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# Wire & Cable ASIA 线缆

November 2013

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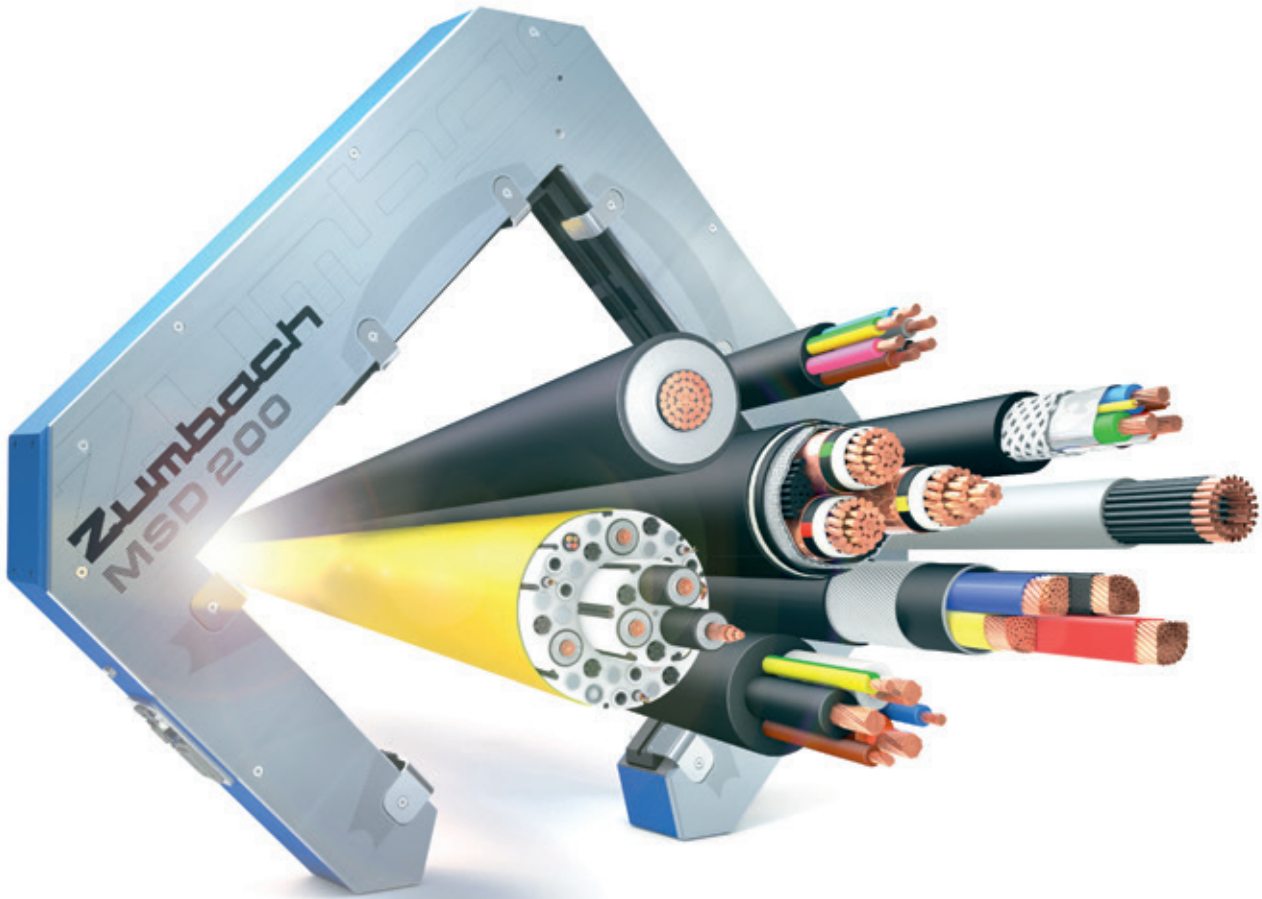
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## Double Twist Stranders



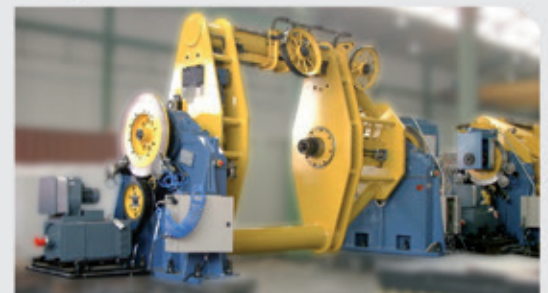
## Rigid Stranders



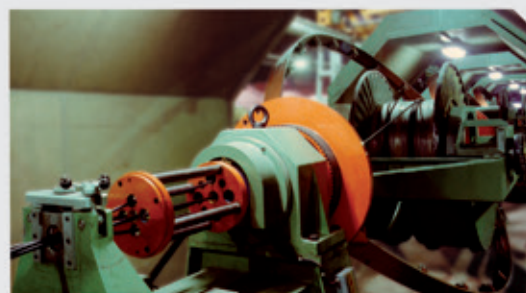
## Drum Twisters



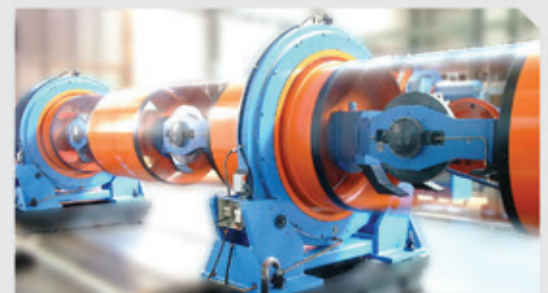
## Single Twist Stranders



## Bow Skip Stranders



## Tubular Stranders



## Planetary Stranders



## SZ Stranders



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Executive Board SIKORA AG

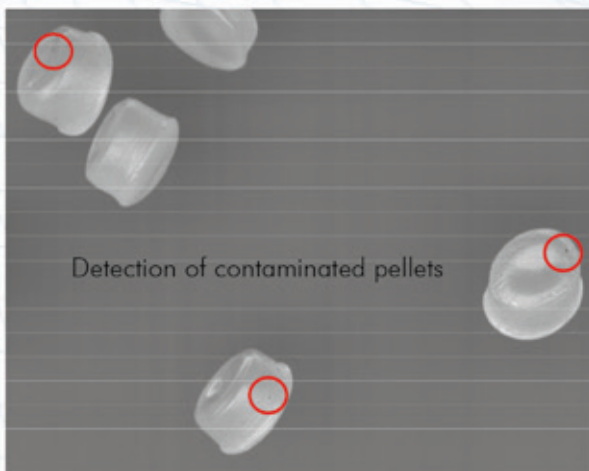


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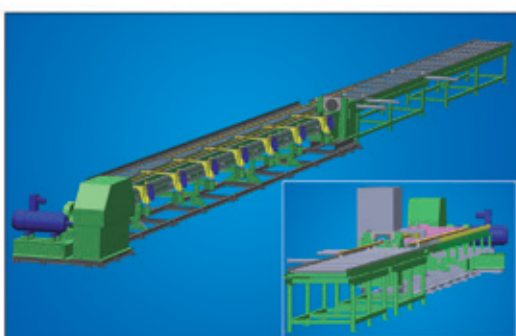


## Revamping and modernisation projects

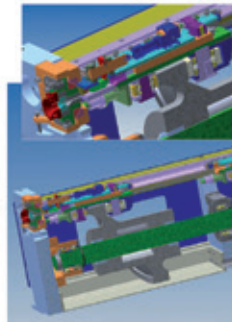
Revamping is a broad term, here at UDM modernisation is closer to a new machine. As an example, we have this drawbench project where at the core is a 25 ton drawbench that has been revamped and extended to 22 metres. In addition to the revamping is the modernisation of the automation and a recirculation system for multiple drawing of the same bars. The finished line is supplied with full CE certification and all safety systems.

### Here are some of the innovations of the line:

- Loading bench with pneumatic positioning arms
- Spherical die stand with optional motorisation and memory
- Drawn bar rotating supports with motorised belts for unloading
- Accumulation roller table with re-feed to loading bench
- New electrical cabinets with automation system
- In-line pointing unit
- New non destructive controls



## Special COMBINED DRAWING LINES

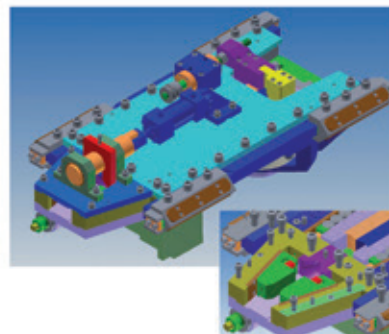
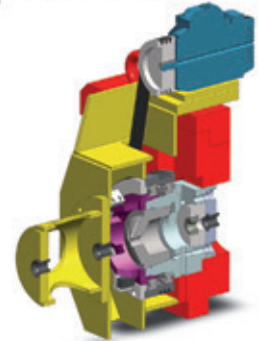


### New or reconditioned drawbench

When supplying a drawing line, we can either supply it new or a upgraded and modernised used one with either the existing carriages with modern control systems or replacement ones

### Scalping units

For continuous in line scalping of the material, simple or with rotary chip breaker

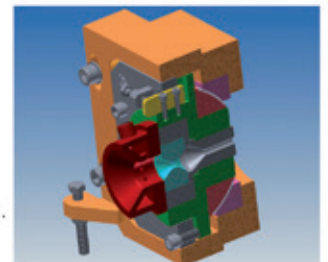


### Drawing carriage modification or replacing

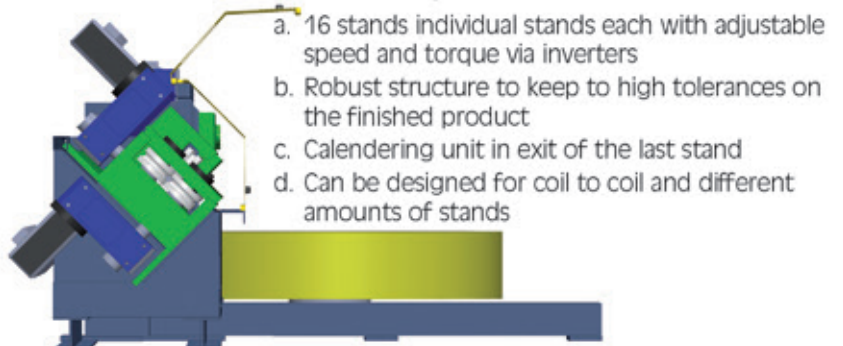
When revamping drawing lines we can either upgrade the existing carriages with modern control systems or replace them with new ones for the best production possible.

### Motorised die blocks with load cell

Our motorised die supports allow you to memorise the position of the die for speeding up size changes as well as allowing the operator to adjust the die position while the material is being drawn. As an option, load cells can be mounted behind the die.



### Cold rolling mill



- 16 stands individual stands each with adjustable speed and torque via inverters
- Robust structure to keep to high tolerances on the finished product
- Calendering unit in exit of the last stand
- Can be designed for coil to coil and different amounts of stands



# contents

- 8 Industry News
- 20 行业新闻
  
- 26 Technology News
- 33 技术与产品
  
- 36 India Insight
- 36 印度透视
  
- 38 Telecom News
- 40 通信新闻
  
- 41 From the Americas
- 45 来自美国的消息
  
- 47 Wire & cabling  
for the transport  
industry
- 52 运输行业用线缆
  
- 60 Editorial Index
- 60 通讯目录
  
- 60 Advertisers Index
- 60 广告索引



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By Christensen Holm,  
Allan Nielsen and Jesper  
Joergensen – Roblon  
Industry, Roblon A/S

**58** 用RobCoil™进行自动精卷绕  
作者: Roblon Industry,  
Roblon A/S公司Per  
Christensen Holm,  
Allan Nielsen和  
Jesper Joergensen

## Next Issue

### Feature On

wire Düsseldorf  
2014 preview

### Getting Technical

**PV Ribbon: Overview of product specifications and comparison of production processes**

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# \$1 trillion boon for the GCC

Driven by an astonishing \$1 trillion worth of infrastructure and real estate projects to 2018, the GCC region – Saudi Arabia, Kuwait, Bahrain, Qatar, the United Arab Emirates, the Sultanate of Oman, and the Republic of Yemen – is certainly ending 2013 on a high.

These projects will provide a much-needed chance for the area's wire and cable companies – if they rise to the challenges ahead. Whilst the older companies have faced stiff competition since the 2008 recession, the newcomers in the region have taken advantage of the opportunities on offer.

