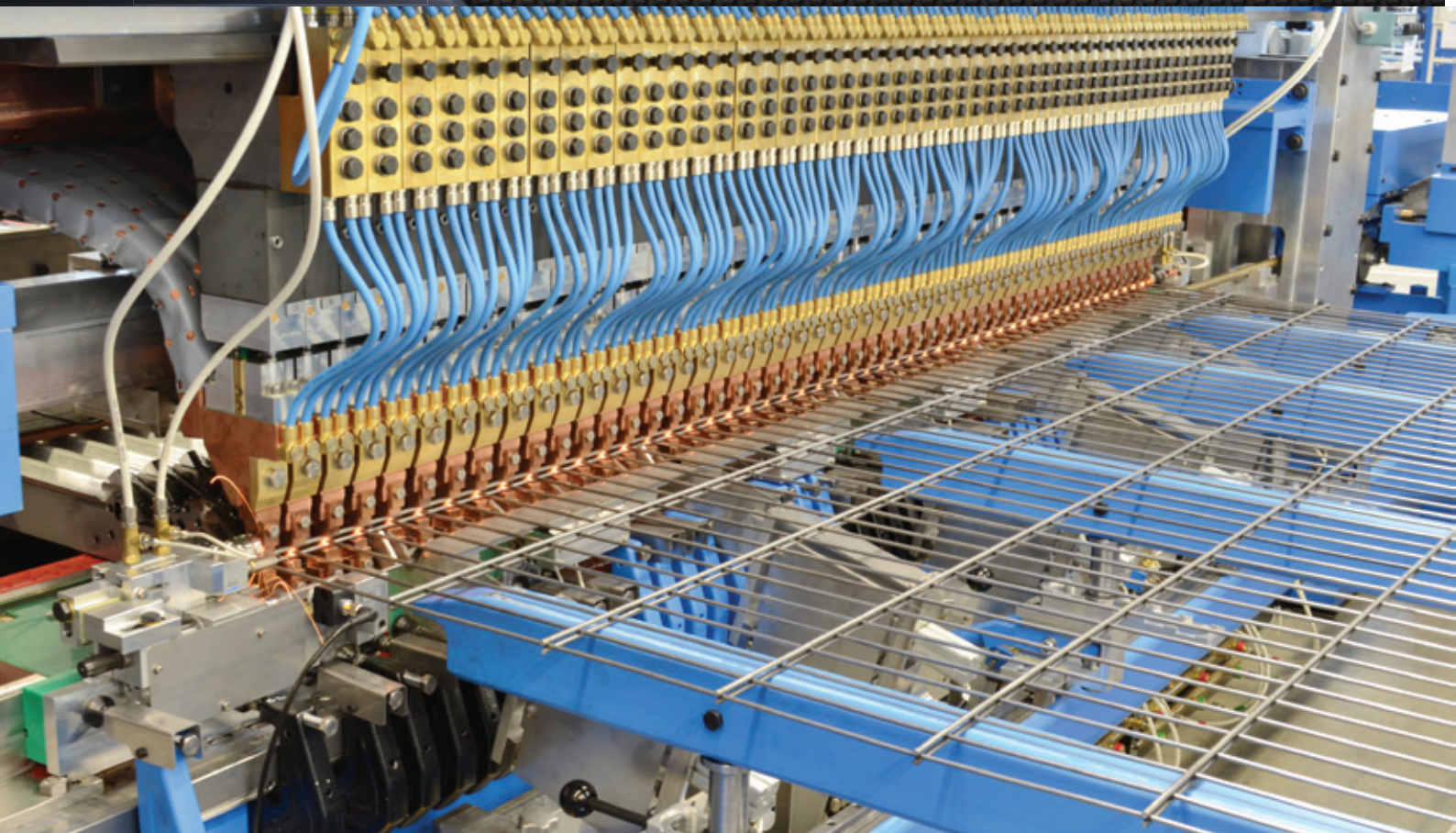
The EcoStrip 9380 is a hard-working machine that is also user-friendly. It is controlled via Schleuniger's standardised S.ON user interface with 5.7" colour touchscreen. With the release of the EcoStrip 9380, this interface is now the standard across the entire line of Schleuniger cut and strip products.

As business grows this standardisation makes it easier than ever for customers to expand capabilities and transition to new, higher level cut and strip machines without having to learn a new user interface.

The EcoStrip 9380 is compatible with Schleuniger's wire processing software, Cayman, as well as the planning software S.WOP, for network integration of the machine.

The EcoStrip 9380 is also precise. All driven axes are powered by Schleuniger's proven electronic platform, Bricks. The machine is equipped with a high-resolution blade holder and feeding drive axes as well as precise guide parts.

Schleuniger North America – USA
Website: www.schleuniger-na.com



○ FSD 栅栏生产线焊接门架

创新和进步

自1923年以来，Ideal一直代表着焊机生产和自动化领域的创新和进步，包括根据客户需求提供定制机器解决方案等。

这家德国公司从事金属网焊机生产、线材和绞合导线卷材连接，用于格栅和栅栏的焊机，以及线材产品生产，如电缆槽、电缆盖、电缆框架以及电缆圈等。

其产品组合包括用于网焊机、栅栏、线材和绞合导线卷材连接、格栅以及线缆产品生产等方面的解决方案。

栅栏市场正在发生着变化。几年前标准栅栏都还是大批量生产的。而如今批量越来越小，重点也聚焦在焊机的快速转换上。

适应日益增长的竞争压力和优质产品的灵活生产变得比以前更重要了。

在采购生产栅栏的焊机时，高质量的焊接、自动化、资源节约型生产以及灵活性和最少的设置成为最重要的要求。

为灵活地满足生产者和市场的不同要求，这家德国公司提供各种生产概念和配置：

- GA-Series系列金属网焊机，用于生产从小到大、从简到繁的栅栏网，用于单层或双层铁丝护栏网以及3-5-8安全围栏网
- CSR Versaweld™ 夹具焊机，用于各种栅栏网以及装饰围栏小批量生产和特殊垫子生产
- 特别配置机器配件
- 用于3D围栏网自动V型弯的压弯机
- 用于全自动生产过程的FSD生产线，根据不同产品组合提供不同版本，用于复杂产品和大批量产品生产（如单层和双层铁丝护栏网，3-5-8安全围栏网，3D围栏网，装饰围栏以及定制解决方案）

模块化设计的一个最重要方面是可以对现有设备里的模块进行改造。这使得该

机器能根据市场需求和制造商需求而发展。

复杂的焊接气缸、不同的变压器（交流电、直流单相电、1000赫兹中频技术）、以及直接或间接焊缝的可能性，和各种工艺相关的选择是焊接任务得以实现理想配置。

经典的十字焊受制于更高的质量要求。“不好”的焊缝里的毛刺太明显，水分在交叉点收集。

随后的粉末涂料在收集的水分里制造的气泡造成交叉点生锈。随后，氢致裂纹造成焊缝腐蚀，最后与材料疲劳相似。

为排除这些差错以及满足质量标准要求，Ideal不仅提供合适的硬件和软件，还提供建立在100年经验基础上的专业焊接知识。

Ideal-Werk C+ E Jungeblodt GmbH + Co KG – 德国
网址: www.ideal-werk.com

提供FFT分析和 SRL预测的测量仪器

数据电缆等先进电缆产品的生产,需要持续监督电缆的直径、同心性和/或电缆的电容量,避免电缆参数出现最细微的周期性波动。这些波动变化的原因可能来自生产过程中的不规则性,比如挤出机的“脉动”、旋转零件的不平衡、线速的定期波动和/或体预热的周期性波动等。

数据和高频电缆最常用的的质量控制方法,是测量某一长度电缆的回波损耗,将其作为操作频率的函数。这种回波损耗应该在电缆中传输。结构性回波损耗(SRL)的含义为:在朝入口的整个电缆长度中,馈给信号和再反射信号部分之间的关系(单位为dB)。较小幅度的随机波动所产生的辐射可能会被忽略,但对于定期重复产生的电缆参数波动,就应该检测出来并予以消除。

以下估测信息更显著地证明了这一点:由于生产程序不规则性,导致周期性重复出现“凹痕”,陷入电缆的绝缘之中,间隔10厘米。如果将馈给信号0.1%反射作为每一次瑕疵的基数,预计最大的总反射量为 $1,000 \times 0.1\% = 10\%$ (忽略100米电缆长度1,000个瑕疵时的电缆衰减)。这就等于回波损耗为20dB。当电缆入口的所有单反进行同相求和时,将这个数值得出一个总计值。

为了优化电缆质量,减少废品率,必须尽早找出成品电缆回波损耗周期波动的根本

原因,通过调整生产参数消除这些原因。通过短期电缆容量数据,对回波损耗进行在线预测,可以提供必要的相关信息。

Sikora公司提供了类型多样的测量系统,用于电话线、数据电缆和同轴电缆的质量控制(比如测量直径、椭圆形和同心率的Centerview 8000、测量电容的Capacitance 2000)。

关于测量准确性、测量分辨率和测量速度,所有这些设备都可以提供FFT分析和SRL预测。

强大的数字信号处理器默认整合在表头内。在这些测量仪的计算能力基础上,Sikora还可以实现数字范围分析,在表头内直接预测回波损耗。这意味着,对于在线计算电缆参数波动范围和在线预测回波损耗而言,这两个功能的执行位置与获得输入数据(即直径、通信性或电缆电容测量值)的位置相同,具有极高的时序性和振幅分辨率,同时可实现高精度和最小测量值噪音。不会出现存在问题的单测量值传输(通常为模拟性质)。

对于电缆制造商而言,不需要对若干单一设备进行复杂

的安装、配置和布线。此外,由于不需要进行宽带数据传输,因此,因电磁干扰耦合导致分析结果失真的风险也被降至最低。

Ing Werner Blohm博士是威廉港市杰德大学工程科学系的教授,也是Sikora公司的免费顾问,他说:“使用FFT频率分析不仅有利于通讯电缆生产,其他的电缆制造商也会通过这一现代控制工具受益,可将其用于检测周期出现的直径波动,消除波动现象,优化生产程序,节约材料。绝缘材料的消耗也可以降至最低,同时还可以保障一致的电缆壁厚度。”

Sikora AG – 德国
网址: www.sikora.net



○ Sikora的Capacitance 2000系列

新Trendseal – CV加工线的可变端封系统

使用Trendseal公司推出可变端封设备,任何类型CV生产线在更换产品时都不需要改变密封,减少了工具更换时间。

每个CV管都配备了一个或多个端封,以此在缆线行进过程中,保持加工过程中的冷却介质。根据所加工缆线的直径,需要为每一种缆线类型更换一个适用的密封和支撑环。为了避免操作人员出现失误,最大限度减少产品更换次数,Troester开发出了可变端封系统Trendseal。

一个由交流电动机驱动的内凹外观轧辊对,可以轻松地进行调整,可以密封类型各不相同的导体和缆线直径。轧辊外是一层高阻橡胶化合物涂层,耐磨性设计,可实现完美的密封效果。再也不需要氨基甲酸乙酯橡胶密封、硅胶薄片以及相应的压力和支撑环套装。

Trendseal可用于任何类型的CV生产线(CCV、VCV和橡胶CV线),普遍适用于中至高压电缆生产过程中的密封应用。

只需一个 Trendseal设备就可以替代传统的端封系统,比如单端密封、双端密封和导线密封。

Troester电缆设备部门的销售总监Dirk Schmidt说:“Trendseal从源头将碎屑降至最低,只需要一个通用端封设备,即可避免复杂的处理程序,降低成本。我们已在多个电缆生产工厂中对其进行进行了两年多的长期试运行,结果充分证明了它的能力。目前,我们

正在拓宽其适用范围,包括使用水和/或氮冷却回路的新CV生产线以及现有CV生产线的升级。”

Troester GmbH & Co KG – 德国
网址: www.troester.de

○ Troester的可变端封设备Trendseal



NPS提高生产速度

Niehoff生产的设备，涵盖了缆线和电线生产及处理的几乎所有过程。Niehoff Package System NPS是一种车用电线的处理系统，具有高效、安全和经济的特点。它包括一个特别开发的SV型收线器和可伸缩的ABS塑料多向收线气。

在2016年商展后，Niehoff公司立刻在德国施瓦巴赫的总部举行了内部展览，展出了最新版本的SV 402.D型双收线器产品。这种原装的NPS收线器产品可以将生产速度提高20%，达到1800米/分钟。该系统另外一个优势是，这一原装NPS收线器可实现最高的生产安全性水平，实现安全操作。SV收线器预计也可用于挤出生产线。由于这种收线器采用了一种特殊的锥形布线技术，可以对来自挤出生产线的绝缘电缆进行收线。在最大生产速度时，收线器从满至空的转变可以实现不停产的目标，让下游程序实现最高的缆线放线速度。

Niehoff的标准产品系列包括6种不同尺寸的NPS收线器。空置的NPS多向收线器可以完全拆除，可彼此嵌套在一起。拆除的收线器所占用的空间仅为传统收线器的三分之一，退货运输所占据的空间也