The competition is a major driving factor in the market, as outlined in the report by Integer Research on page 8 of this issue of *Wire & Cable ASIA*.

The report also goes on to claim that Saudi Arabia, in particular, will see a consumption growth rate of 5.4 per cent from now to 2017.

The report has been published prior to the 2<sup>nd</sup> Advanced Cable Asia 2013 Conference being held in Shanghai, China, at the end of November.

Also in this final issue of the year is news of one UK company – Metalube – receiving its Queen's Award for Enterprise in International Trade. The full story on this can be found on page 15.

It also seems that Huawei is forging ahead with its vision for a 5G network. The Chinese telecom equipment provider currently has 200 technicians working on G5, which includes increasing Internet speed up to 10Gbit/second. This can be found in our Telecom News section on page 38.

US coal exporters could also be in for an uncomfortable ride after a fall in demand from China as the energy sector shifts towards cleaner-burning operations. Insights on this can be found in From the Americas on page 43.



David Bell  
Editor

Photo by Rene Tillmann/Messe Dusseldorf





## *when and where*

### March 2014

11-15 Mar:  
**METAV** –  
 trade exhibition –  
 Düsseldorf, Germany  
**Organisers:** VDW  
**Fax:** +49 69 756081 74  
**Email:** [metav@vdw.de](mailto:metav@vdw.de)  
**Website:** [www.metav.com](http://www.metav.com)

### April 2014

7-11 April: **wire/Tube**  
**Düsseldorf** – trade exhibition  
 – Düsseldorf, Germany  
**Organisers:** Messe Düsseldorf  
**Fax:** +49 211 456 0668  
**Email:**  
[wire@messe-duesseldorf.de](mailto:wire@messe-duesseldorf.de)  
**Website:** [www.wire.de](http://www.wire.de)

### May 2014

6-7 May: **Wire Expo** –  
 trade exhibition –  
 Indianapolis, USA  
**Organisers:** Wire  
 Association International  
**Fax:** +1 203 453 8384  
**Email:** [sales@wirenet.org](mailto:sales@wirenet.org)  
**Website:** [www.wirenet.org](http://www.wirenet.org)

### May 2014

14-17 May:  
**Lamiera** –  
 trade exhibition –  
 Bologna, Italy  
**Organisers:** Ucima-Systems  
**Fax:** +39 0226 255 894  
**Email:** [lamiera.esp@ucimu.it](mailto:lamiera.esp@ucimu.it)  
**Website:** [www.lamiera.net](http://www.lamiera.net)



○ The Middle East • bigstockphoto.com • Photographers: Haider, balaikin2009, swishippo, cherkas, Orfia and skilledman

# Increased investment and competition is driving growth

FOR GCC wire and cable makers there is reason for optimism, as the region's construction industry experiences a period of resurgence thanks to increased infrastructure spending. It is a sharp contrast to the deep recession the region faced in 2009.

The value of infrastructure and real estate projects planned for the GCC up to 2018 is estimated at a surprising US\$1 trillion. This in turn will drive demand for wire and cable.

According to Integer Research's Wire & Cable Focus Report: Middle East and North Africa Markets, the GCC cable industry is well-equipped to supply this solid demand, but the local cable makers must evolve to take full benefit.

In recent years, the GCC has experienced double-digit growth in insulated wire and cable capacity, including the entry of new players into the market, such as Bahra Cables, Al Fanar, RESCAB, QICC, El Sewedy (in

Saudi Arabia and Qatar), and Power Plus.

This new wave of cable makers is challenging the dominance of established local cable producers, such as Saudi Cable, Riyadh Cables, Jeddah Cables and Ducab.

According to Andrea Valentini, senior analyst at Integer: "Several new producers are capitalising on their close business links with end-users. Bahra Cables has strong links downstream to key end-users Saudi Bin Ladin Group and Electric House, and Al Fanar has a long established distribution network in Saudi Arabia and a sister company engaged in EPC contracting."

Most of the GCC cable makers are rising to the challenge of intensified domestic competition by implementing a range of strategies.

Many are increasingly looking to new countries or products to diversify their market risk, such as Ducab's

expansion into high voltage power cables.

Others are integrating vertically into raw materials, for example MESC, Jeddah Cables, and Bahra Cables have all made recent investments in polymer compounding capacity, whilst others are integrating into end-user services, such as turnkey project management offered by Riyadh Cables and Saudi Cable.

"Our analysis indicates that GCC cable companies are evolving to maximise the benefits of a resurgent construction market, and are developing the necessary sophistication to face an increasingly competitive market.

"Saudi Arabia, in particular, will have the highest wire and cable consumption growth rate, with 5.4 per cent compound average growth forecast annually between 2012 and 2017," added Mr Valentini.

**Integer Research – UK**  
Website: [www.integer-research.com](http://www.integer-research.com)

# Bringing energy all around

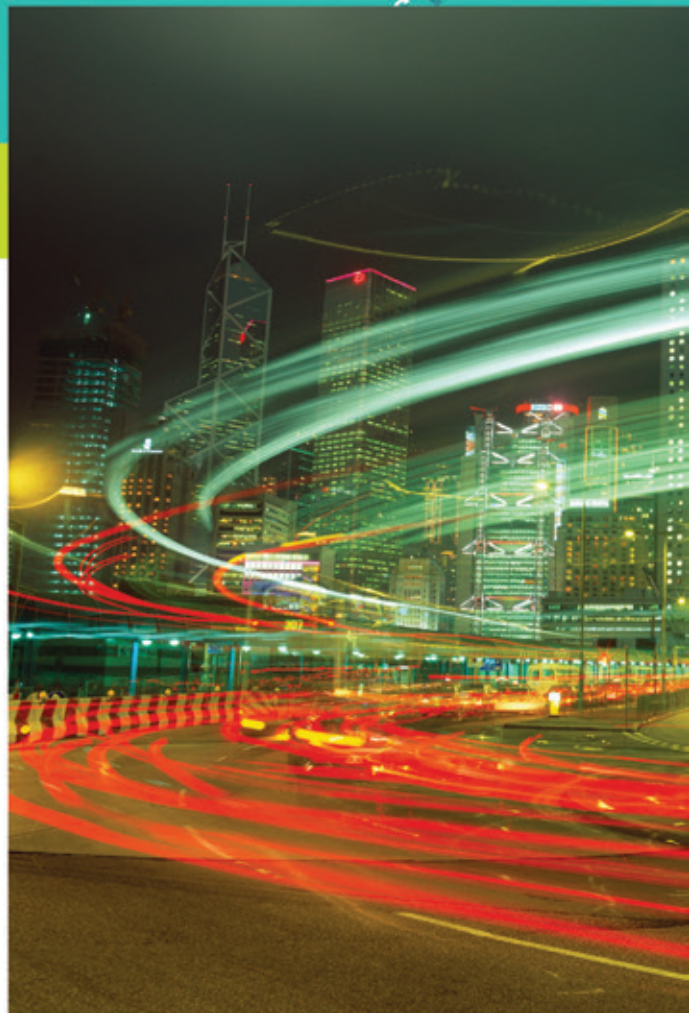
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## The reel deal. . .

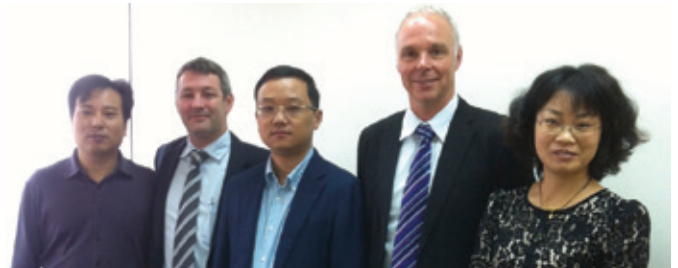
Inosym Reels and Qunye Reels have established a joint venture company – IQ Reels.

The establishment of IQ Reels is a major milestone for Inosym and Qunye and will ensure existing and new customers continue to receive high quality products and service through a comprehensive worldwide sales network and world-class production facilities of over 40,000m<sup>2</sup>.

The quality and service of Inosym combined with the cost base and production facilities of Qunye will allow IQ Reels to offer reels, bobbins and spools to meet all markets, quality and price expectations.

IQ Reels welcomes enquires through the local Inosym agent, found through the Inosym website at [www.inosym.com](http://www.inosym.com) or directly through either [www.inosym.com](http://www.inosym.com) or [www.qunyeglobe.com](http://www.qunyeglobe.com)

**Inosym – New Zealand**      **Qunye Reels – China**  
**Website:** [www.inosym.com](http://www.inosym.com)      **Website:** [www.qunyeglobe.com](http://www.qunyeglobe.com)



○ IQ Reels' directors are, from left, Mr Chen Houqing, Mr Grant Latimer, Mr Bob Zhou, Mr Philip Young and Ms Wang Qiuxiang

## Changing spools is made easy

Changing spools is made easy with fast-action clamping systems for plain shafts. But how do you do this? Pictures tell more than words. For this reason, Uhing has published two short online videos showing the Easylock fast action clamping system, and its variant, the U-Clip clamping element.



These videos show the fastening on plain shafts and some application examples. The viewer sees how easy, fast and safe handling is. Both products can be operated without tools or even with one hand and independent of the direction of rotation, and they are vibration resistant. The video also shows that – depending on the size of the element used – the retaining force of Easylock can be up to 5,000N and that of U-Clip up to 420N.

○ A screenshot of the video on the Uhing website

The close-up pictures focus on the essential: the plain shaft, the clamping element and the hand of the person operating the element. Explanations of the handling are not necessary.

In these presentations the viewer can see exactly each single move – even if there is a hurry during operation. The videos are available at [www.uhing.com/en](http://www.uhing.com/en)

**Joachim Uhing GmbH & Co KG – Germany**  
**Website:** [www.uhing.com](http://www.uhing.com)

# New trolley wire drawing machines for China

BONGARD Engineering produces new machines for the wire and cable industry and has recently completed a wire drawing line for a Chinese customer.

The company ties in with Bongard Trading – founded in 1976 – as a specialist for sale and purchase of used machinery, ranging from single machines to complete production plants.

The trademark Bongard Machines has been known in the wire and cable industry worldwide for almost 55 years.

The services offered by Bongard Engineering cover the complete range of established and innovative products such as drawing lines for trolley wires, static coiler, barrel coiler, horizontal spooler, spooling line and rotating pay-offs.

Due to the intensive dialogue with Bongard Machines' customers worldwide, the company knows its customers' requirements, and its



○ Services from Bongard cover the complete range of products

experienced and skilled team enables it to offer flexible and fast solutions using modern though robust technology.

Solutions that are attractive in price terms, energy-efficient, environmentally suitable and user-friendly, as well as constructions that are robust and ensure a high productivity and a long service life, are some of Bongard's typical characteristics.

Bongard also carries out the mechanical production, assembly, electrical installation and software

development itself and has adequate capabilities to carry out test runs together with the customer in their own premises in production-like conditions.

The complete customer service includes assembly of the line, training of the operating personnel, commissioning, spare part service and remote maintenance.

Bongard Engineering has manufactured and tested four customised wire drawing machines. During the test run, a special copper wire alloy with a strong basic raw material bearing an approximate diameter of 30mm was drawn successfully.

The robust and customer-friendly wire drawing line passed the 'qualifying examination', which demanded huge forces.