远远小于传统收线器。如果应用不需要定期更换收线器，则可选择NPS 400单向收线器。NPS概念已经成功地走向世界各地，目前全球使用的NPS多向收线器已经超过300万个，所有产品均彼此兼容。所有退还收线器的配件都能够互换使用。为了保护NPS收线器与无法与NPS标准兼容的收线器混淆，导致安全风险，Niehoff长期以来始终都对其采取了保护措施。

措施之一就是推出RFID应答器设备，所有设备均配有原装NPS多向收线器。通过这个应答器，NPS用户可以识别某个收线器是否属于该系统，是否与其兼容。应答器也简化了收线器的打标方法：因为收线器的身份标识保存在RFID中，无需标记。

NPS是世界上唯一一款汽车电线包装设备，适用于铜线、铜合金线和铝线，可在最高速度中实现无故障、无缠绕放线操作。即使是截面面积为0.13立方毫米的铜合金单根电线，也可以顺利地进行处理。

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

○ Niehoff的SV 402.D型双收线器



切剥一体机新产品

Schleuniger的EcoStrip 9380是公司切剥一体机系列中最新的创新产品。Schleuniger的营销负责人Martin Engel说：“你不必每天都西装革履。很多时候，牛仔裤就可以了。”切剥程序也是如此。很多应用领域需要的其实只是入门级解决方案。EcoStrip 9380的特色之一，就在于它可以与轧辊或带式给料设备进行共同配置，操作员还可以通过简单快捷的方式改变配置。可供用户选择的带式送料设备采用独特的三位设计，进一步提高客户的生产能力。根据应用领域的不同，带式送料设备可以设置为正常模式、轧辊模式或短期模式加工。给料单元配有剥离强化控制器，如果需要，可以加大设备的剥离力。

EcoStrip 9380的定价合理，具有极佳的性价比。该设备的性能较之前的型号提高了大约20%。EcoStrip 9380之所以能够具有低廉的生产成本，源自于它先进的设计水准和可同时加工两根缆线的能力。EcoStrip 9380还可兼容类型全面的加工前和加工后配件，进行预给料、标记（飞唤打印机）、堆放、卷绕和捆扎，可以将一个独立的设备变成一个全自动加工线。EcoStrip 9300原始型号的用户，可以在新型号EcoStrip 9380中使用原来的锯片和导板，节省更换成本。EcoStrip 9380是一款结实耐用的用户友好型设备。通过Schleuniger的标准化S.ON用户界面进行控制，该界面配有一个5.7英寸的彩色触摸屏。EcoStrip 9380推出之后，这个界面现已成为Schleuniger切剥一体机全系列产品的标准配置。当然，EcoStrip 9380还兼容Schleuniger的线缆加工软件Cayman以及规划软件S.WOP，可进行机器的网络集成。除了这些优点，EcoStrip 9380的精准度也非常高。所有驱动轴都由Schleuniger完善的电子平台Bricks提供驱动。此外，该机器还配备了高分辨率锯片托、给料驱动轴和精准的引导零件，无需使用任何工具即可实现快速更换。

Schleuniger North America – 美国
网址: www.schleuniger-na.com

Zumbach测量仪表表现已配备OPC UA标准

Zumbach为其功能强大的仪表产品配备了广受认可的OPC UA标准。有了这一重要技术，测量解决方案可与生产线中的不同系统进行简单安全、可扩展、独立于平台和制造商的信息交换。

为全新的工业4.0服务准备您的尺寸、剖面和直径测量现场数据。配备新OPC UA标准的设备，可以满足智能数据网络的技术要求。

Zumbach已为其强大的测量仪器配备了OPC UA标准，确保不同生产线系统之间可进行简单、安全、可扩展的信息交换，不会收到平台或生产商的影响。

只需一个软件，即可让所获得的所有M2M（设备对设备）或M2H（设备对人）测量数据，都能够在一个输出平台上互联、收集、显示和分析。OPC UA标准可以促进自动化设备不同级别之间的水平和垂直整合。这就意味着，在工业自动化以及工业4.0和物流网（IoT）未来的语义通讯情境方面，本产品已经满足了相关的要求。

OPC在自动化领域中的适用范围最广泛，但由于它在技术上具有行业中立性，因此可以在所有操作系统中运行。工厂设备之间的通讯可以独立于制造商，以更可靠、更安全的方式进行。

作为首批内联测量和监督设备的生产商之一，Zumbach已通过主机通信协议将OPC UA整合到其由台式机构成的主干系统之中（即Profilemaster®轮廓测量系统系列、热轧机和Steelmater®冷处理的测量系统、进行通用数据记录和处理的USYS IPC系列、显示系统等）。OPC UA服务器也可作为外部网关软件，用于测量带有微处理器和主机通讯协议的测量仪器（ODAC®激光直径测量仪、MSD直径和椭圆形测量系统、火花检测器、电脑接口盒等）。

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

合作开发全新拉拔设备

德国企业Schmidt Maschinenbau和奥地利企业Plasmait联合两家公司在机械方面的专业能力，共同开发出一个全新的拉拔设备，配备有一个并联退火炉，用于生产不锈钢微丝和镍合金缆线。

目前的不锈钢和镍合金缆线退火工艺，大部分都是在传统管式炉内进行多线拉拔。本设备彻底改变了这一状况。PlasmaAnnealer可与Schmidt的微丝拉拔机并联，以最快4-15米/秒的速度生产不锈钢微丝（直径从0.1-1毫米）。



集成拉拔设备参加今年在德国杜塞尔多夫举行的展览

有了这种整合式微丝拉拔设备，就无需在传统的管式炉中使用10-20条拉拔线，因此也不需要进行成本昂贵的多线拉紧和放线程序，避免了相关的材料处理和人力投入。

该设备的安装包括一个平置退火炉的拉拔机和带有自动绕线转向功能的双头拉紧器。

本集成式拉拔机还可以提供紧凑型设计版本，配有竖置退火炉，适合较小的微丝直径范围。

全新集成式拉拔-退火设备首先在欧洲和亚洲上市，随后将很快登陆北美市场。PlasmaAnnealer也可与轧钢机或捻股机结合使用。

全新集成式拉拔-退火设备可适用于不同类型原材料，应用范围非常广泛，包括用于丝网和纺织品、过滤器、金属刷、EMS丝网、电阻丝、加热元件、医疗设备、珠宝、航空航、汽车以及其它类似的应用领域。

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

Schmidt Maschinenbau GmbH - 德国
网址: www.schmidt-maschinenbau.com

Datwyler 288光纤 FTTx户外电缆

Datwyler Cabling Solutions的FO Outdoor wbKT S-Micro光线电缆系列增加了一种新产品。该产品的层绞松管(12x24)中共有288根光纤(G.652.D)。这种FTTx户外电缆的直径仅有10.4毫米。这是吹入12毫米或其它内径尺寸微管的理想尺寸。这种非金属紧凑电缆拥有多个干式缝隙，可轻松地安装和拆除。其衰减数据为1,550 nm情况下0.21 dB/km，这一性能对用户也非常有利。其机械性能也非常优越，抗张强度为2,900 N，可以吹出超长距离。

Datwyler - 瑞士
网址: www.datwyler.com

Datwyler 光纤电缆系列产品的新成员



TLAser1240 - 快速精准

LaserLinc推出的TLAser1240™激光扫描测微计是一种新型单轴直径测量仪，无需接触即可对大型产品进行快速准确的检测。

TLAser1240测微计可以测量直径、高度或宽度最大为9.1英尺(231毫米)的产品，适用于金属、玻璃、缆线和电线、塑料以及橡胶挤出行业。

如用于金属和玻璃材质产品，发射器和接收器可以分置两处，避免与移动部件、设备和热源接触。

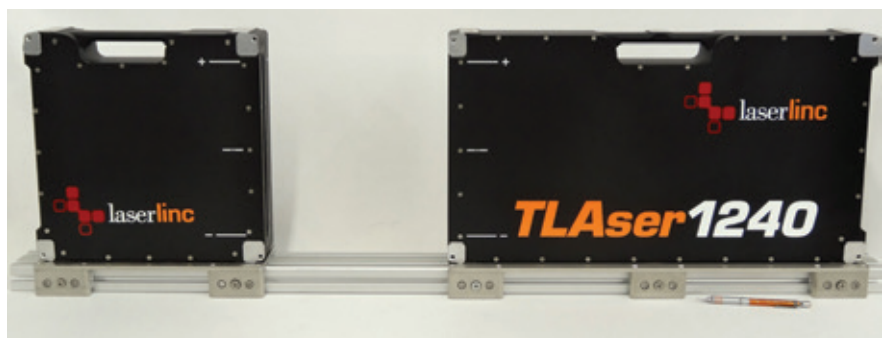
产品特色包括:

- 可对任何材质进行测量，包括透明材质
- 快速检测 - 每秒1,600次测量速度为50英尺/每分钟时，设备在产品上的测量间隔为0.007英寸，测量几乎实现100%覆盖
- 可重复性(2秒钟) - $\pm 0.00008''$ [$\pm 2\mu\text{m}$]
- 发射器和接收器分别放置，安装滑道可

在任何方向进行刚性安装，避开移动的产品和设备。

- 可同时使用两个单元进行双轴(XY)检测；如是三轴直径，可使用三个单元进行三轴检测，还可以进行准确的椭圆形检测
- 使用标准的以太网连接，可以与Total Vu™ HMI整合，进行完整的产品和程序监督和控制
- 使用SmartLinc™处理器以及

全新 TLAser1240



EtherNet/IP工业通讯与线控PLC集成，质保期四年

LaserLinc的副董事长Jeff Kohler说：“在TLAser1240之前，测量大型零部件是一项难度很高的任务。这个测微计在速度和精准度上解决了该问题。”

LaserLinc Inc - 美国
网址: www.laserlinc.com

India Insight

India's new source of domestic copper

DUTCH multinational Trafigura is to establish a copper wire rod manufacturing facility in India in partnership with Polycab Wires.

The joint venture, in Halol, Gujarat, is expected to be operational by the end of 2017. It is the first base metal manufacturing investment by Trafigura in the Indian sub-continent and is planned to meet the rising demand for copper wire rods by construction, power, transport and telecom industries. The entire production will be sold domestically.

The Indian copper wire rod market is worth \$3 billion and is expected to grow 12 per cent year-on-year.

"Though our core competence is trading and moving commodities like oil, minerals and metals across global geographies, we hold just under 25 per cent of Nyrstar, a Belgian-listed zinc smelting and mining company, and we recently purchased 30 per cent equity in Jinchuan, China's largest nickel producer," said Jeremy Weir, CEO, Trafigura.

"So, we do have industrial activities normally on a JV basis, where we team up our competency, which is the supply of raw materials and our financing capacity together with somebody who has complementary industrial skills.

"This is the case with Polycab, whereby we have the sourcing capability, the raw material and the financing capability and they have the manufacturing know-how. For us, this JV is a very complementary fit."

Trafigura – Netherlands

Website: www.trafigura.com

Polycab Wires – India

Website: www.polycab.com

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To submit news for the India Insight section free of charge, email david@intras.co.uk or call direct on +44 1926 334137.

AAE-1 to come ashore

Reliance Jio Infocomm has received environment clearance for building the Indian section of the Asia-Africa-Europe One (AAE-1) submarine cable system. AAE-1, believed to be the largest next-generation subsea cable system at around 25,000km, is under construction by a consortium of 17 global service providers, with the Indian section implemented by Reliance Jio.

“As per the recommendations of the EAC [expert appraisal committee], the environment ministry has given CRZ [coastal regulation zone] clearance to the project,” a senior government official confirmed.

The cable will terminate in Mumbai at a beach manhole. The expected cost of the project is \$6 million.

Conditions of the clearance include that activity is confined to the 4-6 hours of low tide, to avoid water ingress in the excavated area.

The excavated area must be covered after laying the cable, and even the CRZ area will be cordoned off by floating buoys, warning flasher lights, and a sound alarm in case of any intrusion into the cordoned area.

The company has been asked to establish its labour camps and storage areas away from the CRZ area, and told not to disturb mangroves or marine life.

The AAE-1 cable system is designed to improve telecom connectivity, providing additional capacity and speed for international traffic.

Reliance Jio Infocomm – India

Website: www.ril.com

Greenfield power site

Tata Power Solar has commissioned a 100MW solar project for the National Thermal Power Corporation (NTPC) in Ananthapur district, Andhra Pradesh. In accordance with the Indian government’s “Make In India” initiative, the project uses only domestically manufactured solar cells and modules.

The plant, which was completed nearly three months ahead of schedule, is spread across a 500-acre site, where natural streams and hillocks were untouched so as to maintain the natural ecosystem.

Tata Power Solar’s executive director and CEO, Ashish Khanna, said: “Today, pace of delivery and quality have become crucial benchmarks in the industry, and we are especially proud to have delivered a project of this scale in record time.

“By bringing together our core strengths in domestic manufacturing and EPC services over the last 25 years, this 100MW plant is the largest project commissioned by us to date. We hope to continue to build on our capabilities and deliver over expectations to proficient customers like NTPC.”

NTPC technical director A K Jha said: “Given our ambitious target for green power, we were aware that our requirement of rigorous timelines and cost-efficiency was a challenging one. We thank Tata Power Solar for their experience, and commitment in delivering this large scale project ahead of strict timelines.”

Tata Power Solar – India

Website: www.tatapowersolar.com

Expanding its range

Recognised for its manufacture of steel wire ropes, Usha Martin has added oil-tempered wires to its product portfolio. Currently producing 10,000 tonnes per annum of oil tempered wire, the company plans to expand its capacity to 18,000 tonnes per annum.

Pengg Usha is a joint venture between Usha Martin and Joh Pengg AG of Austria to produce oil-tempered wire for the automotive industry.

The unit at Ranchi has a complete range of manufacturing and testing facilities, including a shaving line, oil tempering line, testing line, tensile testing machine, torsion testing machine, wrap testing machine and metallurgical testing equipment.

Usha Martin is one of the largest wire rope manufacturers in the world, with facilities in the UK, India, Thailand, and UAE. Its product range includes wire rope, strand, wire, cable, steel bar and steel wire rod.

Usha Martin – India

Website: www.ushamartin.com

New wire plant

Hindalco Industries, part of the Aditya Birla Group, is investing heavily in a new wire rod plant at Dahej in Gujarat. The new facility will take the company’s total wire rod production capacity to 400,000 tonnes from the current 150,000 tonnes.

Satish Pai, managing director of Hindalco Industries, reported that the plant will begin production by March 2018, and that the investment is part of a strategy to enhance the contribution of value-added products to 60 per cent, from the current 40 per cent, of overall sales.

He added that the recently commissioned wire rod mill in Mahan pushed up copper value-added production by 80 per cent in the quarter to June.

The company aims to make one or two investments every year, to increase capacity on the downstream side in both aluminium and copper. However, regarding price outlook Satish Pai said: “We hear China has restarted four million tonnes of aluminium production that was shut due to high production cost. It is a bit worrying, though we do not have firm numbers on this.”

Hindalco Industries – India

Website: www.hindalco.com

ITU: Some 3.9 billion people – more than half the population of the world – will not yet be using the Internet at the end of 2016

ICT Facts & Figures 2016, from the International Telecommunication Union (ITU), shows that 3.9 billion people remain cut off from the resources available through the Internet, despite falling prices for information and communication technology services.

While the UN specialised agency established that developing countries now account for the vast majority of Internet users – 2.5 billion users compared with one billion in developed countries – those population-centred results are starkly at odds with its Internet penetration results.

Here the ITU data tells a very different story: 81 per cent penetration in developed countries, compared with 40 per cent in developing countries and 15 per cent in the category Least Developed Countries.

Among the findings from the new edition of ICT Facts & Figures:

- Mobile phone coverage is now near-universal, with an estimated 95 per cent of the global population – or some seven billion people – living in an area covered by a basic 2G mobile-cellular network. Advanced mobile-broadband networks (LTE) have spread quickly over the last three years and reach almost four billion people today – corresponding to 53 per cent of the global population.

But while the number of mobile-broadband subscriptions continues to grow at double-digit rates in developing countries to reach a penetration rate of close to 41 per cent, mobile-broadband penetration growth has slowed overall. Globally, the total number of mobile-broadband subscriptions is expected to reach 3.6 billion by end 2016, compared with 3.2 billion at end 2015.

- Global fixed-broadband subscriptions are expected to reach around 12 per 100 inhabitants in 2016, with Europe, the Americas and the Commonwealth of Independent States regions having the highest rates of penetration. Strong growth in China is driving fixed-broadband in Asia and the Pacific, where penetration is expected to surpass 10 per cent by the end of 2016.
- Mobile-broadband services have now become more affordable than fixed-broadband services, with the average price for a basic fixed-broadband plan more than twice as high as the average price of a comparable mobile-broadband plan.
- By the end of 2016, more than half of the world's population – 3.9 billion people – will not yet be using the Internet. While almost one billion households in the world now have Internet access (230 million in China, 60 million in India, and 20 million in the world's 48 Least Developed Countries), figures for household access reveal the extent of the digital divide, with 84 per cent of households connected in Europe, compared with 15.4 per cent in Africa.
- Internet penetration rates are higher for men than for women in all regions of the world. The global Internet user gender gap grew from 11 per cent in 2013 to 12 per cent in 2016. The regional gender gap is largest in Africa, at 23 per cent, and smallest in the Americas, at two per cent.
- By early 2016, international Internet bandwidth had reached 185,000 gigabits per second, up from a low of 30,000 gigabits in 2008. However, bandwidth is unequally distributed globally, and lack of bandwidth remains a major impediment to improved Internet connectivity in many developing and Least Developed Countries.

Connected cars are at the centre of a tussle over spectrum between USA telecoms and the auto industry

As self-driving cars start to proliferate on USA roads, several major telecom companies are moving to have spectrum previously reserved to the auto industry reallocated for use in WiFi. They assert that the automakers have not made extensive enough use of the spectrum. As noted by Ryan Matthew Pierson on *readwrite.com*, the issue arises "at a time when that spectrum is set to be more important" than ever before. ("Gimme, Gimme: Automakers and Telecoms Spar Over Spectrum," 16th May). Anticipating vehicle-to-vehicle communication, the US Federal Communications Commission in 1999 allocated spectrum within the 5.9 GHz band for use by auto makers. The telecom companies argue that this spectrum is better used for WiFi as, in their view, its utilisation in Intelligent Transportation System (ITS) devices is too limited to warrant dedicated bandwidth.

Dell, Google, Broadcom, Qualcomm, Intel and others made their case in an open letter to President Barack Obama sent in late April. The companies claimed to have identified a growing need for spectrum for unlicensed use by the public. This growth, they wrote, is creating what they termed an unlicensed spectrum crisis. They proposed an arrangement whereby the disputed band would be opened up for unlicensed usage, with both ITS and WiFi signals sharing the spectrum.

Mr Pierson reported that, on 5th May, a "counter-letter" was sent to the White House. In it, more than 50 members of the auto industry and like-minded others asserted that de facto spectrum sharing has been taking place; and that the transportation sector, working closely with the wireless industry, has already brought a prospective solution to the attention of key government agencies.

Giving up the 5.9 GHz band for free unlicensed usage would, according to this second set of advocates, limit the capability of Dedicated Short Range Communication (DSRC) systems to reduce roadway injuries and fatalities.

The appeal to Mr Obama observed that technologies that would best utilise the band for the prevention of accidents are just now emerging: opening up the spectrum now would set back a decade's worth of innovation.

Summing up, Mr Pierson wrote that the debate continues as to whether the auto industry is unfairly "spectrum squatting"; or, is the telecom industry moving in on that 75 megahertz of spectrum at a risk to public safety?

Undersea fibre optic cables in fact and in prospect

The new undersea fibre optic cable system Faster, funded by six international companies, is in service and delivering 60 Terabits per second (Tbps) of bandwidth across the Pacific. Commissioned on 30th June, the system lands in Oregon in the USA and at two landing points in Japan, in the Chiba and Mie prefectures. It also includes a connection from Japan to Taiwan, which has 20 Tbps of bandwidth and is owned solely by Google of the USA.

As reported by Stephanie Condon in *Between the Lines* (29th June), Faster is the highest-capacity undersea cable ever built: some "ten million times faster than the average cable modem." Besides Google, the consortium behind Faster includes China Mobile International, China Telecom Global, Global Transit (of Malaysia), KDDI (of Japan) and Singapore's Singtel. The 5,592-mile cable, which in the USA has connections to Portland, Seattle, the San Francisco Bay Area and Los Angeles, was built by NEC Corp of Japan.

Google now has a stake in four completed undersea cables and is working on more, noted a company spokesman, Alan Chin-Lun Cheung, in a blog post to *Between the Lines*. In March it was reported by Angelica Mari in *Brazil Tech* that Google would finance a new submarine cable linking Rio de Janeiro and São Paulo. The 242-mile link – to be called Júnior, after Brazilian painter José Ferraz de Almeida Júnior – will be composed of eight pairs of fibre optic cables and provide a maximum speed of 13 Tbps. It will be used exclusively for data traffic between the two Brazilian cities.

Smartphone sales are slowing, but not in the Indian market where Samsung leads the pack, Apple brings up the rear

According to a report published on 19th August by International Data Corporation, India continues to be one of the rare growth markets for the global smartphone industry. IDC, a global provider of market intelligence, was impressed by the 17 per cent year-on-year increase in unit shipments in the Indian market in the second quarter of the year. That performance followed two successive quarters of shipment declines in India, with Q2 registering a slim 3.7 per cent increase over the shipment total for Q1, IDC said. Supplying context, Jon Russell of *TechCrunch* noted that growth in smartphone sales worldwide is forecast to slow to just 3.1 per cent this year.

South Korea's Samsung accounted for 25.1 per cent of all smartphone shipments in India during the April-June period, ahead of Micromax (12.9 per cent), Lenovo (7.8 per cent), Intex (7.1 per cent) and Reliance Jio (6.8 per cent). Mr Russell commented, "IDC didn't report a figure for Apple – such was its lowly position." ("Samsung Leads India's Smartphone Market, as Apple's iPhone SE Fails to Take Off"). While it did say that the iPhone SE failed to make any significant impact in the premium segment, IDC reported that the "previous-generation iPhone 5S continued to contribute majority volume."

Lenovo was the only Chinese vendor in the top five. (Micromax, Intex and Reliance Jio are all Indian.) But IDC noted that Chinese smartphone makers as a group are seeing their shipment numbers rise in India. In contrast, global and India-based players have seen their numbers there shrink year-on-year. "China-based vendors' shipments grew 28 per cent over the previous quarter [and] Lenovo group, Vivo, Xiaomi, OPPO and Gionee were key contributors driving the growth," IDC analyst Karthik J said in a statement.

➤ Regarding Apple, Mr Russell observed that the second and third quarters of the year "are usually tough" on the American

company, as buyers await the next iPhone – typically introduced in September. While the new four-inch SE (priced at \$399) did not fare well in India, it performed as intended in the USA and in parts of Europe.

Elsewhere in telecom . . .

➤ The Indian startup Ringing Bells is offering a brand of budget smartphones that cost only \$3.72 apiece, the lowest price tag anywhere in the world. The 3G phone runs on Google's Android operating system and comes with a 3.2 megapixel camera. As reported by Takafumi Hotta in the *Nikkei Asian Review* (9th July), Ringing Bells launched the Freedom 251 in February, but overwhelming demand apparently forced an end to pre-orders after just a few days.

Now, the company says, the first round of shipping (5,000 units) has begun, with an evaluation of market response to take place at the 200,000 unit mark. Mohit Goel, a co-founder of Ringing Bells, told Mr Hotta that its goal is to bring smartphones to low-income people. He acknowledged that the phones cost more to produce than they fetch in price, but said the company will make up for the loss with advertising and other revenues.

• As of this past summer, the partnership of Deutsche Telekom and BMW permits users of BMW ConnectedDrive to book a WiFi hotspot using Deutsche Telekom's HotSpot Drive portal. The mobile hotspot facilitates the connection of up to ten WiFi-enabled devices without the need for individual SIM cards. The system is pan-European, with wider coverage planned.

Permanently embedded in a vehicle, the eSIM can be updated over-the-air whenever required. Reinhard Clemens, Deutsche Telekom board member and T-Systems CEO, told *Telecom TV* (25th July) that, with the placement of the network inside the car, "telecommunications and IT are now providing the basic technology for digitisation of the motor vehicle."