**Bongard Engineering GmbH & Co KG – Germany**  
**Website:** [www.bongard.de](http://www.bongard.de)

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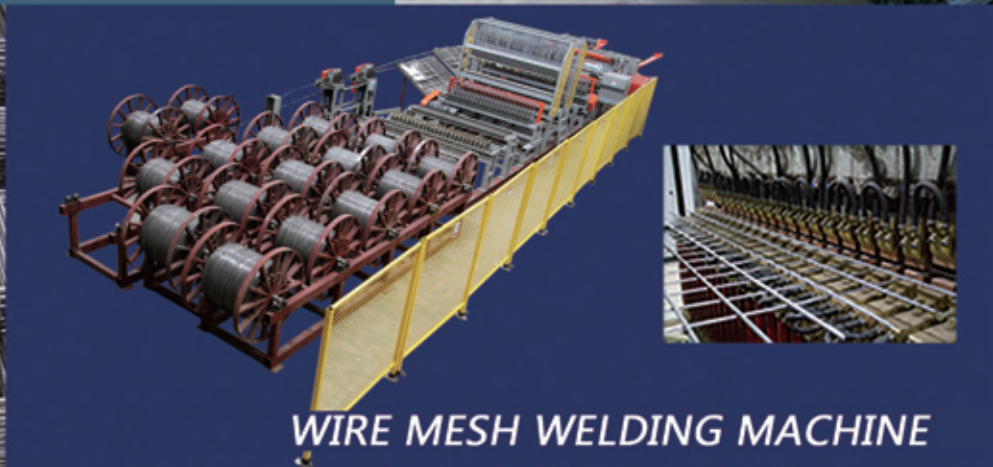
Ridgway Machines Ltd Leicester UK

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Website: [www.tjkmachinery.com](http://www.tjkmachinery.com)

E-mail: [tjk@tjkmachinery.com](mailto:tjk@tjkmachinery.com)

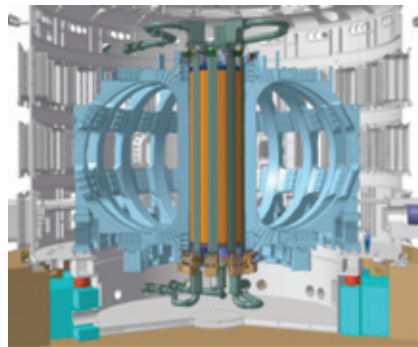
# Ridgway's role in the 'largest science experiment'

RIDGWAY Machines has won a major new contract from General Atomics, a US-based technology innovation firm in fusion research and technology. The tape wrapping system will be used to insulate superconductor coils for the central solenoid magnet on the international nuclear fusion reactor ITER, which has been called the largest science experiment in history.

ITER aims to demonstrate the technical and scientific feasibility of fusion power for commercial-scale energy. The ITER tokamak machine will be one of the most complicated machines ever engineered – almost 30 metres high and weighing 23,000 tons, it will house an estimated one million components.

The central solenoid will be located in the heart of the ITER tokamak, and will provide the majority of the magnetic flux change needed to initiate the plasma, generate the plasma current and maintain this current during the burn time.

The ITER organisation was formed to advance the development of hydrogen



○ The ITER central solenoid magnet system

fusion as an energy source. Fusion is a safe, carbon-free energy source fuelled by abundant resources (heavy hydrogen from sea water) and can produce high levels of power.

Partners China, the European Union (EU), India, Japan, Korea, Russia and the United States will implement the project during its estimated 10-year construction and 20-year operational phases. Construction is now well underway in Cadarache, France, and operations are expected to begin in the early 2020s.

The seven ITER members share every aspect of the project, including science, procurement, finance and staffing, with the aim that ultimately each member will have the know-how to produce its own fusion energy plant. Ridgway also provides sophisticated taping heads to insulate the toroidal field (TF) magnet coils supplied by the EU.

**Ridgway Machines – UK**  
**Website:** [www.ridgwayeng.com](http://www.ridgwayeng.com)

## Networking the islands

Alcatel-Lucent and Telkom Indonesia are to develop a 3,000km optic fibre network infrastructure to connect the islands of Sulawesi, Maluku and Papua in the Indonesian archipelago. Capable of supporting data speeds of 100G per second, the system will deliver an ultimate capacity of up to 16Tbit per second. The system is part of Telkom Indonesia's Nusantara super highway.

**Alcatel-Lucent – France**  
**Website:** [www.alcatel-lucent.com](http://www.alcatel-lucent.com)



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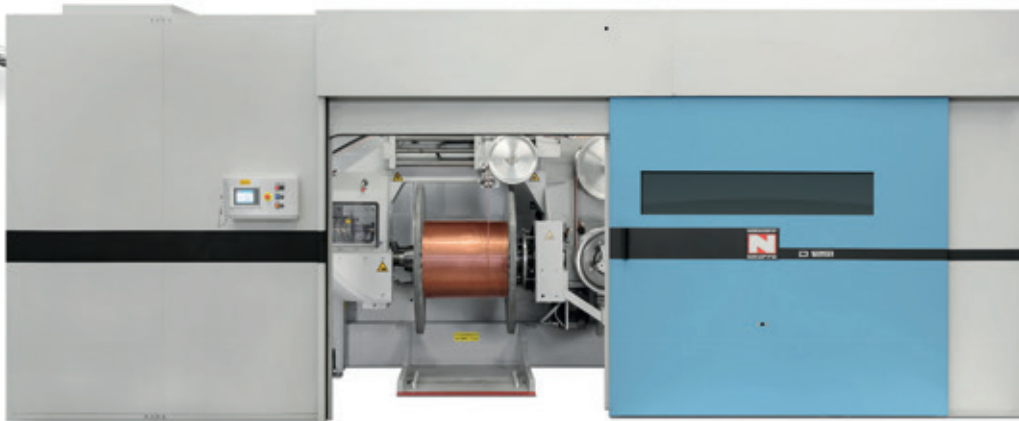
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**Our capstan power opens a new range of possibilities. Sector-shaped conductors with a cross section of up to 120 mm<sup>2</sup>!**



Today's global markets are highly demanding and dynamic: When it comes to demands and products, there are both continuous and fast changes of pace within the realm of aluminium and copper wire production. While ensuring that these high expectations are met, there is a need for flexible machines that are highly adaptable to an ever changing production environment.

For maximum flexibility during production, NIEHOFF offers the D 1251 double twist bunching machine – with a capstan pulling force of 12,000 N. This high pulling force allows high-speed processing of strands with cross sections up to 95 mm<sup>2</sup> for copper and up to 120 mm<sup>2</sup> for aluminium – either bundled or as sectors. Such capability is unique in this class of machines. Additionally, the variance in the machine's vibration behavior has been reduced to an absolute minimum. The D 1251 is designed with a highly flexible concept, which can be optimally adapted to your needs.

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## Royal award and boosting Indian office

WARREN Smith JP, Her Majesty's Lord Lieutenant of Greater Manchester, presented Metalube Ltd with a Queen's Award for Enterprise in International Trade.

The Lord Lieutenant was welcomed and thanked by Metalube's founder and managing director, David Lee, who said what a proud day it was for him and the company.

Mr Lee also thanked all the Metalube employees for their hard work and commitment to the company. He conveyed how pleased he was to welcome members of the team to Irlam from China, Brazil, India, Hong Kong and Malaysia.

The company is very much a family business with three sets of fathers and sons amongst the team working for them – and this was apparent at the ceremony, with three generations of various families there to witness the proud ceremony.

The company's Indian operation has progressed well since its inception in



○ Warren Smith JP, Her Majesty's Lord Lieutenant of Greater Manchester, with Metalube managing director David Lee at the awards ceremony

September 2011, winning both new businesses and retaining existing customers.

Due to this success, two new members have recently been added to the Metalube India team: application engineers Prashant Sharma responsible for Northern India, and Chirag

Mhatre for Western India. The process of building 'team India' will continue as Metalube grows, with the company strategy to appoint locally based engineers in the key Indian markets.

Amit Gupte, general manager, Metalube India, said: "The company is providing total lubrication management and support to all its customers, both in the field of copper and aluminium wire drawing applications. We maintain sufficient stock of Metalube's Lubricool, Alumol and Inoxol range to meet any immediate customer requirements."


He added: "I'd like to welcome on-board our two new application engineers and with their support we look forward to growing the Metalube India business even further in 2013/14."

Based in Irlam, Greater Manchester, Metalube also has offices in China, India and Brazil.

**Metalube Ltd – UK**  
Website: [www.metalube.co.uk](http://www.metalube.co.uk)

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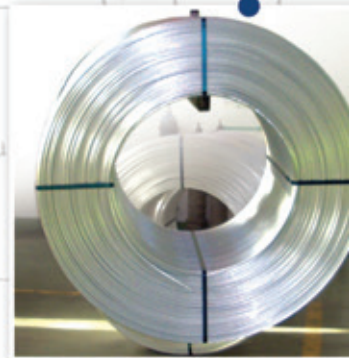
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## Firmly focused on its rigid stranders

ASSOCIATED Engineers & Industrials Ltd (AEI) is one of the most experienced companies that specialises in the design and manufacture of rigid stranding machines, arguably the most important rotating machines in any power cable plant.

AEI stresses on continuous innovation, based on latest product requirements and customer feedback, as absolute essentials to keep its technology ahead of competition.

Eight out of ten MV and EHV cable manufacturers and large overhead conductor manufacturers in South Asia use the company's rigid stranders.

The company's recent development is a new generation high-speed ASRB/E rigid strander, an integration of top quality mechanical craftsmanship with new generation control systems.

The intelligent stranders incorporate



○ The new rigid strander from AEI

features such as electronic shaft synchronisation (including during power failure), individual wire break detectors, auto regulated pneumatic bobbin brakes, motorised pintles, remote diagnostics over telecom link and fully automatic floor/trolley loading devices.

AEI's use of perfectly balanced fork type cage rotor construction ensures superior energy efficiency whereas use of fully enclosed gearboxes

instead of belt systems ensures robust performance for years.

Based on customer requirements the machines are configured with suitable heads. Prespiral sector heads have been completely redesigned for higher precision Milliken conductor for up to 3,000mm<sup>2</sup> x 500kV EHV cables.

Likewise, a trapezoidal wire (TW) head has been developed for the manufacture of new generation pre-shaped wire conductor.

Mr L S Jain, managing director and chief designer, explains: 'With our single focus on rigid stranders, each aspect of the machine gets full, undivided attention.'

"An otherwise considered simple sub-assembly like bobbin pintles is the result of thousands of hours of design developments."

**Associated Engineers & Industrials Ltd – India**  
**Website:** [www.aeimachines.com](http://www.aeimachines.com)

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# Upgrade gives more power to downtown Mumbai

STERLITE Technologies has completed the installation and commissioning of a challenging project in the centre of Mumbai, India, upgrading the power carrying capacity of a Tata Power line.

The project involved design, supply and installation of high capacity, high strength carbon composite core conductors on an existing critical arterial 22kV line.

A unique solution has resulted in an exponential increase in the power

transmission capacity of the existing IIT Powai to Saki transmission line, which crosses a thickly populated slum area on hilly terrain.

“The lines on which ACCC conductors have been installed are very old lines traversing through populated areas,” said M V Deodhar, assistant engineer – projects, Tata Power.

“The idea was to go for lightweight conductor so that we can retain our existing structures and augment the line capacity.

“Further, lightweight conductor was mandatory in order to improve ground profile as well as maintain existing clearances. These three factors were considered while selecting the conductor,” Mr Deodhar added.

Tata Power introduced Sterlite’s carbon composite core with trapezoidal annealed wires to replace the old ACSR conductors.

The complete re-conductoring exercise was supervised by Sterlite and carried out using specialised tensioners and pullers to eliminate any possibility of winding force between the carbon core and the trapezoidal annealed wire conductors.

The core of the ACCC conductors is claimed to be 25 per cent stronger and 60 per cent lighter than traditional cores, and its lower coefficient of thermal expansion leads to less sag at higher temperatures.

**Sterlite Technologies Ltd – India**  
**Website:** [www.sterlitetechnologies.com](http://www.sterlitetechnologies.com)

## An important choice

The selection of proper dies and lubricants are two of the most important and essential requirements for wire drawing applications. This determines the quality and helps reduce the cost of drawing, in terms of maintenance and by increasing the life of the die and reduction of lubricant consumption.

Kay Pee Dies, established in 1968, produces tungsten and carbide dies for wire, bar, tube, drawing, cold heading, extrusion and special applications, and services customers from India, South East Asia, Nepal, the Middle East and Africa. It also acts as an exclusive distributor for Pan Chemicals SpA, Italy, for distribution and sale of its wire drawing lubricants.

**Kay Pee Dies – India**                      **Website:** [www.kaypeedies.com](http://www.kaypeedies.com)

## \$30m contract for Iraq grid expansion

The power and automation technology group ABB has won an order worth around \$30 million from Zagros Energy to build four new transmission and distribution substations in the Kurdistan region of Iraq, part of an initiative to expand and strengthen the regional power grid. The project is scheduled for completion in 2014.

Due to industrial growth, construction projects and economic development, demand for reliable power is growing at a rate of 10 to 25 per cent per year. The Kurdistan power grid supplies around 2,750MW of electricity with more than 90 per cent of the capacity owned and operated by independent power companies.

The increasing demand for electricity means that outages and blackouts are frequent. In the short term, a capacity expansion to about 4,000MW is planned; the long-term ambition is to reach 10,000MW, which would open up the possibility of exporting power to neighbouring countries.

ABB’s project scope includes the design and supply of the substations to enable an additional 600MW of power to the region. The substations are based on GIS technology, selected for its compact footprint since they will be located in the centre of the city.

Two will be connected with 132kV underground cables, due to the lack of space for overhead lines.

**ABB – Switzerland**                      **Website:** [www.abb.com](http://www.abb.com)

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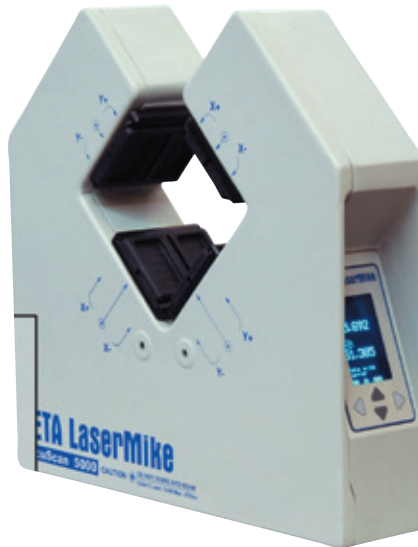
## Latest non-contact measurement solutions

BETA LaserMike will introduce its latest non-contact measurement solutions at the 62<sup>nd</sup> IWCS Conference in Charlotte, North Carolina, from 10<sup>th</sup> to 13<sup>th</sup> November at the Charlotte Convention Center.

The new AccuScan 5000 series diameter and ovality gauges perform ultra-fast measurements at 2,400 scans per second per axis. However, the increased scan rate is of little use without each scan being accurate and usable. The improvements in the AccuScan 5000's single-scan calibration algorithm mean that each scan is highly accurate to provide reliable high-speed tolerance checking on a single scan.

This ensures lumps and necks are consistently detected. When using the STAC (stranded, twisted, armoured and corrugated) measurement mode, AccuScan outputs accurate maximum/minimum or enveloped readings at a higher rate, allowing for faster process control of complex cable constructions.

At Booth 514, Beta LaserMike will offer



○ The AccuScan 5000 Series from Beta LaserMike

a range of AccuScan 5000 Series models to measure diameters up to 80mm (3.15"). AccuScan 5000 Series gauges support a wide range of communications protocols, including RS-232, Ethernet/IP, DeviceNet, Profibus and Profinet. An integrated air

purge system keeps windows clean from dust and debris for maximum uptime and reduced maintenance.

Beta LaserMike will also exhibit its new three-axis LN3040 lump and neckdown detector.

Also on show will be solutions for automated cable testing. On display will be the DCM Model SCS-350B for quality testing 4-pair Category LAN/data cables up to 600MHz.

The company will also be delivering a technical presentation to cable producers on the latest in coupling attenuation testing and how it complies with current industry specification requirements for Category 8 cable. The paper, entitled 'Coupling Attenuation (CA) Testing for Category 8 Compliance', will be co-presented by Rafael Herrera, chief engineer for DCM Cable Testing Systems, and Nadim Kafati, systems engineer at Beta LaserMike, in session four during Tuesday morning.

**Beta LaserMike – USA**

**Website:** [www.betalasermike.com](http://www.betalasermike.com)

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# 增加投资和竞争， 推动经济增长

对于GCC线缆制造商来说，他们有理由乐观，由于基础设施建设支出增加，使得该地区的建筑业经历了一段时期的回潮。

与2009年地区经济面临的严重衰退形成了鲜明的对比。

GCC基础设施和房地产项目总价值到2018年预计达到一个惊人的数字1万亿美元。这将带动电线电缆的需求。

根据咨询公司Integer Research关于聚焦线缆的报告显示：中东和北非市场，GCC电缆行业装配精良，能够满足刚需，但当地电缆制造商必须享有充分的利益。

近年来，GCC绝缘电线电缆产能经历了两位数的增长，包括进入市场的新成员，比如Bahra Cables、Al Fanar，

RESCAB、QICC、El Sewedy（位于沙特阿拉伯和卡塔尔）和Power Plus。

新一波的电缆制造商正挑战当地老的电缆制造商，诸如Saudi Cable、Riyadh Cables、Jeddah Cables和Ducab等制造商。

据Integer高级分析师Andrea Valentini介绍：“有几个新的制造商正利用他们和终端用户密切的业务往来关系。Bahra Cables与重要的终端用户Saudi Bin Ladin Group和Electric House有着紧密的联系，与Al Fanar在沙特阿拉伯建立了长期分销网络，以及从事EPC总承包的姐妹公司。”

大多数GCC电缆制造商都上升到通过实施一系列的战略加剧国内竞争。很多商家越来越多地开辟新的国家

市场或新产品，以降低市场风险，比如Ducab扩展到高压电力电缆领域。另外，有的商家垂直整合原料，例如MESC、Jeddah Cables和Bahra Cables近期投资于高分子复合，而其他制造商正与终端用户整合，如Riyadh Cables和Saudi Cable提供的交钥匙管理项目。

“我们的分析表明，GCC电缆公司正寻求复苏建设市场利益的最大化，并发展必要的复杂性，以面临竞争日益激烈的市场。”

“特别是沙特阿拉伯，将拥有最高的电线电缆消费增长速度，预计在2012和2017年期间年均复合平均增长率达到5.4%。” Valentini补充说。

Integer Research – 英国  
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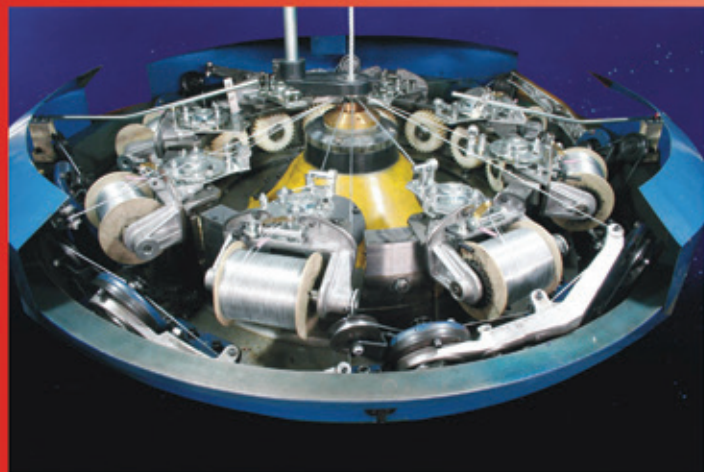
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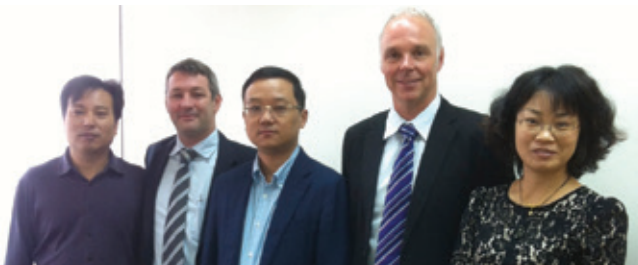
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○ 从左向右依次为IQ Reels各部门经理Mr Chen Houqing, Mr Grant Latimer, Mr Bob Zhou, Mr Philip Young和Ms Wang Qiuxiang



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利用普通轴承快速夹紧系统, 更换线轴变得更加便捷。但是, 怎么做到这一点呢? 图片解释更为详细。出于这个原因, Uhing出版了两段在线视频, 展示了Easylock快速夹紧系统及其变体, 以及U形夹夹紧元件。

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特写图片重点放在基础部分: 普通轴承, 夹紧元件, 操作元件人员的手。关于处理的解释说明没有必要。识别主要产品功能的关键词出现在各场景。在这些示范演示中, 观众可以清楚地看到每一个动作 - 即便操作过程急促。会议现场在线视频介绍的优势: 感兴趣的观众可根据喜好随时观看, 并且在办公室展示给同事看。

视频网站: www.uhing.com

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

Shanghai Shenchen Wire and Cable Equipment Co.Ltd.

上海申辰线缆设备有限公司

- The Kingdom of Cold Welding Machines

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SHEN CHEN

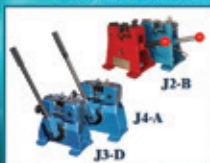


Shanghai Shenchen Wire & Cable Equipment Co., Ltd is a company specializing in producing cold welding machines and dies. For many years, we have devoted ourselves to cold welder design, manufacture and sales. Now our company has become an international professional enterprise.

The welding copper wire ranges from  $\phi$  0.05 mm -  $\phi$  25 mm and aluminium  $\phi$  0.06mm -  $\phi$  35mm, the flat cable largest width is 33mm and smallest thickness is 0.40mm. Our enterprise has one of the largest welding range in the whole industry. Our cold welder series products rigorously comply with enterprise standard Q/YQJT1-2004 to produce quality and consistency.

Our company has accumulated a wealth of production experience though continuous innovation, constantly filling the domestic gap. Recently our company has launched a Multi-stand cluster welding machine, which ranges from 0.5mm<sup>2</sup>- 630mm<sup>2</sup>. We are always leading the industry.

<http://www.sch.chinacable.com.cn> Email:schsc8@aliyun.com



Shanghai Shenchen Wire & Cable Equipment Co.Ltd.(head office, foreign trade office)  
Address:Rm.1804,Bldg.No.1(Guoke Mansion),Lane 1029,Kongjiang Road, Yangpu District, Shanghai, China.

Tel: 0086-21-65199437 0086-21-65199438 Fax: 0086-21-65199430



## 展示解决方案

Beta LaserMike在第62届国际电线电缆行业大会上推出其最新的非接触式测量解决方案，会议于11月10-13日在北卡罗莱纳州，夏洛特会议中心举行。公司新产品使得电线电缆制造商测量产品精度更高、速度更快，从而提高生产力、产品质量和节约材料。

新的AccuScan 5000系列直径与椭圆仪以每轴每秒2,400次的扫描速度进行超快速测量。但是，如果没有每一次的精确实用扫描，提高的扫描速率用处不大。AccuScan 5000系列单独扫描校准算法的改进意味着每一次的扫描都高度准确，在单独的扫描过程中提供最可靠的高速公差检查。块状和弯颈部分确保被持续检测。如果使用STAC(扭绞，捻绞，铠装和波状)测量模式，AccuScan将以较高的速度输出准确的最大/最小或包封读数，从而以更快的过程控制复杂电缆结构。

Beta LaserMike将在514号展台展出系列AccuScan 5000型机，测量直径长达80毫米(3.15")。AccuScan 5000系列仪器支持广泛系列的通信协议，包括RS-232、Ethernet/IP、DeviceNet、Profibus和Profinet。集成空气净化系统保持窗口干净，最大化运行时间，并降低维护成本。供选择的超明亮显示屏和操作界面，使得用户能够轻松排列和查看测量数据。所有的AccuScan仪器结构坚固，根据IP 65(NEMA 4)标准进行密封，在恶劣环境下提供有效保护，从而延长服务寿命。

Beta LaserMike还将展出其新型三轴LN3040块状和颈缩探测器。这种先进的测量仪能够更精确的检测短期故障，比两轴系统更具有优势。新的LN3040探测器能够测量长达40毫米(1.57")的直径，线速度高达3,000米/分(9,842ft/min)，检测到的缺陷高度精确到0.05毫米(0.0020")。

LN3040拥有用户友好的操作界面，接受一系列的输入信息，应用RS-232、Ethernet/IP、DeviceNet、Profibus和Profinet通信协议，方便与主机PC或

PLC相连。Beta LaserMike还提供三轴LN3015块状和颈缩探测器，具有与LN3040同样强大的功能、探伤能力和通信水平，但印迹更小。LN3015测量产品的直径高达15毫米(0.59")。除了新产品发布，Beta LaserMike还将展示自动化电缆测试解决方案。参展的DCM SCS-350B型机用于质检高达600MHz的4类对局域网/数据电缆。该紧凑台式系统高度精确、高效检测Cat 5/5e/6/6A非屏蔽(UTP)与屏蔽(STP/FTP)双绞线电缆。

公司为局域网/数据电缆、电信、射频/同轴以及航空航天/国防电缆提供完整系列的DCM电缆测试解决方案。产品包括应用于自动化电缆测试功能的快速、可靠的固态切换技术，可以集成到强大的矢量网络分析仪(VNAs)，形成完整的高性能测试系统。DCM系列电缆测试系统设计用于提供最高品质的结果、性能和投资价值。

Beta LaserMike - 美国  
网址: www.betalasermike.com



○ Beta LaserMike制造的AccuScan 5000系列仪器



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- 外径不确定性:  $\pm 0.15\mu\text{m}$
- 缺陷检测 75kHz, 事件记录
- 超微汽线检测,  $0.3\mu\text{m}$ , 400Hz
- 光纤位置:  $\pm 2\text{mm}$  区间  $\pm 0.1\text{mm}$ , 1kHz
- 搓动频率测试
- 光纤不圆度测试