ITU: 截止 2016 年末, 全球仍有超过 39 亿人无法使用互联网, 占世界人口一半以上

国际电信联盟 (ITU) 是联合国下属的一个专门机构。该机构在其2016年的ICT Facts & Figures报告中称, 尽管信息和通讯技术服务的价格不断下降, 目前仍有39亿人口无法获得接入互联网的资源。

ITU的调查显示, 目前发展中国家在全球网络用户中占据主流, 约为25亿人, 相比之下, 发达国家仅为10亿人。但发展中国家庞大的用户人数, 却与其网络覆盖的结果存在差距。从ITU的数据可发现: 发达国家的网络覆盖率为81%, 发展中国家为40%, 最不发达国家仅为15%。

新版ICT Facts & Figures报告的内容还包括:

- ① 移动电话目前计划实现全球覆盖, 全球约有95%的人口 (约70亿人) 的生活区域覆盖基本的2G移动电话网络。在过去的三年中, 先进的移动宽带网络 (LTE) 扩展迅猛, 如今已达到近40亿人, 相当于全球人口的53%。但是, 尽管发展中国家移动宽带的用户数量以两位数的速度持续增长, 覆盖率接近41%, 但移动宽带的覆盖增长速度却总体放缓。从全球来看, 截止2016年末, 移动宽带用户总人数预计达到36亿人, 而2015年末为32亿人。
- ② 2016年, 全球固定宽带用户预计达到居民的12%, 其中欧洲、美洲和独联体国家的覆盖率最高。中国的快速增长也推高了亚太地区固定宽带的覆盖率, 预计截至2016年, 覆盖率将超过10%。
- ③ 如今, 移动宽带服务的价格比固定宽带更便宜。移动宽带不足相应基本固定宽带价格的一半。
- ④ 截止2016年末, 超过一半的世界人口 (39亿人) 仍无法使用网络。如今全球几乎10亿家庭都可以连接因特网 (中国2.3亿、印度6000万、世界上48个最不发达国家2000万)。但家庭上网的比例却显示出了各国之间的真正差异: 欧洲家庭联网比例为84%, 而非洲仅为15.4%。
- ⑤ 从性别角度来看, 在世界所有地区, 男性中的网络覆盖率要高于女性。全球网络用户的性别差异, 从2013年的11%, 增加到2016年的12%。从区域来看, 非洲的性别差异最大, 达到23%。美洲差异最小, 仅为2%。
- ⑥ 截止2016年初, 国际网络带宽达到了每秒185,000千兆比特, 远高于2008年30,000千兆比特的水平。但是, 全球各地的带宽情况差别很大。在很多发展中国家和最不发达国家, 带宽不足是提高网络连接水平的重要障碍。

互联汽车成为美国电信业和汽车业频段之争的核心

随着美国道路上自动驾驶汽车的数量越来越多, 几家大型电信公司开始觊觎之前分配给汽车业的频段, 希望能对其进行重新分配, 供电信业用于无线网络。电信业认为汽车工业未能充分使用该频段。正如Ryan Matthew Pierson在readwrite.com网站中所说, 这个问题出现的时间“正是该分类市场即将变得比以往更为重要之刻”。(“Gimme, Gimme: Automakers and Telecoms Spar Over Spectrum,” 5月16日)

早在1999年, 美国联邦通信委员会就预测到汽车与汽车之间将会进行通讯, 因此将5.9 GHz范围内的频段分配给汽车制造商使用。电信公司认为, 这个频段更适合用于WiFi。他们认为, 仅供智能交通系统 (ITS)

设备使用的局限性太大, 不适合将其作为专用频段。去年四月, 戴尔、谷歌、Broadcom、Qualcomm、Intel和其它高科技公司向总统奥巴马致信, 表达了他们的立场。这些公司表示, 他们发现, 公众对未授权使用频段的需求越来越高。他们在信中说: 这样的发展正在导致他们所称之的“未授权频段危机”。他们建议政府作出安排, 开发所述频段供市场进行无授权使用, 由ITS和WiFi信号共享该频段。

Pierson先生在文章中又说: 5月5日, 一封“反立场信件”已寄往白宫。在这封信中, 50多家汽车制造商和相关方表示: 事实上, 频段共享已成为现实; 交通业与无线行业密切合作, 提交了一份前瞻性解决方案, 提请主要政府机构的关注。汽车业的态度是: 放弃5.9 GHz频段供社会无授权免费使用, 这会制约专用短程通信 (DSRC) 系统减少道路

伤亡事故的能力。汽车业代表对奥巴马总统呼吁: 以最佳方式利用频段来防范事故的技术, 目前刚刚处于萌芽阶段。如果现在就开放这个频段, 将会毁掉十年来的创新成果。

Pierson在文章最后写道: 这场争论的焦点就是: 汽车工业是否不公平“霸占频段”, 或者电信工业是否应该冒着公共安全的风险, 使用那75兆赫兹的频段?

智能手机销售开始放缓, 但印度市场却仍然红火, 三星零头, 苹果垫底

全球市场情报提供商International Data Corporation (IDC) 在8月19日发表的一份报告显示, 对于全球智能手机工业而言, 印度仍然是一个罕见的增长市场。该公司惊讶地发现, 在今年第二季度, 印度市场单位发货量的年比增长达到17%。

IDC在报告中说: 在此之前, 印度市场该数据曾连续两个季度下跌。与1季度相比, 2季度的数据略微增长了3.7%。TechCrunch的Jon Russell对这一增长给出了解释, 他说: 今年全球智能手机销售的增速预计放缓, 仅为3.1%。

在4-6月期间, 发给印度市场的所有智能手机货物中, 25.1%来自三星, 其次是Micromax 12.9%、联想7.8%、Intex 7.1%、Reliance Jio 6.8%。Russell先生指出: “IDC并未提及苹果的数据, 这也说明了苹果排名之低。” (“Samsung Leads India's Smartphone Market, as Apple's iPhone SE Fails to Take Off”)

但这并不代表iPhone SE在高端市场中没有任何影响力。IDC报告称: 之前型号的iPhone 5S是销量中的主角。

联想是前五名中唯一的中国品牌。(Micromax、Intex 和 Reliance Jio 都是印度品牌)。但IDC也指出, 从中国智能手机品牌整体来看, 其在印度的销量在不断上升。相比之下, 其它国际品牌和印度本土品牌的销量年比却呈下降趋势。

IDC分析师Karthik J在一份声明中说: 在上一季度中, 中国供应商的发货量增加了28%, 联想、Vivo、小米、OPPO和金立是推动上涨的主要力量。

① Russell先生在谈到苹果时表示: 今年第二季度和第三季度是美国市场通常的淡季, 因为消费者都在等待新一代苹果的上市, 通常都会在九月。但新款四英寸的SE (定价为399美元) 却并没有告别印度市场, 它在印度的表现, 与在美国和部分欧洲国家的表现相似。

Presidential politics USA

Is China taking jobs away from Americans? Or are Chinese workers losing out to their counterparts in the United States?

Even in an electioneering season rife with expressions of concern for the American worker, the claims of presidential candidate Donald J Trump stood out. Throughout his campaign he asserted that China is stealing American manufacturing jobs. In his speech to the Republican National Convention on 21st July, Mr Trump – the party's nominee – said that “disastrous trade deals” had hurt factory workers in the USA. He also said that American support for China's embrace of free trade has been a “colossal mistake.”

Writing from Beijing during the week of the convention, Michael Schuman of the *New York Times* reviewed the supposedly baleful Chinese effect on US workers and was led to a very different – indeed, opposite – conclusion from Mr Trump's. Workers in today's China, Mr Schuman reported, are losing their jobs to a slowing domestic economy, rising costs and stiffer foreign competition – including from the USA. (“Is China Stealing Jobs? It May Be Losing Them, Instead,” 22nd July)

In short, wrote Mr Schuman, China's labour market has changed sharply, with manufacturing for export “getting harder and harder.” Jim McGregor, chairman of the consulting firm APCO Worldwide's Greater China operations, put it succinctly. The presidential candidates, he told the *Times*, “are screaming about yesterday's problems.”

The agents of change are clear enough. As the Chinese economy has expanded, creating opportunities in many sectors, assembly line jobs have become less attractive, causing managers to raise wages to attract workers. At the same time, local governments in Shenzhen and other industrial centres have steadily increased the mandated minimum wage to improve the welfare of working families and pressure companies to produce more expensive, high-value products.

That combination, noted Mr Schuman, has pushed wages for Chinese factory workers higher. Their monthly pay now averages \$424 – approximately 29 per cent more than it was just three years ago. Labour costs in China are now significantly higher than in many other emerging economies. Factory workers in Vietnam earn less than half the salary of a Chinese worker, while those in Bangladesh are paid under a quarter as much.

USA manufacturing reshoring picks up

What that means, wrote Mr Schuman, is more jobs for American factory workers. Half of the respondents in a 2015 survey of large USA manufacturers conducted by the Boston Consulting Group reported expecting the number of manufacturing workers they employed in the USA to increase over the next five years.

In a separate survey by BCG last year, 24 per cent of respondents said they were actively shifting production home from China or were planning to do so over the next two years, up from only 10 per cent in 2012.

“It just makes economic sense,” Hal Sirkin, a senior partner at BCG, told the *Times*. “The US right now is in a very favourable position.”

And it is not just the USA that is taking jobs away from China, observed Mr Schuman. Rising costs are driving many companies in a variety of sectors to relocate to a wide range of other countries. He cited the most recent survey from the American Chamber of Commerce in China, in which a quarter of respondents said they had either already moved or were planning to move operations out of China. The top reason? Rising costs. Of those respondents, almost half are moving into other developing countries in Asia. But, tellingly – if presidential aspirant Donald J Trump had happened to be paying attention – nearly 40 per cent are shifting to the USA, Canada and Mexico: the three signatories to the North American Free Trade Agreement (NAFTA), which Mr Trump has called the worst deal in USA history.

Automotive

An American company is implicated in an airbag-related fatality

Airbags made by ARC Automotive (Knoxville, Tennessee) came under heightened scrutiny in August after a rupture in one of its bags was linked to the death of a driver in Canada the previous month. The National Traffic Safety Administration (NTSA), the USA regulator, is investigating hybrid airbag inflators made by ARC that use both a gas and the explosive compound ammonium nitrate. The fatal rupture raised the prospect of adding millions of cars to the already extensive recall of exploding airbags made by the Japanese manufacturer Takata.

According to the Canadian auto safety regulator, Transport Canada, the driver of a 2009 Hyundai Elantra died when the driver-side airbag inflator exploded after a low-speed collision in Newfoundland on 8th July. The NTSA had already opened a preliminary inquiry into at least eight million airbag inflators made by ARC for use in Chrysler, General Motors, Kia, and Hyundai cars through model year 2004, but the agency said its new, formal, investigation will go beyond that population of inflators. The death in Canada was the first known fatality linked to a rupture in an airbag from a supplier other than Takata. The NTSA said on 4th August that the ARC and Takata airbag inflators had “significant design differences” and that the fatal ARC rupture probably had a different cause.

With over 380 million connected cars expected on the road by 2021, automakers and tech companies make a new dynamic duo

A connected car is able, by means of connectivity with the Internet and usually also with a wireless local area network

(LAN), to optimise its own operation and maintenance even as it enhances the driver and passenger experience. A report from BI Intelligence, the research service of *Business Insider* (New York), takes note of a significant uptick in the number of these cars on the road.

According to “The Connected-Car Report: the Transformation of the Automobile,” over the next five to ten years Internet integration will in fact revolutionise the auto industry, pacing the development of fully autonomous vehicles and changing the car ownership model. In the BI view, the market position of the connected car today is similar to that of the smartphone in 2010: ready to explode.

Here are the three key takeaways from the report:

- ④ While technological, regulatory and other hurdles to adoption remain, the fully autonomous car – one that can drive itself from point A to point B with little or no human interaction – is only a few years away
- ④ With more automakers all the time preparing to satisfy consumers who are embracing the connected car faster than expected, over 380 million connected cars will be on the road by 2021
- ④ Given the eagerness of automakers to “connect up” the vehicles they sell, tech companies will be playing a major role in the automotive market. A big question, says BI Intelligence, is whether tech companies – presumably no less alert to opportunity than carmakers – may not eventually turn to car manufacture themselves.

Elsewhere in automotive . . .

- ④ Automakers including Germany’s Volkswagen and Japan’s Nissan are striving to raise their market share in India’s passenger car market, forecast to be the third-largest globally by 2020. But General Motors appears to be rethinking its strategy for the price-sensitive Indian market, where the USA carmaker commands a less than one per cent share. In July, GM officials said that the company is re-evaluating a \$1 billion investment in India, announced in 2015, and has put on hold plans for a new car platform there.

The new platform would have helped GM to be competitive in the Indian market, whose buyers favour low-cost cars and which is dominated by the domestic company Maruti Suzuki India and South Korea’s Hyundai Motor. Jack Uppal, vice president of marketing at GM India, told *Reuters* (24th July) that, instead of launching the Spin MPV, GM will focus on bringing a compact SUV to India soon. But he added that GM has not altogether abandoned plans to launch small cars there.

- ④ Computer security experts at the University of Birmingham in England have published a paper highlighting the vulnerability of remote keyless automotive entry systems. The research team, led by computer scientist Flavio Garcia, said, “Our findings affect millions of vehicles worldwide and could explain unsolved insurance cases of theft from allegedly locked vehicles.”

As reported by Stephanie Mlot in *PCMag* (12th August), the keyless feature – found in most Volkswagen

Group vehicles manufactured since 1995 – relies on a few global master keys. Using cheap, off-the-shelf equipment, eavesdropper-hackers within 20 yards can simply clone a driver’s key fob; and, wrote Ms Mlot, “Voila! – they gain unauthorised access to the car.”

Insecure vehicles include Audi, VW, Seat and Škoda models sold over the past two decades. But a VW spokesman told *Reuters* that the current Golf, Tiguan, Touran and Passat models are safe, and that the Birmingham findings will serve to further improve the company’s security technology.

Meanwhile, owners of at-risk vehicles were advised to be wary of unlocking their car doors remotely. Leaving no physical traces, the wireless hack poses “a severe threat in practice,” the researchers warned.