**NCTM:** 非接触式张力测试仪  
(拉伸力、双折射原理)

- 0-400  $\pm 1$ 克, 1kHz
- 测量区间: 4mm直径
- $\pm 1$  gr 室内环境 10-40°C

**CM5:** 5向涂层检测仪

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- 5向鼓包及凹凸:  $\pm 2\mu\text{m}$ , 3.6MHz 采样
- 涂层偏心: 30Hz
- 内部缺陷: 800kHz (汽线、汽泡、内含物、杂质等)

**其他:** AIR (汽线探测)  
LDS-T (激光衍射测径仪, 用于透明圆柱体测试)



**www.CERSA-MCI.com**

## 为中国提供新型架空线拉丝机

Bongard Engineering为电线电缆行业制造新型机器，最近为中国客户提供拉丝生产线。

公司与Bongard Trading联系密切，Bongard Trading成立于1976年，是出售和购买二手机器的专家，机器品种从单机到完整的生产工厂。Bongard机器的商标在全球电线电缆行业已享誉55年。

Bongard Engineering提供的服务包括品种齐全的新、老产品，诸如架空线拉丝生产线、静态卷取机、桶卷取机、水平缠绕机、缠绕生产线和旋转放线机。

公司通过与Bongard Machines全球范围内的客户进行密集会话，了解客户

的需求，加上经验丰富、技术精湛的团队使用强大的先进技术，为客户提供灵活而快速的解决方案。解决方案在价格方面很有吸引力，高效节能、环保、用户友好、构造坚固、生产率高、使用



○ Bongard提供的服务涵盖所有系列的产品

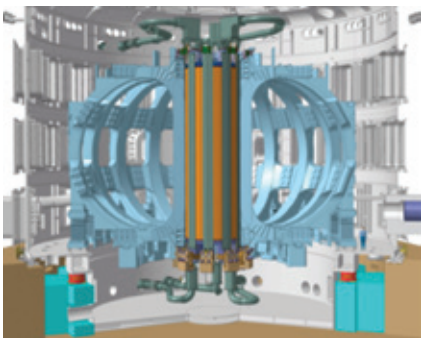
寿命长等是Bongard机器的一些典型特征。Bongard还开展机器生产、装配、电气安装和进行自身软件开发，拥有足够的进行运行测试和在客户场所进行生产条件的验收。完整的客户服务包括装配生产线、操作人员培训、调试、备件服务以及(远程)维护。

Bongard Engineering生产和测试四种定制拉丝机。在试运行期间，成功拉伸具有较强基本原料的特殊铜合金丝，直径大约为30毫米。坚固而用户友好的拉丝生产线通过了“资格检测”，这需要付出巨大的力量。

**Bongard Engineering GmbH & Co KG - 德国**  
网址: [www.bongard.de](http://www.bongard.de)

## ITER助推Ridgway

Ridgway Machines最近赢得了美国General Atomics公司重要新合同，General Atomics致力于聚变研究与技术革新。胶带包装系统用于国际核



○ ITER中央电磁铁系统

聚变反应堆ITER中央电磁铁的超导线圈绝缘，这被称为历史上最大的科学实验。

ITER旨在为商业化规模能源核聚变呈现技术与科学的可行性。ITER托卡马克机将是历史上设计最复杂的机器之一——近30米高，重23,000吨，预计可容纳一万个零件。中央电磁阀安装在ITER托卡马克机的核心部位，将为启动等离子体提供主要的磁通变化，产生等离子体电流，并在刻录时间内保持电流。

成立ITER组织目的是推进氢聚变作为能源的开发。聚变是安全、无碳能源(海水中的重氢)，能够产生高浓度的能源。合作伙伴包括中国、欧盟(EU)、印度、日本、韩国、俄罗斯和美国，他们在预计的10年建设和20年的运作阶段实

施该项目。目前正在法国的卡达拉舍进行建设，有望在21世纪20年代初开始运营。

ITER七成员共享项目的各个方面，包括科学、采购、财务和人员，目的是最终每个成员自身拥有生产核聚变能源的专业知识。Ridgway也提供先进的录音头，用来绝缘欧盟提供的Toroidal Field (TF) 电磁线圈。

Ridgway市场营销总监Andy Clarke说：“我们很高兴能够赢得ITER项目的大宗订单。我们将与客户紧密合作，满足这一苛刻工程应用所要求的规格和性能标准。”

**Ridgway Machines - 英国**  
网址: [www.ridgwayeng.com](http://www.ridgwayeng.com)

## 孟买输入更多电力

Sterlite Technologies已经完成安装和调试孟买中心的一个挑战项目，升级Tata Power电力线的功率承载能力。项目包括在现有的关键主干22kV线上设计、供应和安装大容量、高强度碳纤维复合芯导线。独特的解决方案导致现有的IIT Powai到Saki传输线路电力传输能力指数上升，该传输线路穿过丘陵地带，山上贫民人口密集。

“安装有ACCC导体的线路都老化了，穿过人口密集地区，”Tata Power项目助理工程师M V Deodhar说。

“我们的想法是力求轻质导线，这样我们可以保留现有的结构和增加线路容量。此外，轻质导线是强制性的，为了改善地面剖面并保持现有间隙。在选择导线的时候考虑了这三个因素，”Deodhar先生补充说。

Tata Power推出Sterlite碳纤维复合芯梯形退火丝，替代老的ACSR导体。Sterlite监督整个调整过程，并使用专门的张紧器和拔具消除碳芯和梯形退火导线之间有可能出现的缠绕力。ACCC导体芯与传统芯相比，强度增加25%，重量减少60%，较低的热膨胀系数导致较高温度下凹陷可能性更小。

**Sterlite Technologies Ltd - 印度** 网址: [www.sterlitetechnologies.com](http://www.sterlitetechnologies.com)

## 价值3千万美元的伊拉克电网扩张合同

电力和自动化技术集团ABB赢得了Zagros Energy赋予的价值约3千万美元的订单合同，在伊拉克库尔德地区建设四个新的输配电变电站，作为扩充和加强地区电网的一部分。该项目计划于2014年完成。由于工业增长、项目建设和经济发展，对可靠电力的需求每年以10-25%的速率增长。库尔德斯坦电网提供约2,750兆瓦电力，超过90%的容量由独立的发电公司拥有和经营。电力需求的不断增长意味着频繁停电。短期内，计划扩大容量至4,000兆瓦；长期计划要达到10,000兆瓦，这将开辟了向邻国出口电力的可能性。ABB项目范围包括设计与供应变电站，为该地区新增600兆瓦电力。变电站基于GIS技术，其紧凑的外形选择，适合应用于市中心。由于架空线路的空间不足，两条线将与132kV地下电缆相连。

**ABB - 瑞士** 网址: [www.abb.com](http://www.abb.com)

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○ Setting the standard for round and complex wires

# Straightening machines for round and complex wires

VIOLI Srl specialises in the design and production of industrial machinery dedicated to the manufacturing of tubes, wires and bars.

The firm offers a range of comprehensive and very reliable straightening machines able to process tubes or wires made of steel or other metals having circular or complex profiles, ensuring excellent results and high productivity.

The machines model VM/RFTS1 and model VM/RFTC1 are intended to straighten and cut tubes and wires with a diameter up to 10mm.

They consist of an unwinding reel – which can be motorised or fractioned – with adjustment of the coil's diameter; a double rectifier group with casters mounted at 90° relative to one another; and a drawing unit with both shaped rollers and rollers with plastic polymers.

An encoder is installed to determine the cut length with a tolerance of  $\pm 0.1$ mm.

The cutting unit can consist of a mechanically controlled shear or a saw blade with variable speed.

The machines are equipped with a support which collects the cut bars and discharges them into a collector.

Optimisations vary according to customer specifications and depending on the product that needs to be processed.

The whole process is controlled by PLC with a touch screen panel. Both machines comply with the applicable international standards.

**Violi Srl – Italy**  
**Website:** [www.violimacchine.it](http://www.violimacchine.it)

## Unique multi-axis taping head

RIDGWAY Machines has launched the new advanced NCT narrow coil taping machine with a unique multi-axis taping head motion control system.

Coupled with a fully programmable and intelligent touchscreen HMI, this simplifies the taping of all narrow coil configurations to ensure that the highest levels of quality and productivity are consistently achieved.

The design solves a common problem where traditional taping machines have limited access to both sides of the coil.

To simplify set-up the coil support system features automatic coil turn-over and height adjustment, which also eliminates the need to remove or reposition a coil to tape both sides, improving operational efficiency and productivity.

The NCT is fully programmable, for example to set the number of layers required for each coil side, tape pitch, linear speed and tension control.

Auto reverse at the end of each pass allows for uninterrupted, multiple layers without incurring machine downtime.

Coil lengths between 700mm and 3,000mm can be accommodated with weight up to 200kg. The NCT will accept tape widths of 20mm or 25mm with a pitch capability between 5mm and 28mm, whilst operating at a rotational speed up to 60rpm. Tension control is between 20 and 50N.



○ New advanced NCT narrow coil taping machine from Ridgway

For manufacturers of narrow profile coils such as wind turbine generator stator coils, taping quality and productivity will be maximised. The NCT also uses remote machine diagnostics, enabling Ridgway to provide live, machine-specific user support worldwide.

This ensures that performance of the NCT can be rapidly optimised for different operating conditions.

**Ridgway Machines – UK**  
**Website:** [www.ridgwayeng.com](http://www.ridgwayeng.com)

## All in a straight line

TFC's Smalley® linear springs offer a selection of spring loads that react along a straight line, as opposed to a conventional helical spring that fits in a circular cavity. This results in a spring which, although located in an axial direction, provides a radial force between mating components.

Linear springs are a continuous wave formed wire length produced from spring-tempered materials which act as a load bearing device. Manufactured using the same technology applied to the production of coiled flat wire wave springs, they have the same load/deflection characteristics and burr-free edge profile.

Linear springs from TFC are now produced as a standard item. Over 200 sizes are available from stock in both carbon spring steel and stainless steel, and unique customer designs are also available without tooling costs.

**TFC – UK**  
**Website:** [www.tfc.eu.com](http://www.tfc.eu.com)

## New packaging system

M Power Tech Inc has launched a new packaging system, APP-100, for AC power cord and DC cables that have to be wound and tied before being packed into a cardboard sleeve or plastic bag. The APP-100 includes automatic winding and tying machines, conveying system, paper or plastic packing machine, labelling device, quantity counter, auto loading system to send packed cables into a carton, and auto box sealing machine.

**M Power Tech Inc – Taiwan**      **Website:** [www.mpfa.tw](http://www.mpfa.tw)

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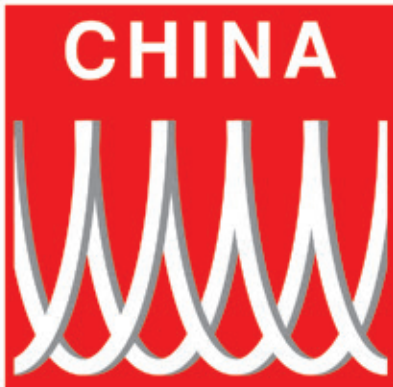
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International Wire & Machinery Association (IWMA)



Italian Wire Machinery Manufacturers Association (ACIMAF)



Wire and Cable Industry Suppliers Association (USA)

For more information, please contact  
 Messe Düsseldorf (Shanghai) Co.,Ltd.  
 Tel : (86 21) 6169 8300 ext. 8369/8313  
 Fax : (86 21) 6169 8301  
 Email : [wire@mds.cn](mailto:wire@mds.cn)  
[www.mds.cn](http://www.mds.cn)

## New development for the automatic die working machine

The costs for product quality have mainly been spent by the dies and their manufacturing tolerances, which have been determined throughout the drawing hollow. In order to get along with the requirements, it is necessary to use an improved drawing tool.

The resulting requirement of the improved die geometry requires a sustainable further development of the currently used die-working machine. The target of the new development was a secure and efficient observation of the die working geometry during the

manufacturing process with improved manufacturing tolerances. Beside the quality observation, the safety of the process and observation of the die quality is of crucial importance.

The machine is equipped with an automatic needle exchange device and a fully automatic measuring system, which sends the data of the manufacturing process to the controller. This allows the automation of a small series without the intervention of staff members to switch the measuring pins. Because of the

needle exchange device, it is possible to perform this with a completely automatic workstation. All three steps such as grinding, polishing of the cone and processing of the cylinder are fully automatic.

The demand and the urgent requirement of the wire processing industry to such intelligent solutions for process observation will grow even stronger in the future.

**Willi Bremer GmbH – Germany**  
**Website:** [www.bremer-willi.de](http://www.bremer-willi.de)

## Protecting against effects of sea and salt water

COATS plc, an industrial thread and consumer textile crafts business, has made a unique enhancement to its Ultrabloc S/SC range that protects delicate fibre optic cables against the damaging effects of sea and salt water.

Coats Ultrabloc S/SC is a water-swellable yarn, suitable for dry blocking in fibre optic cables. It is appropriate for use in any application that requires no mess processing and soft, uniform surfaces around the cables, such as inside and outside tube blocking, to produce completely dry cable designs.

Coats Ultrabloc S is a spun super-absorbent polymer yarn, while Ultrabloc SC incorporates a polyester core for added strength. These yarns have been tested and proven to withstand temperature cycling, heat aging, and freeze/thaw testing.

One of the benefits of Coats Ultrabloc is that it eliminates the need for gel inside tubes, allowing for totally dry fibre optic cables. Dry cable designs are preferred by service providers because they are lighter in weight and



○ Coats Ultrabloc is used to protect delicate fibre optic cables against the damaging effects of sea and salt

make installation and repair of cables much easier and more cost efficient.

Coats Ultrabloc S/SC yarns have extremely smooth surfaces because they are not coated and are spun on state-of-the-art equipment for precise diameter and quality control. The smooth outer surface provides less chance of signal weakening in the cable, which can lead to loss of signal strength.

Since there is no coating on the yarn there is no 'shedding' or 'dusting' during cable manufacture. Having a much cleaner procedure can save both

time and money in cable processing due to reduced machine setup time and increased machine lifetime.

Coats Ultrabloc S/SC is used throughout the cable industry for loose tube, ribbon or central tube optical fibre cables, and for energy/power cables.

Shantanu Banerjee, managing director, global speciality, Coats plc, said: "The technological enhancements in Coats Ultrabloc S/SC are a world first for the totally dry cable market. The range can now protect against sea water which has a damaging effect on fibre optic cables. Coats Ultrabloc S/SC is yet another example of Coats' varied portfolio of apparel, footwear and speciality thread, yarn and zip innovations."

Coats Ultrabloc S/SC yarns are now also available on fibre reels. This allows for easy introduction and processing on existing buffer tube lines with no need for tooling or modifications to existing lines. It also allows for more precise tension control.

**Coats Plc – UK**  
**Website:** [www.coats.com](http://www.coats.com)

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## Showing the red card to airlines

AT the production of the preform for optical fibres, there is a risk that air bubbles might be enclosed. Later, at the fibre drawing process, fibre airlines could arise. Airlines at the interfaces may lead to complications in further processing.

Sikora accepted the great challenge to reliably detect airlines in optical fibres. A fibre diameter measuring device would just recognise the outer contour of the fibre, but not the airline inside the fibre. The airline detector Fiber Laser 6003 Airline, however, was designed to reliably localise airlines in optical fibres. The airline detection features a high measuring rate and is able to detect airlines down to a diameter of 0.5µm.

The ideas of the Sikora research and development team led to a modular concept – the Fiber Laser 6003 Airline and the gauge head Fiber Laser 6003 come as a unit. This concept makes it possible to offer the benefit of airline detection at an attractive price.

The combination of Sikora's Fiber Laser 6003 gauge heads with the Fiber Laser 6003 Airline detector offers the measurement of diameter, position, spinning and tension as well as reliable airline detection. All devices are



○ The Fiber Laser 6003 Airline from Sikora equipped with the universal interface module.

In order to attain optimum conditions in optical fibre production, four devices are needed in the drawing tower. A Fiber Laser 6003 after the extension tube, the Fiber Laser 6003 Airline before the coating cup, the Fiber Laser 6003 and the Fiber Lump 6003 after the coating.

For drawing with primary and secondary coating, a further Fiber Laser 6003 might be installed after the first coating. This way, the optical fibre production is always secure.

**Sikora AG – Germany**  
**Website:** www.sikora.net

## Cleaning up at the data centres

Fujikura Europe Ltd has launched its new One-Click™ Cleaner MPO, designed specifically for cleaning MPO/MTP connectors and adapter mounted MPO/MTP connectors which are widely used in data centres and also in some telco-operated infrastructure.

The new product cleans MPO/MTP connector end-faces which have been exposed to loose contaminants, such as dirt and oil from an installer's fingers. With just one simple action it is able to clean a variety of fibre counts up to 48 fibre MPO/MTP end-faces and is capable of providing over 500 cleans per unit.

The One-Click™ Cleaner MPO is now included within a range of tools which are designed and built to clean an array of network connections. It has also been produced to be more ergonomic than the previous design of MPO cleaning tools by Fujikura, and is able to effectively remove contaminants to the same high standard and low cost per clean at a significantly faster pace.

“This new tool will not only make the task of cleaning these abundant connectors easier and quicker with improved functionality, it will keep the cost per clean down and allow for in situ cleans too, which some other cleaners are not able to do,” said Brian Leonard, European product manager (connectivity).

The cleaner is compliant with the EU/95/2002/EC directive (RoHS) since it is made of environmentally friendly materials. An adapter/dust cap is also supplied with the product for cleaning MPO/MTP connector plugs as well as the connectors themselves.

**Fujikura Europe Ltd – UK**

**Website:** www.fujikura.co.uk



## Long-lasting Rapid Coat

RAPID Coat powder coatings are manufactured by Rapid Engineering Co Pvt Ltd (RECPL).

Located at a two-acre site in New Delhi, India, Rapid Coat manufactures both thermoplastic and thermosetting powder coatings, which are sold globally.

HAPA stands for high adhesion polymer alloy. As the name suggests, it is a thermoplastic polyethylene alloy. These plastic coating powders have been specifically designed to provide a long lasting, chemically and mechanically tough coating for both exterior and interior applications.

The HAPA coating has excellent adhesion to the base metal and is almost impossible to peel off.

HAPA powders are available in a variety of grades:

**HAPA SC (spray coating):** The powder item size is very fine and designed to be sprayed onto the item using electrostatic spray guns. The air velocity and powder flow should be suitably adjusted so as to prevent overspray or bouncing back of the powder spray.

**HAPA DC (dip coating):** This grade of powder is designed for coating by the dip/fluidised bed coating method. In this method, the heated item is dipped into a fluidised bath containing the powder for 2-5 seconds.

**HAPA granules:** These granules possess the same properties as the other grades but are designed for coating using the extrusion coating method.

HAPA powders find many applications given the tough and durable coating properties along with the flexibility available in methods of coating. Some of the most common applications of HAPA are: playground equipment, garden furniture, outdoor benches, welded wire mesh, wire mesh rolls, chain link fences, security fences, fence posts, pipelines, automotive clamps, automotive fuel tank filler pipes, fire extinguishers, battery boxes, submersibles, fan guards and lamp posts.

The coating methods include:

1. Fabrication: The metal plate is de-greased, de-rusted, de-scaled, passivated and cleaned. Thin 'wire

loops' or hooks should be attached at suitable locations, for ease of handling the item, so as not to mark the product appearance. These are later cut off or removed.

2. Preheating: The bare item is heated in the oven at 250-300°C (480-570°F) for 5-10 minutes. The heating time and temperature depends on the mass of the item and the loading of the oven. This has to be practically ascertained to provide the desired production rates and coating thickness.

3. Coating: The heated item can be coated in two ways: Spray coating, the powder can be sprayed onto the item using electrostatic spray guns. The air velocity and amount of powder should be suitably adjusted so as to prevent overspray or bouncing back of the powder spray, or

Dip/fluidised bed coating: The heated item is dipped in a tray containing the powder and the powder is splashed on it, or the item is dipped in a fluidised bed of the powder for 2-5 seconds. The powder will stick to the hot item.

Once the item is coated, care should be taken to ensure it does not rub or come into contact with any surface to prevent damage. A rough, powdery, but uniform coating on the item is obtained. The excess un-melted powder is shaken off with a slight jerky motion or light tapping. The coating thickness increases with the pre-heating temperature and dipping time.

To smoothen out the powder and provide a glossy surface, the item is re-heated in the oven for 2-3 minutes. The suggested temperature varies between 120-140°C. This causes the powder to melt, sinter and flow out. Excessive heating may cause the coating to discolour or sag. The item should be carefully taken out of the oven, without the coating coming into contact with any other surface, and allowed to cool in a clean, dust-free atmosphere. Sometimes water quenching is also resorted to for wire products.

The thin 'wire loops' attached earlier for handling the item are carefully snipped off at the base so as not to mar the appearance. The item is inspected for pinholes or blemishes. These can be filled or repaired with a little powder with a small soldering iron or hot air gun.

**Rapid Engineering Co Pvt Ltd – India**  
Website: [www.rapidcoat.com](http://www.rapidcoat.com)



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## Correct geometry and tolerance from Ajax



○ The die must have correct geometry and tolerance

THE wire die is vital to the efficiency, quality and profitability of a wire mill. The die must have the correct geometry and tolerance or there will be inconsistent quality, customer returns, increased scrapes, operator frustration and down time.

Tolerance has equal importance to geometry. The real diameter of dies, particularly final dies, has to be as much as possible to the stated diameter, ie with narrow tolerance.

As to the finishing dies and when drawing thin wires, dies must be used measuring the wire elongation instead of tolerance on wire diameter.

To optimise the performance efficiency of the high-speed multi-wire drawing operation, Ajax & Turner has introduced long nibs. Wire has better finishing and fewer breakages, and the life of the die is much more than short nib.

The company is equipped with Conoptica, the world's highest die inner geometry checking instrument from Norway. The print out of bearing, blending and reduction angle can be taken to check complete die geometry.

Guidelines for customers of Ajax & Turner include:

- Recut or repolish die on observation of wear ring of wire contact to maximise die life
- Filter lubricant to remove metal fines to maximise lubricant flow, wire finish and die life
- Do not exceed maximum die size recommendation for blank size
- Decrease bearing length for higher speed drawing
- Use finer grain dies blanks for improved wire surface finish and in drawing ferrous and plated wires
- Use coarser grain die blanks for drawing larger size non-ferrous wire to provide longer die life and improved wire dimensional control
- In high temperature drawing of tungsten and molybdenum wire, maintain reducing atmosphere in drawing zone to minimise detrimental oxidation effects and maximise die life
- Use matched elongation die sets in multi-wire drawing machines.

**Ajax & Turner Wire Dies Co – India**

Website: [www.ajexturner.com](http://www.ajexturner.com)



○ 设置圆形和复杂电线的标准

# 圆形和复杂电线 矫直机

维奥利股份有限责任公司专业设计和生产专门用于制造管道、电线和棒材的工业机械。

该公司供应一系列综合可靠的矫直机器，这些机器能够处理钢材或其他金属制成的圆形或复杂形状的管道和电线，确保高产出和高生产效率。

这种机器的VM/RFTS1和VM/RFTC1机型的设计用途为拉直和切割直径小于10毫米的管道和电线。它们包括一个开卷卷轴——可由电机带动或组合使用——通过调节线圈直径可做到；一个双整流器组带脚轮与机器互为90度角安装；一台装有形辊和塑料聚合物滚筒的拉丝设备。

为了维持公差为 $\pm 0.1$ 毫米的切割长度，机器上安装了一个编码器。该切割机器可以包括一个机械控制的大剪刀或者一个变

速锯片。该机器也配备了一个收集切杆信息并将信息输送到收集器的支持系统。

优化过程根据不同客户要求的规格进行，还取决于需要加工的产品。整个过程由带

有触摸屏面板的可编程控制器（PLC）控制。两种机型都符合适用的国际标准。

**Violi Srl – 意大利**  
网址: [www.violimacchine.it](http://www.violimacchine.it)

## 新型包装系统

钧强科技股份有限公司（M Power Tech Inc）推出了一款新型包装系统，APP-100，适用于交流电源线和直流电缆用纸套筒或塑料袋包装前的缠绕和捆绑。

APP-100包括自动缠绕和捆绑机、输送系统、纸或塑料包装机、贴标设备、数量计数器、将包装好的电缆送入纸箱的自动装载系统和自动封盒机。还有一个可以用较少的人力和成本完成生产线的码垛系统可供选择。

**M Power Tech Inc – 台湾**

网址: [www.mpfa.tw](http://www.mpfa.tw)