Steel

China’s record exports of steel prompt countermeasures, but not everyone is convinced of the efficacy of duties and tariffs

“From the USA to India, regulators around the world are pushing harder than ever to shield local steel industries from foreign competition.”

Citing data from the Russian Steel Association, which counts both preliminary and permanent trade-restrictive measures, *Bloomberg News* reporters Yuliya Fedorinova and Thomas Biesheuvel noted that nations imposed 85 new duties and other taxes on steel imports in the first half of this year. That is 49 per cent more than at the same point a year earlier. (“Steel Protectionism Goes Global as Few Can Survive Low Price,” 11th August)

The trade frictions are, of course, largely a response to record exports from China, which accounts for about half of the world’s supplies of steel and shows scant sign of curbing its output. Despite its pledge to cut some 150 million tons of steelmaking capacity, China’s production of steel was down just an annualised 0.5 per cent over the first seven months of the year. Output for July was higher than in July 2015, and data from China on 10th August showed that mills there were still churning out steel.

In August, the European Union imposed five-year tariffs as high as 36.1 per cent on Chinese and Russian producers of non-stainless cold rolled steels, upon its finding that imports from the two countries unfairly undercut European manufacturers.

Even so, recently there has been a slight but noticeable shift in emphasis from China’s failure of self-restraint to the perils of overreaction, with Fitch Ratings Ltd senior director Peter Archbold among those analysts warning that the duties pose a risk in the long term. In a broader context, the World Trade Organization in July said that it has seen a “significant increase” in trade-restrictive measures generally. In an online statement the WTO called this “the last thing the global economy needs.”

As Kevin Bai, a Beijing-based analyst with the CRU Group, told *Bloomberg*, more tariffs in developed countries will not hurt Chinese steelmakers because their exports go mainly to Asian countries while they seek new business in Africa and the Middle East. As for Russian producers, according to Kirill Chuyko – a strategist at BCS Global Markets, Moscow’s largest brokerage – low production costs mean they are able to make money despite tariffs because they can reroute shipments to more distant markets.

Telecom

Heavily dependent on their communications systems, USA airlines have found themselves grounded by very minor glitches

“The big computer systems that get airplanes, passengers and baggage to their destinations every day are having a bad summer.”

Annalyn Kurtz, writing in the *New York Times*, easily proved her point. In an update to an on-going midsummer story, she reported that Delta Air Lines was working to reset its operations after a power failure at its Atlanta hub, the world’s busiest, led to cancelled flights and delays that left passengers stranded in airports. Around 1,000 of 6,000 Delta flights were scratched, the airline said. Recovery efforts, begun in the morning, continued into the evening, and cancellations were still being posted the following day. (“Delta Malfunction on Land Keeps a Fleet of Planes From the Sky,” 8th August)

As described in the *Times*, the “latest debacle” commenced when the failure of a piece of electrical equipment shut down Delta’s computer systems worldwide, setting off a cascade of paralysing events. A similar scenario had played out at Southwest Airlines three weeks earlier, when a notebook-size router failed at a data centre in Dallas, causing some 2,300 cancelled flights over four days.

Last year, malfunctions in United Airlines computer systems grounded hundreds of flights; and American Airlines experienced delays after a bug in its iPad software meant that pilots did not have accurate airport maps.

In every case the precipitating malfunction seems slight in comparison with the consequences. The Delta culprit was a switchgear, similar to a circuit-breaker installed as a safety measure in a private home. The Southwest electrical breakdown was remedied in only an hour, noted Ms Kurtz, but it took 13 hours to reboot the computer systems. Why, she wondered, were backup systems not equal to the challenge?

“In the case of Delta, whatever occurred was clearly a catastrophic failure, and it is alarming that the backup system didn’t kick in,” Henry Harteveltdt, a travel industry analyst at Atmosphere Research Group, told Ms Kurtz. Delta said that some of its critical operations had failed to switch over to backup systems. Southwest said that its in-place backup system did not trigger, as intended, when the router failed.

As the morning of 8th August wore on, and the effects of the Delta breakdown were being felt in airports nationwide and overseas, the system began slowly to reboot. While the costs to Delta have not yet been published, Southwest has said its malfunction of 20th July will cost the company tens of millions of dollars.

Backup processors need real-time data

Airlines were among the early adopters of information technology (IT), building electronic reservation systems in the 1960s. But according to Bob Offutt, principal of Travel Technology Consulting and former chief architect at Sabre, the world’s largest computer reservations system, their systems have been rebuilt over the years. Given the high volume of transactions, he told the *Times*, the airlines’ data should be backed up continuously.

Mr Offutt said that, while airlines have secondary systems in place – to provide emergency power, for example – their data is backed up not in real time but only a few times a day. Thus, even after a malfunctioning router or power source is fixed, it can take hours to bring the systems back online. Noting that the systems are very complicated, he made an important distinction: “It may be that they have a backup processor but not backup data.”

Ms Kurtz pointed out that major airlines primarily use third-party processors like Sabre, Amadeus and Travelport to distribute their real-time flight data to travel booking sites such as Expedia and Travelocity.

The airlines also, she wrote, contract with these services to run their internal reservations systems as well as their departure control systems for processing last-minute bookings, seat assignments and boarding.

Delta, for instance, uses an in-house system to process passenger services and flight operations, but the system infrastructure is run by Travelport at its Atlanta data centre.

Southwest uses Sabre for its domestic reservations and Amadeus for its international bookings, although it is in the process of migrating everything to the Amadeus system.

🌐 Pointing out that each passenger on each flight represents a separate log and multiple transactions (seat assignment, meal preference, child requirements, frequent-flier number, etc), Andrea Huguely, a spokeswoman for Sabre, supplied context for these responsibilities. Every minute, she told the *Times*, the Sabre system processes 164,000 requests and some \$250,000 worth of travel spending.

🌐 Ms Kurtz wrote, “Airlines, of course, are only one of many industries with complex systems whose failure can be catastrophic.” Many companies, like banks and large financial traders, manage the risk by copying data to service areas powered by different data centres, so that they can continue working in the event of a malfunction.

But to thousands of stranded travellers who on 8th August could do nothing but cool their heels for hours in Delta boarding lounges, the airlines industry is the one needing most urgently to solve its communications issues.

After reaching just six metro areas in four years, Google Fiber is considering wireless for its Internet customers

“Google parent Alphabet Inc is rethinking its high-speed Internet business after initial rollouts proved more expensive and time consuming than anticipated – a stark contrast to the fanfare that greeted its launch six years ago.”

The name Google is more usually associated with overachievement than with miscalculation. But Jack Nicas, of the *Wall Street Journal's* San Francisco bureau, was calling attention to the outlay, by Alphabet's Internet provider Google Fiber, of hundreds of millions of dollars to lay fibre optic cable in a handful of USA cities to offer connections roughly 30 times faster than the national average. Now, however, a course change is in progress.

Alphabet has suspended fibre projects in San Jose, California, and Portland, Oregon, and is trying to cut costs and accelerate its expansion elsewhere by leasing existing fibre or asking cities or power companies to build the networks.

People familiar with the company's plans told the *WSJ* that Alphabet hopes to use wireless technology, rather than cable, to connect homes in metro areas including Los Angeles, Chicago and Dallas. (“Google's High-Speed Web Plans Hit Snags,” 15th August)

Mr Nicas supplied context for the turnabout. Google announced its fibre project in 2010, when telephone companies were perceived as moving slowly to roll out faster broadband service. More than a thousand cities signed on, and service was begun in the Kansas City area in November 2012.

Expectations ran high. But to this point Google Fiber has reached just six metro areas, providing an example of the challenges facing digital companies seeking to move into more traditional lines of business.

“The delays in Alphabet's fibre plans follow stumbles in other arenas outside the company's core Internet search and advertising business,” wrote Mr Nicas. Early last year, privacy concerns moved Alphabet (Mountain View, California) to stop selling the first version of its Glass wearable computer. More recently, it dissolved a robotics team it had put together from six separate acquisitions.

Google Fiber has begun construction in five new metro areas and announced plans to reach another dozen cities in the next few years. Now, as noted by the *WSJ*, those dozen cities will be the test bed for a push into wireless technology.

Dismissing security concerns, the USA reassigns an important telephone-numbers management contract to an overseas company

Over the protests of critics who claim that the selection of a non-USA company poses national security risks, in July the

Federal Communications Commission made its choice of a new clearing house for routing billions of mobile telephone calls and text messages across the United States.

The FCC is giving the New Jersey-based Telcordia subsidiary of Ericsson AB, the Swedish technology giant, the very big job of operating a sprawling national system to track and route wireless calls and texts among hundreds of service providers.

The routing system was initiated in the 1990s to enable individual and business subscribers to keep their mobile telephone numbers when they switch carriers. But intelligence and law enforcement agencies quickly discovered its usefulness for tracking and tracing phone numbers in investigations.

Some current and former intelligence officials expressed concern that awarding the new contract to a foreign-owned company could raise the system's vulnerability to cyberattack.

The contract to operate the system, worth up to \$1 billion over seven years, had been held since 1997 by a small Virginia company, Neustar.

Over the course of an intense bidding process, with the backing of several large carriers Telcordia apparently convinced the FCC that it could do the work more cheaply than Neustar; this, despite Neustar's vigorous effort to hold on to the assignment, worth more than \$460 million in 2014.

Bryan Koenig of the legal news site *Law360* (14th June) supplied background for the tussle over a new Number Portability Administration Centre, or NPAC: “Telcordia is seeking FCC approval for the...contract, approval that Verizon and others want expedited to end the purported tens of millions of dollars [the] industry loses each month from the delay, but which a coalition of smaller carriers and a policy institute say should be slowed to ensure transparency and avoid a rushed transition that could lead to misdirected and dropped calls.”

Neustar said last year it would facilitate a transition even as it sought to contest the change in the Circuit Court of Washington DC. The company started pressing the FCC for greater transparency in the bidding process after it was revealed in late April that Telcordia had employed a small number of foreign nationals, including one Chinese citizen, as computer coders for early work on its system.

While the FCC did not disqualify Telcordia, it required the company to scrap its extensive work to that point and start over, with outside help only from “vetted USA citizens.”

🌐 FCC officials said they had worked to address the national security concerns raised in the course of the bidding process. After the five-member board of commissioners voted in closed session to give the final go-ahead to Telcordia as the new local number portability administrator, or LNPA, FCC spokesman Mark Wigfield said (21st July), “I can confirm that the plan was voted on and approved.”

Dorothy Fabian
Features Editor

美国总统政治

中国人是否在抢夺美国人的饭碗？ 亦或者，中国工人是否输给了美国工人？

在如火如荼的美国大选中，关于美国工人的问题成为一个热门话题。但总统候选人唐纳德·特朗普的观点却额外引起了人们的关注。在他整个竞选过程中，他始终都坚称，中国正在“偷走”美国制造业工人的饭碗。

在7月21日举行的共和党全国大会中，该党候选人特朗普先生在发言中表示：“灾难性的贸易交易”已对美国工人造成伤害。他还说，美国支持中国发展自由贸易之举，是一个“巨大的错误”。

在此次大会召开期间，美国《纽约时报》的Michael Schuman从北京发来一篇文章，探讨了这种认为中国对美国工人产生恶劣影响的想法。但文章得出了一个与特朗普不同、或者说截然相反的结论。Schuman先生认为，由于本土经济放缓，成本增加，来自外国的竞争日益严峻（包括美国），中国工人正面临失业的危机。（“Is China Stealing Jobs? It May Be Losing Them, Instead,” 7月22日）

Schuman先生的观点简言之就是：中国劳动力市场已经出现了巨大的改变，出口型制造业的处境“越来越难”。咨询公司APCO Worldwide大中华区运营董事长Jim McGregor一针见血地说明了问题。他对《纽约时报》的记者表示：“总统候选人们嚷嚷的都是老问题。”

这一变化的原因显而易见。中国经济的不断发展在很多行业创造了机遇，组装线旁的工作逐渐失去了它的优势，经理们不得不提高工资吸引工人。与此同时，深圳和其它工业中心的地方政府开始稳步增加最低工资标准，以此改善工薪家庭的生活。为此，各大公司开始面临着一个压力：生产更昂贵、附加值更高的产品。

Schuman先生指出，这些因素加在一起，推高了中国工人的工资水平。如今，中国工人的平均工资为424美元，在过去仅仅三年的时间内，就增加了大约29%。而中国的劳动力成本现在也远高于很多其它新兴国家。相比之下，越南工厂的工人工资不及中国工人的一半，孟加拉工人的工资更是低于中国工人的四分之一。

美国制造业开始回归

Schuman先生写道，这就意味着为美国工人提供了更多职位。2015年，Boston Consulting Group面向美国大型制造企业开展了一项调查，近一半的受访者预计在未来的五年中，他们在美国雇佣的制造业工人数量将会增加。