# 持久快速镀膜

快速壳粉末涂料由快速工程有限公司私人有限公司(Rapid Engineering Co Pvt Ltd(RECPL))生产。快速涂层在印度新德里拥有两英亩的场地,生产热塑性和热固性的粉末涂料,销路遍布全球。HAPA代表高附着力的聚合物合金。顾名思义,它是一种热塑性聚乙烯合金。这些塑料粉末涂料专门为提供长期持久、化学和机械性能良好的外部和内部应用而设计。HAPA涂层对基底金属有很好的附着力,几乎没有脱落的可能。HAPA粉末分为很多种等级:

**HAPA SC (喷涂):** 粉末产品大小非常精细,使用方法为用静电喷枪喷到物体上。为了防止粉末喷涂飞溅或激回,应适当地调节空气流速和粉末用量。

**HAPA DC (浸涂):** 设计这种等级的粉末是为了适应浸入/流化床镀膜方法。使用这种方法时,产品加热后被浸入到含有粉末的流化浴中2-5分钟。

**HAPA颗粒:** 这些颗粒与其他等级的产品有相同的特性,却是为使用挤出涂布法镀膜而设计的。

由于涂层性能坚韧和耐用,并且可灵活选用涂布方法,HAPA粉末有多种用途。HAPA一些最常用的应用有:游乐场设备、花园家具、户外长凳、电焊网、丝网卷、铁丝网、安全栅栏、栅栏柱、管道、汽

车夹具、汽车油箱加油管、灭火器、电池盒、潜水器、风扇网罩和路灯柱。镀膜方法包括:

1. 制造: 将金属板进行润滑、去锈、除垢、钝化和清洁。为了方便部件操作,应将薄线圈或吊钩放置在合适的位置,这样就不用在产品外观上进行标注,只需稍后把它们切断或去掉即可。

2. 预热: 将裸露的产品在250-300°C(480-570°F)的烘箱中加热5到10分钟。加热时间和温度取决于材料的体积和烘箱的负荷。为了达到欲想的生产率和涂层厚度,必须务实地确定加热时间和温度。

3. 镀膜: 加热的材料可以用两种方法进行镀膜: 喷涂,可以用静电喷枪把粉末喷洒到材料上。为了防止粉末喷涂飞溅或激回,应适当地调节空气流速和粉末用量,或者:

浸入/流化床镀膜方法: 将加热的部件浸入一个盛有粉末的托盘中,将粉末泼到其上或者将其浸入到含有粉末的流化浴中2-5分钟,粉末就会粘附到加热的部件上。

部件一旦镀膜完成,应该当心,防止它刮擦或接触到任何表面,对涂层造成破坏。经过这个阶段,部件上形成了一个粗糙但均匀的粉末层。轻轻摇晃或轻扣就能将多余的未融化粉末甩掉。预热温度越高、浸

蘸时间越长,涂层越厚。为使粉末更均匀,部件表面更光滑,应把部件放在烘箱中重新加热2-3分钟。建议温度在120-140摄氏度之间。这个温度能让粉末熔融、烧结和流出。过度加热可能会导致镀膜褪色或流挂。应当仔细地将部件从烘箱中取出,不让涂层接触到任何其他表面,让其在一个清洁、无尘的环境中冷却。有时线材产品也会使用水淬。

将先前为便于操作部件而套上去的薄“钢丝环”小心地从基底上扯下,以免损伤外观。检查部件是否有针孔或瑕疵。可以用小烙铁或热风枪蘸一点粉末填充或修复针孔或瑕疵。涂层厚度随着部件温度、线材厚度和在粉末中浸入的时间的增加而增加。

Rapid Engineering Co Pvt Ltd – 印度  
网址: [www.rapidcoat.com](http://www.rapidcoat.com)

## 数据中心彻底清洁

藤仓欧洲有限公司推出了专门为清洁MPO/MTP连接器和安装在MPO/MTP连接器上的适配器设计的新型轻轻一点?清洁MPO, MPO/MTP连接器被数据中心和一些电信运营商的基础设施广泛使用。这种新产品清洁暴露于不受控制污染物(如安装人员手指上的灰尘和油)中的MPO/MTP连接器端面。只需简单一个动作它就能够清洁拥有多达48种纤维MPO/MTP端面的各种各样的光纤,且每台机器能够清洁500多次。

目前,这种轻轻一点?清洁MPO包含在为清洁网络连接阵列而设计和制造的一系列工具中。与藤仓公司先前的MPO清洁工具相比,它也更符合人体工程学设计,且能够以同样的高标准有效地去除污染物,每次清洁的成本更低,速度也明显更快。

“这种新型工具功能更完善,不仅使得清洁这些种类繁多的连接器的任务变得更容易和更快捷,而且降低了每次清洁的成本,又可以原地清洗,一些其他清洁器就做不到,”欧洲(连接)产品经理布赖恩·伦纳德(Brian Leonard)如是说。“这是藤仓公司轻轻一点?清洁器系列中的第一款MPO设备,我们设计它的初衷是服务于信息中心市场。”该清洁器用环保材料制成,因此符合EU/95/2002/EC指令(RoHS)。供应产品同时也提供适配器/防尘帽,以便清洁MPO/MTP连接器插头以及连接器本身。

Fujikura Europe Ltd – 英国  
网址: [www.fujikura.co.uk](http://www.fujikura.co.uk)

## 独一无二的多轴包带头

瑞奇威设备(Ridgway Machines)推出了新型高级NCT窄线圈包带机,这种机器拥有独一无二的多轴包带头运动控制系统。

此外,完全可编程的智能触摸屏人机界面简化了所有窄线圈包带配置,确保质量和生产率能保持一贯的最高水准。



○ 来自瑞奇威的新型高级NCT窄线圈包带机

这种设计解决了传统包带机器不能完全触及线圈两侧这个共同的问题。为简化安装,线圈支持系统具备线圈自动翻面和高度调节功能,使得没有必要再为了双侧包带而移除或重新放置线圈,提高了操作效率和生产效率。

窄带包带机完全可编程,例如,可以设置线圈每侧要求的层数、磁带间距、线速度和张力控制。每次结束时自动反向允许无间断的多层包带,因而不会增加机器停机时间。

该机器可处理长度在700至3,000毫米之间、重量在200千克以内的线圈。

窄线圈包带机(NCT)能接受的包带宽度为20或25毫米,细间距能力为5至28毫米之间,旋转速度最高为60转/分钟。张力控制在20至50牛之间。

对窄形线圈(如风力发电机组定子线圈)生产商而言,包带质量和生产效率可达到最优化。窄带包带机(NCT)也使用远程机器诊断,使瑞奇威能够针对具体机器提供全球在线用户支持,确保了窄线圈包带机能够根据不同的操作环境得到快速优化。

Ridgway Machines – 英国

网址: [www.ridgwayeng.com](http://www.ridgwayeng.com)

## 防御海水和盐水的侵蚀

高士线业 (Coats plc), 一家工业用线和家纺工艺消费品企业, 对其 Ultrabloc S/SC 系列产品进行了一项独特改进, 改进后可以使精密的光纤电缆免受海水和盐水的有害影响。

高士 Ultrabloc S/SC 是一种水溶胀纱, 适用于干阻塞光纤电缆。它适合于无需对电缆表面进行污物处理和柔软、均匀表面的任何应用, 如内外管阻塞, 形成了完全干式电缆设计。

高士 Ultrabloc S/SC 是一种高吸水性聚合物纺纱线, Ultrabloc SC 还采用了聚酯芯以增加强度。这些纱线已经通过测试并被证明能承受温度循环、耐热老化和冻结/解冻测试。

高士 Ultrabloc 的优点之一是它不再需要管内凝胶, 适用于完全干燥光纤电缆。服务提供商偏爱干燥电缆设计, 因为它们更轻质, 使得电缆的安装和修理更容易、更具成本效益。



高士 Ultrabloc 被用于抵御海水和盐水对精密光纤电缆的有害影响

高士 Ultrabloc S/SC 纱线的表面由于未包涂料、极为平滑, 它们经由最先进的设备纺制而成, 直径和质量控制十分精确。

光滑外表面减少了电缆信号衰减进而导致信号强度降低的机会。

由于纱线上没有涂层, 电缆生产过程中无需“脱落”或“除尘”。更清洁的过程能减

少机器准备时间, 延长机器寿命, 进而节省电缆生产的时间和成本。高士 Ultrabloc S/SC 被用于包括松套管、色带或中心束管式光纤电缆和能源/电力电缆在内的整个电缆行业。

高士线业全球专家兼常务董事山塔努·潘乃杰 (Shantanu Banerjee) 说: “高士 Ultrabloc S/SC 的技术革新是全球完全干式电缆市场的第一次。目前这一系列产品可以防止海水对光纤电缆造成破坏性影响。高士 Ultrabloc S/SC 是高士服装、鞋类、特殊线、纱和拉链多样化创新组合的另外一个例子。”

如今, 高士 Ultrabloc S/SC 纱线也被用于光纤卷轴。这使其很容易引入现有的缓冲套管线进行处理, 而无需对现有生产线进行加工或改动。它也使更精确的压力控制成为可能。

Coats Plc – 英国  
网址: www.coats.com

## 自动模具加工机器的新进展

产品的成本主要耗费在模具和它们的制造公差上, 而制造公差在整个空心结构图中就已经确定了。为了满足需求, 有必要使用一种改良的拉丝工具。

模具几何尺寸改进产生的要求是对目前使用的模具加工机器进行持续的、更深层的改良。

新进展的目的是对经过制造公差改进后的生产过程中模具工作的几何形状进行安全有效的观察。除了观察质量以外, 观察流程的安全性和模具的质量也至关重要。

该机器装有一台自动针筒交换设备和一台将加工过程数据传送到控制器的全自动测量系统。

这使得一小串活动可以自动进行, 无须人工参与切换测量栓。完全自动化工作站能够实现上述功能得归功于针筒交换设备。所有三个步骤: 研磨、圆锥体抛光以及气缸加工完全自动进行。

未来电线加工行业对流程观察的类似智能解决方案的需求将日益迫切。我们将依托高质量的产品和以客户为中心的解决方案, 满足客户日益复杂的需求, 取得了持续的成功。

Willi Bremer GmbH – 德国  
网址: www.bremer-willi.de

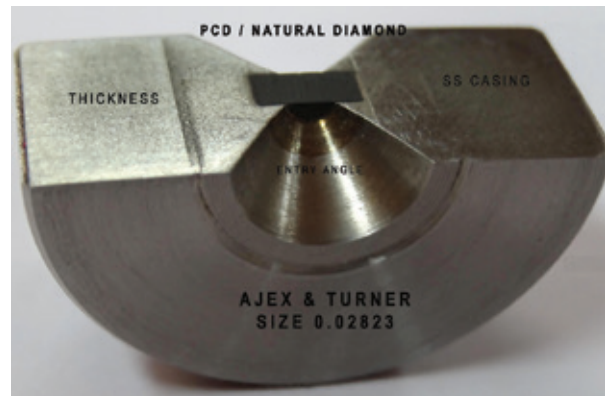
## 正确的几何尺寸和容差

线材模具对效率、质量和线材轧机的盈利能力非常重要。模具的几何尺寸和容差必须很精准, 否则就会出现质量不稳定、客户退货、刮擦增多、运营商受挫和停机时间延长等情况。

容差与几何尺寸有着同等重要性。模具的实际直径, 尤其是最终的模具要尽可能地符合规定的直径, 即就是说容差要很小。至于完工模具, 当对薄线材进行拉丝时, 必须用模具测量线材伸长率而非导线直径容差。

为了优化高速多丝拉伸操作的性能效率, 安吉克斯&特纳推出了长尖端, 使得线材的加工更精细, 破损更少, 模具的寿命比短尖端更长。

该公司采用了挪威产的世界上最强大的模具内部几何尺寸检测仪器, 科诺普蒂卡 (Conoptica)。可以利用轴承、混合、拉模孔圆锥角的输出内容来检查完工模具的几何形状。



模具的几何尺寸和容差必须准确

安吉克斯&特纳的客户指南包括:

- 当观察到耐磨环与线材接触时重新切割或重新抛光模具来最大化延长模具寿命
- 过滤润滑剂, 剔除金属细屑, 使润滑剂的流量、线材的光洁度和模具寿命最大化
- 建议坯料尺寸不要超过模具最大尺寸
- 为获得更高速拉丝速度, 应缩小轴承长度
- 在拉丝有色金属和镀线时, 使用颗粒更细的模具坯料, 以便提升线材表面光洁度
- 拉丝更大尺寸的非有色金属线材时使用颗粒更粗的模坯, 以便延长模具寿命, 加强线材的维度控制
- 在高温下拉丝钨钼丝时, 维持拉丝区域的还原性氛围, 尽量减少有害的氧化作用, 使模具寿命最大化
- 在多线拉丝机上使用匹配的伸长模套。

Ajex & Turner Wire Dies Co – 印度  
网址: www.ajexturner.com

# India

# Insight

## New cable-stayed bridge over the River Ravi



○ The latest Ravi bridge. Photograph copyright of Vishavsathali Basohli - [www.skyscrapercity.com](http://www.skyscrapercity.com)

IT has been confirmed that the Border Roads Organisation is to commission a cable-stayed bridge over the River Ravi in the Basholi area of Jammu and Kashmir, scheduled for completion by September 2014.