在去年BCG进行的另外一项独立调查中，24%的受访者表示，他们正主动将工厂迁出中国，或正计划在未来2年中这么做。而在2012年，这个比例只有10%。

BCG高级合伙人Hal Sirkin对《纽约时报》表示：“这从经济的角度来看是合理的。美国目前正处于一个有利位置。”

☛ Schuman 发现，从中国抢夺工作的不只是美国。成本增加，让众多各行业的公司纷纷选择迁址到其它国家。他提到了美国商务部最近在中国进行的调查，其中四分之一的受访者表示，他们已经或计划将其运营部门迁出中国。最大的原因是什么？成本上涨。在这四分之一的受访者中，近一半目前正在迁往亚洲其它发展国家。但本次调查的一个数据很醒目 - 这也是野心勃勃的候选人特朗普应该注意到的一点：其中近40%的企业正迁往美国、加拿大和墨西哥，即北美自由贸易协定中的三个成员国，但这个协定却被特朗普先生称为美国历史上最失败的交易。

汽车业

一家美国公司被卷入安全气囊相关事故之中

今年八月，ARC Automotive公司（田纳西州诺克斯维尔）开始接受严格的审查，因为七月在加拿大发生一起车祸，司机死亡可能与该公司生产的安全气囊破裂有关。美国国家交通安全局（NTSA）的主管当局目前正在调查ARC公司生产的混合气体安全气囊，其所使用的除了空气，还有易爆硝酸钠混合物。在此之前，已经开始对日本安全气囊制造商Takata的易爆安全气囊进行了大规模召回。这次致命的安全气囊破裂时间，预计也将召回数百辆汽车。

加拿大交通部（加拿大汽车安全监管机构）的数据显示，7月8日，一辆2009年现代伊兰特在纽芬兰发生一起低速碰撞事故，但司机侧安全气囊的充气系统却发生爆炸，导致司机死亡。NTSA已对ARC生产的至少800万个安全气囊充气系统进行调查。这些气囊已使用于克莱斯勒、通用、起亚和现代2004年之前的车型中。但NTSA表示，在正式的新调查中，调查范围将超过上述充气系统的数量。

加拿大这起死亡事故，是自Takata问题以来，因其它品牌安全气囊破裂首次导致的人身伤亡事件。NTSA在八月四号表示，ARC和Takata的安全气囊充气系统“设计迥异”，致命的ARC破裂问题可能由其它原因造成。

截止2021年，全球预计将有3.8亿汽车实现互联，汽车制造商和高科技公司将进行新一轮“双人舞”

所谓互联汽车，即通过因特网以及常见的局域网（LAN）连接形式，优化其汽车的运转和维护，甚至还可以优化司机和乘客的驾乘体验。BI Intelligence是纽约Business Insider公司的研究服务部门。通过该部门的一份报告，我们可以了解道路上互联汽车数量激增的情况。

这份名为《互联汽车报告：汽车行业的转型》的报告认为，在未来的5-10年中，网络智能将切实地引发汽车工业革命，加快全自动汽车的发展，改变汽车所有模式。BI认为，如今互联汽车的市场地位类似于2010年的智能手机：处于蓄势爆发之势。

以下为报告中的三个主要观点：

- ☛ 尽管还存在技术、管理和其它方面的障碍，但全自动汽车（即需要少量或完全不需要人类介入、自行从A点驶至B点）实现上路只需要几年的时间。
- ☛ 消费者接受互联汽车的速度比预想更快，越来越多的汽车制造商随时准备满足这些消费者的需求。因此，在2021年前，道路上的互联汽车数量将超过3.8亿。
- ☛ 面对汽车制造商希望其出售汽车“互联”的迫切愿望，高科技公司也将在汽车市场中扮演重要角色。但BI Intelligence也提出了一个严峻的问题：如果高科技公司所面临的机遇与汽车制造商相同，那么他们是否最终也会成为汽车制造企业呢？

汽车业的其它发展动态...

- ☛ 包括德国大众和日本尼桑在内的汽车制造商，正全力提高它们在印度乘用车市场中的份额，预计在2020年，印度汽车占有量将在全球排名第三。美国汽车品牌目前在印度的占有量不及1%。但对于在印度打价格战的发展策略，通用汽车公司很显然开始反思。七月，通用的官员表示，公司目前正在重新评估2015年宣布的一项10亿美元印度投资，已经暂停了在该国建设新汽车制造平台的计划。这个平台建成后，可以提高GM在印度市场的竞争力。印度的汽车消费者偏爱低价汽车，

主要来自本土公司Maruti Suzuki India和韩国现代。通用印度分公司的副董事长Jack Uppal在7月24日对路透社说：公司决定不再推进Spin MPV车型的生产计划，转而着重于尽快在印度推出一种紧凑型SUV。但他补充道，GM并未完全放弃在印度推出小型汽车的计划。

英国伯明翰大学的计算机安全专家发表了一份论文，探讨了汽车远程无钥匙进入系统的隐患。这个由计算机科学家 Flavio Garcia带领的团队认为：“我们的发现涉及到全球数百万辆汽车。它可以解释，为什么安装此类车锁的汽车会频频被盗而无法破案。”正如Stephanie Mlot在PCMag (8月12日)发表的报告所述：1995年起，大众集团在其生产的大部分汽车中开始配备无钥匙功能。该功能只需几个总控按键即可操作。但Mlot女士在文中表示：使用目前市场中销售的廉价设备，黑客窃贼就可以在20码的范围内，轻松地克隆司机的遥控钥匙，随意进入汽车内。存在安全隐患的汽车包括：奥迪、大众、西雅特和斯柯达在过去20年中销售的车型。但大众发言人对路透社表示，目前，该公司生产的高尔夫、途观、途安和帕萨特车型都非常安全，伯明翰大学的研究将帮助公司进一步改进安全技术。与此同时，对于存在安全隐患的车型而言，建议车主在远程解锁汽车时要提高警惕。作者还提醒到：不要留下物理痕迹。无线入侵是“现实生活中的严重威胁”。

钢铁业

中国钢铁出口创纪录引发贸易报复措施，但税收和关税的效果也引发了质疑

彭博新闻社的记者Yuliya Fedorinova和Thomas Biesheuvel在其文章中援引了俄罗斯钢铁协会的数据，该数据统计了各项初步和永久性贸易限制措施。这两位记者写道：全球各国的监管部门，包括美国和印度，目前正在以远超以往的力度，保护本土钢铁行业不受外国竞争的影响。他们指出，在今年上半年，各国针对进口钢铁颁布了85项新关税和其它税收项目。与去年同期相比，这个数字增加了49%。（“Steel Protectionism Goes Global as Few Can Survive Low Price”，8月11日）

当然了，这样的贸易摩擦也是对中国创纪录钢铁出口所作出的反应。中国的钢铁供应在全球需求中占据了一半的份额，而且没有减产的迹象。尽管中国表示将减少1.5亿吨的钢铁产能，但在今年头七个月中，实际产量仅下降了区区0.5个百分点。七月的产量高于2015年七月的水平。8月10日来自中国的数据显示，钢铁厂的产量仍在加速。今年八月，欧盟由于发现中国和俄罗斯以不公平价格战打压欧洲制造商，因此宣布将在未来五年中，对这两个国家的非不锈钢冷钢材征收高达36.1%的关税。

目前世界普遍认为中国未能进行自我约束，但另外一种不同的声音却值得我们关注。该观点指出了对中国做出过度反应的危害。惠誉评级机构的高级总裁Peter Archbold就是持这一观点的分析人士之一，他警告道，这样的关税会成为一个长期的风险。世贸组织七月表示，从一个更广义的背景而言，全球的贸易限制措施普遍“大幅增加”。世贸在一份网络声明中称这是“全球经济需求最不愿看到的情况”。

电信业

美国航空业严重依赖其自有通讯系统，稍有差错便动弹不得

Annalyn Kurtz在《纽约时报》中发表的文章指出：对于每天指挥着飞机、乘客和行李去往目的地的大型计算机系统而言，今年

的夏天不好过。而这一观点的证据就摆在眼前。她在一份夏季中期系列报告的最新文章中写道：达美航空的亚特兰大枢纽出现电力故障后，该公司正在进行操作系统重置，导致航班取消和延误，乘客滞留机场。该公司表示，大约有1000到6000架达美飞机受到影响。修复工作于今早开始，一直持续到夜间。第二天仍有很多航班处于取消状态（Delta Malfunction on Land Keeps a Fleet of Planes from the Sky, 8月8日）。

正如《纽约时报》中所述，这次“最新发生的灾难”原因在于：一个电子设备出现故障，导致达美在全球的电脑系统崩溃，随后引发了一连串影响航班的事件。三个星期前，西北航空业发生了同样的问题。达拉斯数据中心一个笔记本大小的路由器出现故障，导致四天内2300架航班取消。去年，联合航空公司的电脑系统故障引发数百架飞机停运，美国航空也在iPad软件出现缺陷后停飞航班，因为这个缺陷会导致飞行员无法获得准确的机场地图。

上述的这些事故中，看上去微不足道的故障却引发了如此严重的后果。达美事故的罪魁祸首是一个电子开关，类似于家庭中作为安全措施安装的断路器。Kurtz指出：西南航空的电力中断问题虽然只用了一个小时即告修复，但电脑系统的重启却用了13个小时。为什么备用系统无法应对这样的问题？她对此表示不解。

Atmosphere Research Group的旅行行业分析师Henry Harteveltdt对Kurtz说：“就达美的事故而言，无论发生什么问题，很显然都会产生严重后果。而备用系统并未起到作用，这一点令人担忧。”达美方面的解释是：公司系统的一些重要功能未能由备用系统接手。西南航空则表示：路由器失灵后，已就位的备用系统未能预期启动。8月8日的上午，时间一点点流逝，达美的系统开始缓慢重启，但在美国国内和国际的很多机场，仍可以感受到达美事故带来的影响。达美目前尚未公布本次事故的损失，但西南航空已宣布，7月20日的系统故障对公司造成的损失已经达到数千万美元。

备用处理器需要实时数据

航空业是率先使用信息技术（IT）的行业之一，早在20世纪60年代，就开始开发电子预定系统。Bob Offutt是Travel Technology Consulting的负责人，曾任世界最大电脑预订系统Sabre公司的总建筑师。他说：这些航空公司的系统在多年来已经进行了重建。他对《纽约时代》说，鉴于如此巨大的交易量，航空公司应该定期备份数据。

Offutt先生还表示，航空公司都拥有备用系统，用来提供紧急电力供应等功能。但这些系统的数据并未进行实时备份，只是每天进行几次备份而已。因此，即使失灵的路由器被修复，或者重新获得电力供应，仍然需要数小时才能让系统重新上线。他表示，这些系统都非常复杂。而且他还给出了一个重要的原因：“他们确实拥有备份处理期，但却没有备份数据。”

Kurtz显示指出，这些大型航空公司主要使用Sabre、Amadeus和Travelport等第三方公司的处理器，向Expedia和Travelocity等旅行预订网站分配航空公司的实时航空数据。她写道：航空公司还与这些预订服务商签有协议，运行这些网站的内部预定系统和离港控制系统，用来处理截止时间前的预定、座位分配和登机。比如，达美使用公司内部系统处理乘客服务和航班操作，但系统的基础设施却由Travelport在亚特兰大数据中心运行。西南航空使用Sabre进行国内机票预定，使用Amadeus进行国际机票预定。但西南航空目前正在将所有数据都迁移到Amadeus系统中。

Sabre的发言人Andrea Huguely介绍了这些责任的具体内容。她对《纽约时报》说：每架航班上的每一名乘客，都需要一份独立的日志，而且与多个事务相关（座位分配、餐饮偏好、儿童需求、常飞旅客编号等）。Sabre系统每分钟需要处理164,000份请求，旅行费用价值超过25万美元。

Dorothy Fabian - 特刊编辑

A New Flat Indoor/ Outdoor Drop Cable for FTTH Applications

By Qin Yu, Fei Qian, Liming Chen, Qingqing Qi, Shiyang Wang, Huiping Shi, Cheng Liu
FiberHome Telecommunication Technologies Co Ltd

Abstract

This paper presents a new flat indoor/outdoor drop cable for FTTH application. The flat cable is all dielectric and, with an oblong cross section, could be applied to harsh environments, with large bending stress, lateral pressure or wind load.

Therefore, the flat cable is conducive to the realisation of large-span aerial installation and is particularly suitable for the indoor and outdoor drop application in the FTTH access network.

In this paper, three different combinations of materials are explored to verify the processing performance and product properties of the cable. That is, different combinations of sub-unit material and outer sheath material.

Eventually, it was found that the two kinds of the cable structure could totally satisfy the users' requirements and have excellent transmission, mechanical and flame retardant characteristics, and could be applied in the FTTH applications.

1 Introduction

In order to realise the tri-networks integration as soon as possible, operators in China continue to promote the large-scale FTTH network construction.

FTTH networks can not only provide higher bandwidth, but also improve the anti-interference performance of the access network and integrated access capacity of service.

To meet the different demands of users, there are many types of FTTH optical cable for unceasing requirements from users, such as different demands of construction costs, convenience and rapid cable laying, and the reliability of the optical fibre communication lines.

Therefore, it is very important to choose an appropriate cable for different drop applications.

2 Common drop cables

In general, drop cables are small count fibres with special designs, and most drop cables are of self-supported structure with tight buffer fibres.

The most common shapes of drop cables are figure-8 bow-type cable, round cable, or some other special drop cables, such as low friction bow-type cable and invisible micro cable and so on.

In the present drop applications, the figure-8 bow-type cable and round cable are used widely.

As new drop cables, low friction bow-type cable and invisible micro cable were gradually accepted by more and more users.

Although drop cables become ever more diverse, different kinds of drop cables usually have the following characteristics:

- Diversified and rational structure, able to satisfy the users' special requirements
- Smaller size and can save laying space
- Easy to branch and save construction time and money
- Easy to manufacture and can keep the continuity and consistency of processing
- Easy to install, maintain and replace

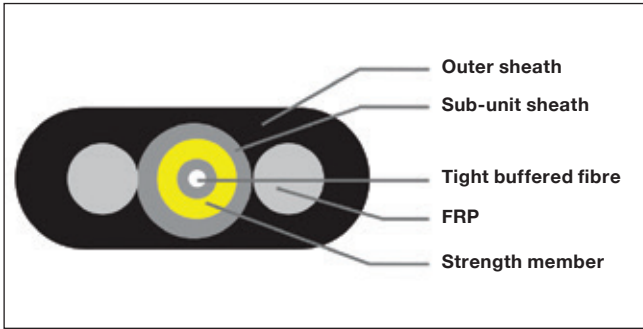
3 Structure of the flat cable

3.1 General structure of the flat cable

The flat cable developed for this paper was to satisfy the customers' requirements for indoor and outdoor drop applications with both aerial and duct construction.

The cable should have good directional bending properties and excellent ability to resist lateral pressure.

Moreover, the flat cable with oblong sectional profile should effectively reduce the destructiveness induced by wind load, and be adaptable to various harsh construction conditions and a complex environment.



○ **Picture 1:** The cross section of the flat cable

Given the specific application environment, the flat cable was designed with an outer sheath, sub-unit sheath, tight buffered fibre, FRP and strength member. See *Picture 1*.

3.2 Different combinations of materials of the flat cable

The flat cable was a tight-structure cable, but after stripping 20-30cm of the outer sheath, the sub-unit cable could not adhere to the outer sheath.

Moreover, the flat cable must meet the requirements of flame retardancy. Therefore, the outer sheath and sub-unit materials both have the flame retardant property and high temperature resistance property.

Taking the users' actual needs and the application environment of the cable into consideration, three different combinations of materials of the flat cable were designed to verify the processing performance and the overall performance of the cable.

That is, three different combinations of sub-unit material and outer sheath material. The first combination was HDPE (high-density polyethylene) outer sheath material and PVC (polyvinyl chloride) sub-unit material.

The second combination was LSZH (low smoke zero halogen) outer sheath material and PVC sub-unit material. And the last combination was LSZH outer sheath material and LSZH sub-unit material.

○ **Table 1:** Overview of requirements of the flat cable

Test	Specified value	Acceptance criteria (1,550nm)
Attenuation of cable IEC 60793-1-40	1,310nm 1,550nm	$\alpha \leq 0.4\text{dB/km}$ $\alpha \leq 0.3\text{dB/km}$
Tensile IES 60794-1-2-E1	1,350N for 1 min	$\Delta\alpha \leq 0.1\text{dB/km}$, fibre strain $\leq 0.6\%$, No damage to cable outer sheath
Crush according to IEC 60794-1-2 E3	500N/10cm for 1 min	$\Delta\alpha \leq 0.1\text{dB/km}$, No damage to cable outer sheath
Water penetration IEC 60794-1-22 F5	3m sample, 1m depth of water for 24h	No penetration
Temperature cycling IEC 60794-1-22 F1	-20°C/+60°C, two cycles	$\Delta\alpha \leq 0.1\text{dB}$
Vertical flame propagation for single sample IEC 60332-1-2	600mm sub-unit sample, 60s flame application	The distance between the lower edge of the top support and the onset of charring is greater than 50mm

After the cable structure was set, the mould was designed according to the materials behaviour and the processing parameters adjusted continually to settle various problems that appeared during the cable processing.

This then underwent repeated processing verification, and it was found that the first and the second designs of the cable could satisfy the stripping requirements. That is to say, the flat cable with HDPE outer sheath and PVC sub-unit, or with LSZH outer sheath and PVC sub-unit could both assure that the sub-unit cable did not adhere to the outer sheath after 20-30cm of the outer sheath was stripped.

For the last design, the LSZH outer sheath materials and the LSZH sub-unit materials easily adhered to each other.

Although this could produce a small amount of sample to meet the stripping requirements, the continuity and consistency of processing for the cable could not be guaranteed, so it was not recommended to adopt this structure.

4 Main properties of flat cable

4.1 Performance requirements

All specifications of the flat cable are determined by the installation and the usage of the cable.

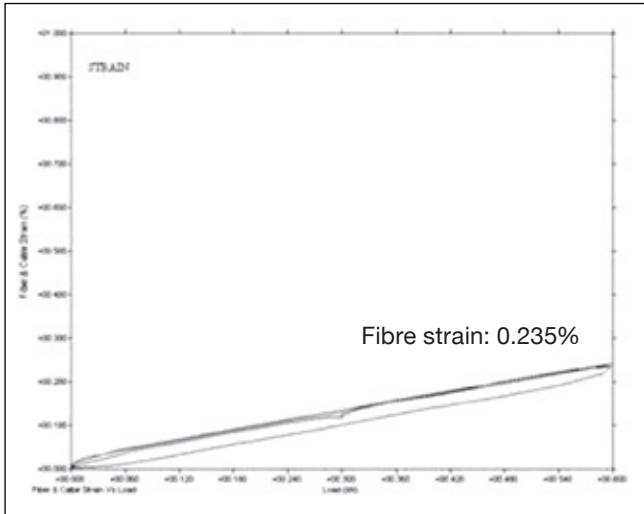
Table 1 below shows an overview of the requirements of the cable. After the continuity and consistency of processing for the flat cable, severe measurement to the properties of the two qualified cables according to *Table 1* were conducted.

In the following sections, all the tests and results are described.

4.2 Test results

4.2.1 Transmission property

The transmission property of the cable was measured by an OTDR (optical time domain reflectometer) according to IEC 60793-1-40.



○ **Figure 1:** Tensile performance for the cable



○ **Figure 2:** The anchor clamp used to fix cable

After testing, all the attenuation values of the flat cable with two different structures were below the limits, that is, the attenuation of the flat cable was no more than 0.4dB/km at 1,310nm, and no more than 0.3dB/km at 1,550nm.

4.2.2 Mechanical property

The following mechanical tests were carried out according to the IEC 60794-1-2 and IEC 60794-1-22 standards in order to make sure that all the parameters were according to the specification and fully met the client's requirements and needs.

A main series of tensile and crush tests had been performed and the relevant results are listed in *Figures 1 and 4*.

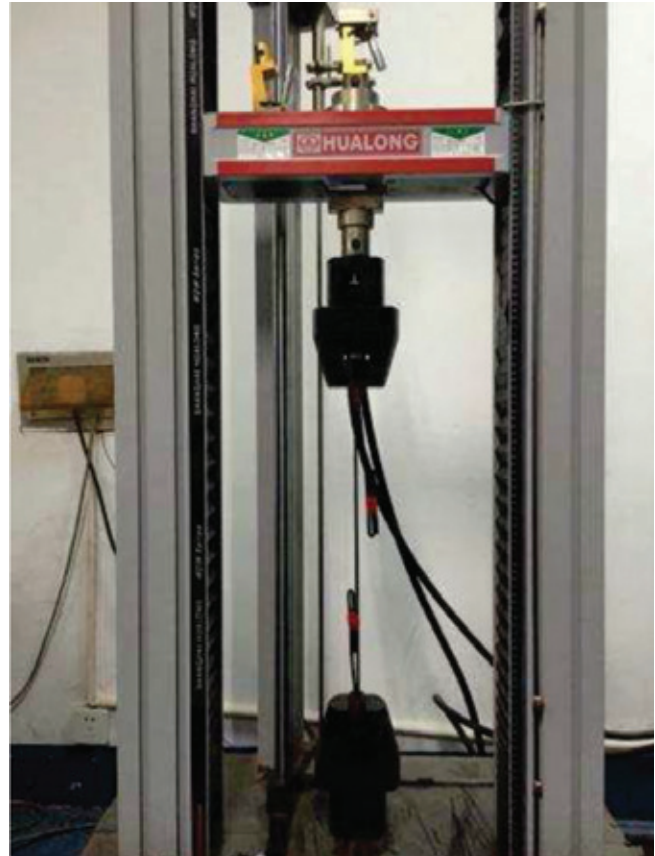
4.2.2.1 Tensile test

The client's requirements for tensile performance were a maximum fibre strain of 0.6 per cent and maximum attenuation increase of 0.1dB for a requested 1,350N load dwell for 1 min. Furthermore, there should be no damage to the cable's outer sheath.

The test result showed that the maximum fibre strain was 0.235 per cent, as shown in *Figure 1*. In addition, it was also found that the maximum short term additional attenuation was only 0.005dB and the maximum residual additional attenuation was just 0.003dB.

In carrying out the tensile limit test of the cable, a special anchor clamp to fix the cable, as shown in *Figure 2*, was used.

The cable was loaded on the tensile testing machine and force applied until breakage took place, as shown in *Figure 3*.



○ **Figure 3:** The tensile limit test of the cable

The breakage appeared as the force increased to 2,300N, and this value far exceeded the users' requirements.

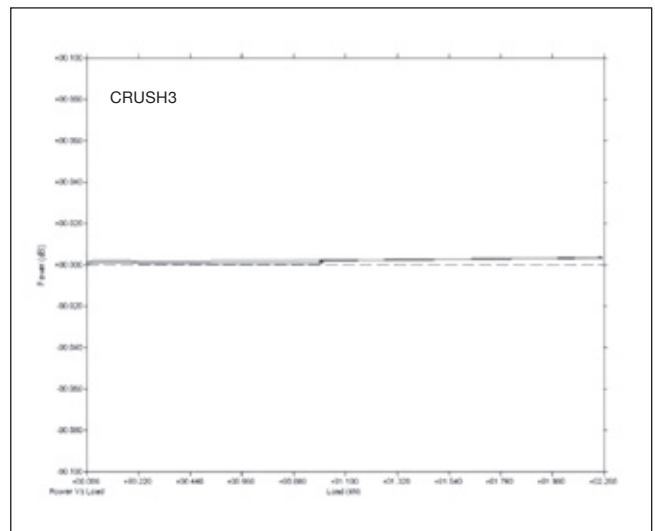
4.2.2.2 Crush test

In this test, the specified crush force was 500N, and the time for imposed pressure was 1 min.

The result obtained for the 500N load is shown in *Figure 4*, where there was almost no change for the attenuation during the test, even at the high load.

The additional attenuation was reversible and there was no damage to the cable outer sheath.

○ **Figure 4:** Crush performance for the cable



4.2.3 Environmental property

Water penetration and temperature cycling test according to IEC 60794-1-22 F5 and IEC 60794-1-22 F1, respectively, were carried out and the results are shown in the following section.

4.2.3.1 Water penetration test

The water penetration test was carried out on a 3m flat cable sample; the cable must sustain 1m height of water for 24 hours.

After this there should be no water penetration. Five samples were cut to verify the water penetration performance of the cable, and all of the five samples passed the test.

4.2.3.2 Temperature cycling test

According to the requirements of the clients, the flat cable went through a temperature cycling test from -20°C to +60°C, and kept 12 hours for -20°C and +60°C, respectively.

The whole temperature cycling test included two cycling processes. When the experiment was over, the additional attenuation of the flat cable was tested, and the results showed that it was much less than 0.1dB which was the acceptance criteria of the client.

4.2.4 Flame retardant test

The flat cable designed was mainly used for the drop application, and the sub-unit of the cable should satisfy flame retardant requirements.

A vertical flame propagation for a single sample according to IEC 60332-1-2 standard was carried out. After the flame application reached 60 seconds, the distance between the lower edge of the top support and the onset of charring was 120mm.

In other words, the riser cable demonstrated in this paper is safe for the drop application.

5 Conclusions

The first and second designs of the flat cable could both satisfy good processing performance, and the test results showed that they also both have excellent transmission, mechanical, environmental and flame retardant properties.

These two kinds of flat cable could apply in the FTTH application and give the operator more choice for the drop application.

6 Acknowledgments

The authors wish to thank the staff of FiberHome Telecommunication Technologies Co Ltd for their support.

Special thanks to the IWCS staff for the articles in this year's publication.

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全新应用于FTTH之扁平室内/室外分支电缆

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摘要

本文展示一种全新应用于FTTH之扁平室内/室外分支电缆。该扁平电缆为具有椭圆横断面的全电缆介质，可广泛应用于各种恶劣环境，如强弯应力、侧向压力及风力载荷。

本文使用三种不同材料组合以核实该电缆的处理性能及产品性质。也即不同子单元材料及外护套材料组合。最终我们发现两种电缆结构可以完全满足用户需求且具卓越传输、机械及阻燃特征，可用于FTTH应用。

1 简介

为尽快实现三网合一，中国运营商一直不断加强大规模FTTH网络建设。FTTH网络不仅可以提供高带宽，还可提升接入网络的抗干扰能力及该服务的整合存取能力。为满足用户的各种不同需求，市面上有很多不同种满足用户不同需求的FTTH电缆，不同需求如不同建设成本、便利度及快速铺装及光纤通信可靠性。因此为不同分支应用选择合适电缆非常重要。

2 普通分支电缆

一般来讲，分支电缆为特殊设计小计数纤维，多数分支电缆都有紧套纤维的自支撑结构。最常见分支电缆形状如图8所示弓形电缆、圆形电缆、或其他特殊分支电缆如低摩擦弓形电缆及隐形微电缆等。

图8所示弓形电缆及圆形电缆在当代分支应用中广泛应用。而新分支电缆如低摩擦弓形电缆及隐形微电缆逐步为用户所接受。

虽然分支电缆种类越来越多，但不同分支电缆通常都具备下列特征：

- 多样且具结构合理，可满足用户特殊需求
- 尺寸更小且可减少铺装所需空间
- 易分支和节约施工时间及资金
- 易生产且可保证加工连续性和一致性
- 易安装、维护及更换

3 扁平电缆结构

3.1 扁平电缆一般结构

本文所述扁平电缆是为满足客户可应用于空中或导管施工之室内及室外分支应用需求而开发。该电缆应有较强弯应力并有较强抗侧压力。同时，拥有椭圆横切面的该电缆应具较强风力载荷，并可适用不同恶劣施工环境及复杂环境。

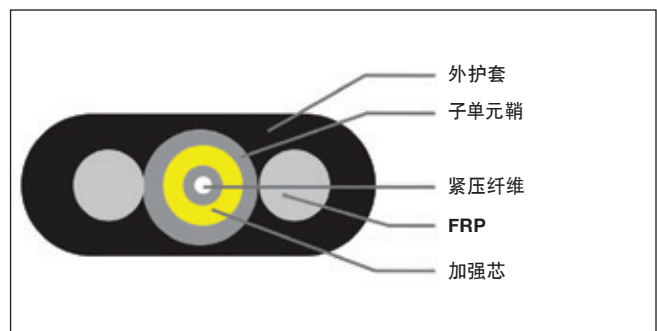


图1: 扁平电缆截面图

由于具体应用环境不同，该扁平电缆具外护套、子单元鞘、紧压纤维、FRP及强力构件。如图1所示。

3.2 该扁平电缆的不同材料组合

该扁平电缆为紧包结构电缆，但在剥开外护套20-30cm后，单元电缆不再能粘附于外护套。同时，该扁平电缆须满足阻燃要求。因此，该外护套及单元材料须具阻燃及抗高温属性。

考虑到用户实际需求及电缆应用环境，我们为电缆设计了三种不同组合材料组合以核实该电缆处理性能及综合性能。也即，三种不同子单元材料及外护套材料组合。第一种组合为HDPE（高密度聚乙烯）外护套材料和PVC（聚氯乙烯）子单元材料。而最后一种组合为LSZH外护套材料及LSZH子单元材料。

当确定电缆结构后，我们根据不断调整材料特性及加工参数以解决电缆加工过程中出现的各种问题。经过重复加工核实后，我们发现第一及第二种电缆设计可满足剥脱要求。

也即，有HDPE外护套及PVC单元，或有LSZH外护套及PVC单元的扁平电缆都可保证在剥脱外护套20-30cm后单元电缆不会粘附于外护套。

而最后一种设计，LSZH外护套及LSZH单元材料容易互相粘附。虽然部分样本可以满足剥脱要求，但电缆生产连续性及其一致性得不到保证，因此不推荐使用该种结构。

4 扁平电缆的主要性能

4.1 性能要求

该扁平光缆所有规格由电缆安装及使用确定。表1总结了该电缆的各项需求。在满足加工该电缆的连续性及其一致性后，根

据表1所列各项需求我们对两个适用电缆进行了严格的性能测试。以下为所有测试及结果。

4.2 测试结果

4.2.1 传输性能

该电缆传输性能由根据IEC60793-1-40的OTDR（光时域反射计）测试。两种不同结构电缆衰减率都满足要求，也即，该扁平电缆在1,310nm时衰减不超过0.4dB/km，且在1,550nm时不超过0.3dB/km。

4.2.2 机械性能

为确保所有参数严格符合规格并满足客户要求和需要，根据IEC 60794-1-2 及IEC 60794-1-22标准，我们进行了下列一系列拉伸及挤压等机械测试。相关结果见图1和图4。

4.2.2.1 拉伸测试

客户对拉伸性能最高纤维张力0.6%且在保压1分钟情况下按要求1,350N负荷下保证最高衰减增加量0.1dB。同时，保证外层外护套无任何损坏。测试结果显示最高纤维张力为0.235%，如图1所示。此外，我们还发现最高短期额外衰减仅为0.005dB，最高残余额外衰减仅为0.003dB。

在进行拉伸极限测试时，我们用特制拉线夹固定电缆，如图2所示。该电缆被固定于拉伸测试机上不断加力，直到电缆断裂，如图3所示。断裂在拉力达到2,300N时发生，该值已远超过用户需求。

4.2.2.2 挤压测试

此测试指定压力为500N，压力维持时间1分钟。500N压力测试结果如图4所示，即使在高压时，电缆都几乎无任何衰减变化。额外衰减可逆且对电缆外套护套毫无损伤。

4.2.3 环境性能

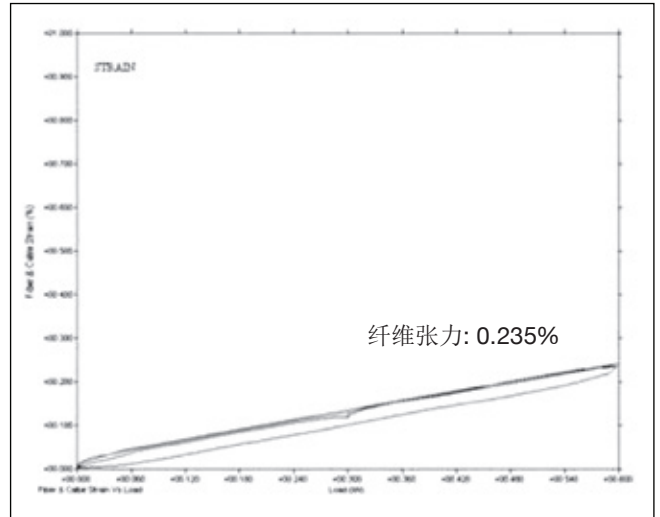
根据IEC 60794-1-22 F5及 IEC 60794-1-22 F1我们分别进行了渗水及温度循环测试，测试结果如下所示。

4.2.3.1 渗水测试

我们使用一根3m扁平电缆样本开展渗水测试，该电缆须在1m深水中持续测试24小时，且须保证无任何渗水。我们切割了五个样品以核实该电缆的防水性能，所有五个样品都通过了测试。

4.2.3.2 温度循环测试

根据客户要求，该扁平电缆须分别经过-20°C 到 +60°C，且



○ 图形1: 电缆拉伸性能



○ 图形2: 固定电缆拉线夹

在 -20°C 到 +60°C中保存12小时温度循环测试。试验结束后测试的该扁平电缆额外衰减远低于客户要求标准的0.1dB。

4.2.4 阻燃测试

该扁平电缆主要设计用于分支应用，其子单元鞘应满足阻燃要求。根据IEC 60332-1-2标准我们开展了针对单一样品的垂直火焰传播。当烧火时间达60秒后，端头支架低端与炭化开始之间距离为120mm。也就是说，本文中展示的吊索电缆符合分支电缆安全要求。

○ 表一: 扁平电缆要求

测试	额定值	接受度标准 (1,550nm)
电缆衰减 IEC 60793-1-40	1,310nm 1,550nm	$\alpha \leq 0.4\text{dB/km}$ $\alpha \leq 0.3\text{dB/km}$
拉伸 IES 60794-1-2-E1	1,350N 持续1分支	$\Delta\alpha \leq 0.1\text{dB/km}$, 纤维张力 $\leq 0.6\%$, 电缆外护套无任何损伤
据IEC 60794-1-2 E3压力测试	500N/10cm持续1分支	$\Delta\alpha \leq 0.1\text{dB/km}$, 电缆外护套无任何损伤
渗水 IEC 60794-1-22 F5	3m样本, 1m深水中持续24小时	无渗透
温度循环 IEC 60794-1-22 F1	-20°C/+60°C, 两个循环	$\Delta\alpha \leq 0.1\text{dB}$
针对单一样本垂直火焰传播 IEC 60332-1-2	600mm子单元鞘样本, 60s火烧	端头支架低端与炭化开始之间距离大于 50mm

5 结论

第一套及第二套扁平电缆设计均可满足良好处理性能，测试结果也显示他们都具有良好传输、机械、环境阻燃特征。这两种扁平电缆均可用于FTTH应用且给运营商的分支电缆铺设提供了新选择。

6 致谢

感谢FiberHome Telecommunication Technologies Co Ltd员工的大力支持。

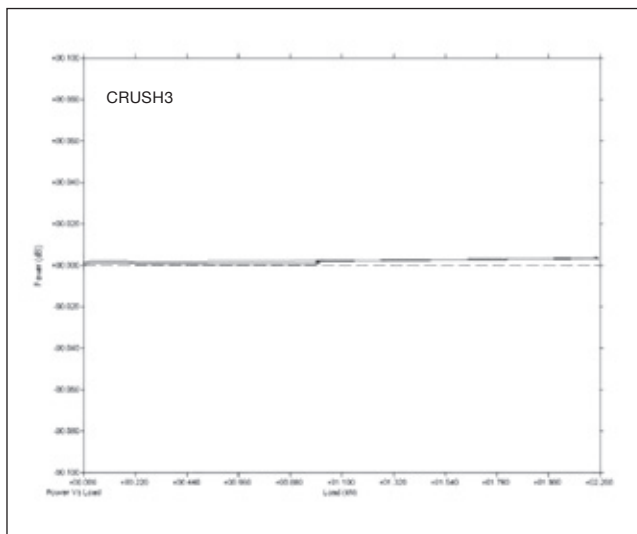
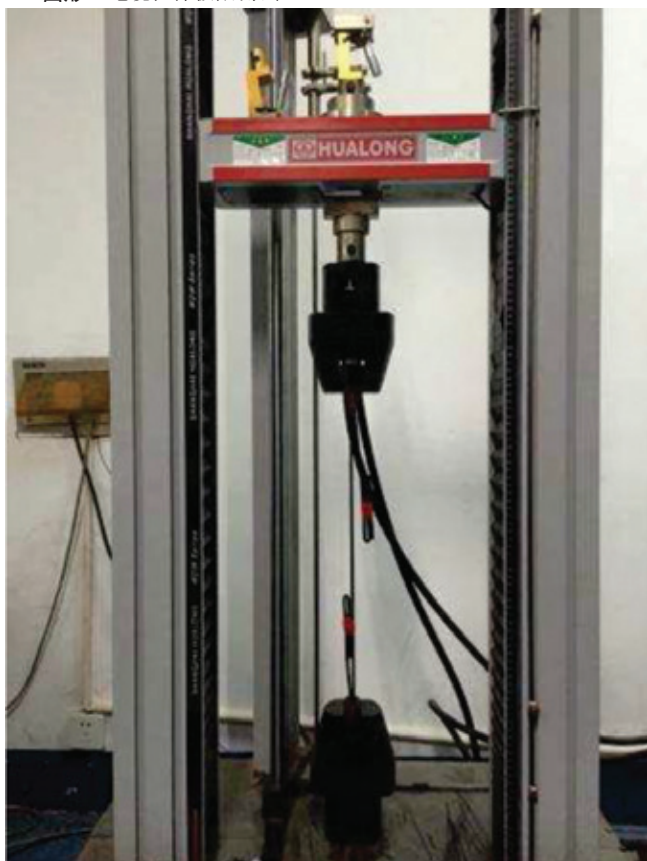
特别感谢IWCS员工在今年发表的文章。

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○ 图形3: 电缆拉伸极限测试



○ 图形4: 电缆挤压测试

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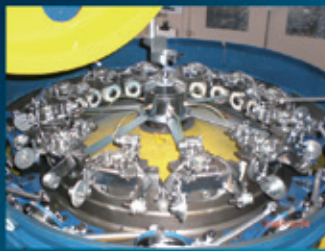
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