The Ravi Bridge will be a 592m-long cable-stayed bridge over two pylons.

“This bridge will be the first bridge of its kind in north India, and the third such bridge in India after Hooghly and Rajeev Gandhi sea link in Mumbai.

“It will open up an alternate route to the national highway 1A, and to Kashmir valley via Basholi, Bani, Bhaderwah, Kishtwar, Chhatroo and Anantnag area,” a defence spokesman said in a statement.

“As of now, there is no direct route from Basholi to Pathankote and the only route available is via the Ranjit Sagar dam, Riyalta and Lakhanpur area with a route distance of 72km.

“Once the Ravi Bridge is constructed and operational, the total route distance will be reduced to 46km. The new bridge will not only reduce the distance by as much as 26km, but also result in reduction of travel time between the two places.”

**Border Roads Organisation – India**  
**Website:** [www.bro.nic.in](http://www.bro.nic.in)

## Cable plant doubles capacity

The consumer electrical and electronics company V-Guard has doubled the manufacturing capacity at its cable factory in Uttarakhand.

The company’s facility in Kashipur currently manufactures 300,000 coils per month. With the expansion, the total capacity of the plant will increase to 600,000 coils, a statement said.

“The capacity enhancement is part of the company’s objective to strengthen its north and east India operations. Through this, the company will now be able to cater to the increasing demand for V-Guard cables in these regions,” said managing director Mithun Chittilappilly. “The copper processing capacity of the factory will now be 8,500 tonnes per annum.”

The capacity addition will result in a 100 per cent increase in revenue for the company from the cable business.

**V-Guard – India**  
**Website:** [www.vguard.in](http://www.vguard.in)

## Power Grid with too much power?

Indian industry body Federation of Indian Chambers of Commerce and Industry (FICCI) has suggested that the state-run Power Grid Corp should no longer be the central transmission utility.

Power Grid was conferred with the title of Central Transmission Utility in 1998, empowering it to undertake electricity transmission through an inter-state transmission system, to discharge planning functions, and to provide open access to the system.

“Currently, Power Grid is [the] tariff collection agency: it collects tariffs from power generators, state electricity boards et cetera and, retaining its share, distributes the remaining to other private licensees.

“This confers additional powers to the company to potentially arm-twist private players,” FICCI said in a research paper. The industry body suggested that it would be better if a neutral entity, such as an independent Central Transmission Utility, became the tariff collection agency.

At present, transmission projects are offered through the tendering route and are identified by an Empowered Committee (EC) consisting of officials from the central electricity regulatory commission (CERC), central electricity authority (CEA), NTPC and Power Grid.

“Being part of the EC, Power Grid is likely to be privy to commercially sensitive information and [the] decision making process while private players do not even have any representation,” the FICCI paper observed, adding that Power Grid should not be allowed to be a member of the EC due to a conflict of interests.

**Federation of Indian Chambers of Commerce and Industry – India**  
**Website:** [www.ficci.com](http://www.ficci.com)

## Kudankulam plant to link with grid



○ The KNPP infrastructure project. Photograph courtesy of the Hindu Business Line

The first unit of the Kudankulam nuclear power plant (KNPP) is to be connected to the grid by the end of August 2013, now that the atomic energy regulatory board (AERB) has agreed to a 50 per cent increase in power generation, up to 500MW.

KNPP’s site director, R S Sundar, told the Press Trust of India that the unit has to apply again for clearance to reach 750MW, 900MW and 1,000MW. “Right now we have already started work for 750MW mark. Once we are done with the tests, we will apply to the AERB for its clearance,” he said.

Nuclear Power Corporation of India Ltd (NPCIL) is constructing two 1,000MW units at KNPP, in a joint project with Russia at Kudankulam. The unit attained criticality in July this year after much delay, following protests against the project by anti-nuclear activists in areas around the complex.

**Nuclear Power Corporation of India Ltd – India**  
**Website:** [www.npcil.nic.in](http://www.npcil.nic.in)

## A plan by the European Union to abolish mobile phone roaming charges envisions a single, streamlined telecom sector

European Commission President Jose Manuel Barros said 11<sup>th</sup> September that an overhaul of the fragmented telecom market of the Eurozone "is essential for Europe's strategic interests and economic progress." To that end, the European Union seeks to abolish cellphone roaming charges across the 28-nation zone.

The proposed legislation would mean that, as of July 2014, customers will no longer have to pay for incoming calls when travelling in other EU countries, and it would end all roaming charges two years later. It also seeks to cap prices of EU-international fixed-line calls at the level of domestic long-distance calls.

The plan, which must be approved by the European Parliament and the governments of the EU member states, is aimed at harmonising the bloc's fragmented telecom market, cutting red tape, and encouraging investment in new high-speed networks to boost growth.

Europe currently has hundreds of mobile and fixed telephony operators across a patchwork of 28 countries. More tellingly, it lags parts of the US, Asia and Africa in rolling out new mobile technologies such as fourth-generation (4G) service. "Lagos has 4G mobile," the Commission noted. "But Brussels does not."

Neelie Kroes, the EU commissioner in charge of the legislation, said the goal is for people to incur the same phone costs regardless of where they happen to be in Europe. She asserted: "EU consumers should not pay more for calling abroad or when they travel abroad in the EU."

Ms Kroes discounted concerns that network operators could try to recoup their roaming losses by hiking their domestic calling prices. The sector's fierce competition will keep prices low, she said, even as the new legislation gives consumers a wider choice of phone and Internet providers — including those from countries outside the Eurozone.

The European Commission, the executive arm of the EU, declared that Europe "[cannot] afford to miss such a low-hanging fruit to power charge the digital economy of the 21<sup>st</sup> Century." The EC claims that a single telecom market could add about one per cent (more than \$132 billion) to the gross domestic product (GDP) of the region.

© The EC's plans for the development of a single telecom market for Europe drew a negative response from the GSM Association (GSMA), whose membership of mobile operators and related companies support the existing protocols for 2G (second-generation) cellular networks. While acknowledging the commitment and dedication of Commissioner Kroes and her team in developing their proposals against a very tight timeline, the GSMA asserted that the focus of the EC should more properly be on measures that address the region's growth, employment and competitiveness challenges.

The GSMA report 'Mobile Economy Europe 2013' highlights the huge gains possible for Europe's economy as mobile technology increasingly transforms such sectors as health, education, transport and energy. To maximise the potential of these developments, the association calls for a forward-looking policy and regulatory framework to boost investment, create new jobs, and drive innovation in the telecom industry.

Anne Bouverot, the GSMA director general, said: "Reform will set the context for investment and innovation in Europe's digital economy for the next ten years."

## To Huawei, 5G is not a technology but an entire system and key to the 'Internet of Things'

"Ever-ambitious Huawei Technologies Co Ltd has set out its 5G vision: a tenfold increase in speed to 10Gbit/s, a thousandfold increase in the required spectrum, and the end to the FDD/TDD tyranny."

Robert Clark, of *Light Reading*, was reporting on the recent assertion by Tong Wen, who leads Huawei's 5G technology development efforts, that the Chinese telecom equipment provider has 200 researchers working on 5G, which he described as "one of [our] priority projects. It will really open up the 'Internet of Things' frontier for massive connectivity."

Ambitious, indeed. Mr Tong believes that the Internet of Things will drive the number of wireless connections worldwide to around 100 billion by the time 5G is mature in 2020, and that this could increase another tenfold by 2030. ('Huawei Sets Out Its 5G Stall,' 22<sup>nd</sup> July).

According to the Huawei fellow, the vendor sees 5G as an extension of 4G, 3G and Wi-Fi — not as replacing them. Over the next decade Huawei expects to address a number of issues, such as immersive connectivity, "with everything connecting into the network," according to Mr Tong.

Mr Clark noted that Huawei has been working on 5G since 2009, partnering with 20 or so educational institutions worldwide, including Harvard, Cambridge, and the Hong Kong University of Science & Technology. Huawei describes itself as advanced in prototyping a device, having completed a demo at 50Gbit/s throughput.

The introduction of 5G could also advance the introduction of wireless technology standard consolidation. Mr Tong speculated that full duplex (simultaneous bidirectional communication on the same frequency) would replace the discrete frequency division and time division modes that have fragmented 3G and 4G development efforts.

© But Mr Clark pointed out that such capabilities impose exacting demands.



He wrote on *lightreading.com*: "Huawei expects 5G to require a thousand times more spectrum than is currently made available for wireless communications, much of it at extremely high frequencies."

Currently the highest bands allocated to wireless are 3.5GHz for LTE TDD and WiMax, although WiMax can operate in a fixed wireless deployment at 66GHz.

### Elsewhere in telecom . . .

© In other news of Huawei, the company said it doubled its investment in research and development in Europe between 2010 and 2013, and that it expects to double it again over the next five years.

Mike Dano, of *FierceWireless* (13<sup>th</sup> September), commented that the 'notable' commitment is indicative of the vendor's hopes to solidify its position both in Europe and in the broader global market.

Com Hem, Sweden's largest cable multi-system operator (MSO), is stretching its network with the rollout of a broadband tier that maxes out at 500Mbps downstream and 50Mbps in the upstream.

Available to over a million households for \$138.03 per month, the new tier strengthens Com Hem's vis-à-vis competitors, such as Telenor and TeliaSonera, in the highly penetrated Swedish high-speed Internet market.

On 21<sup>st</sup> August, technology editor Jeff Baumgartner of *Multichannel News* (New York) observed that the Com Hem announcement provides 'some real-world proof' of the speeds that today's DOCSIS 3.0 platform can provide.

And, he wrote: "It does fit snugly with the European Commission's Digital Agenda, which calls on the region's ISPs to offer download broadband speeds of at least 30 Mbps to all citizens by 2020."

Also by that year, at least 50 per cent of European households are intended to be subscribing to Internet tiers providing speeds of at least 100Mbps.

© The *Wall Street Journal* reported on 13<sup>th</sup> September that Britain's Vodafone Group had achieved its aim of acquiring the German Internet and cable company Kabel Deutschland AG, despite suggestions that some shareholders would hold out for a higher price. The day before, Vodafone said that more than 75 per cent of Kabel's shareholders had agreed to take its \$10 billion offer for Germany's largest cable company.

The deal is considered a coup for Vodafone, which wants to use Kabel's fixed-line network to push beyond mobile in Europe's largest economy. Buying Kabel allows the UK-based operator to offer higher-speed broadband Internet services and means it will no longer have to pay fees to Deutsche Telekom AG for use of its network.

Reporters Eyk Henning and Peter Evans wrote that the acquisition of Kabel could be a curtain-raiser for more deals in Europe by the British telecom company. Two weeks earlier, Vodafone had agreed to sell its 45 per cent stake in Verizon Wireless, of the US, for about \$130 billion – a move that would give it 'more firepower to carry out its European strategy.' Vodafone executives have said they plan to invest in the Italian market and have also expressed interest in Spain.

Analysts have said that the Verizon deal would also likely reduce the chances of Vodafone, cashed-up after the US sale, itself becoming a takeover target.

© Pakistan Telecommunication Co, the country's biggest fixed-line phone-service provider, said it expects excellent second-half sales growth on the strength of its broadband business. Net income rose 15 per cent to \$76 million in the January-June period, while sales climbed 17 per cent to \$634 million, according to calculations based on data compiled by *Bloomberg Businessweek*.

In a 20<sup>th</sup> August interview in Islamabad, the Pakistani carrier's CEO, Walid Irshaid, told *Bloomberg's* Augustine Anthony: "We will be doing equally well, if not better" in the second half.

Owned in part by Emirates Telecommunications Corp, Pakistan Telecommunication itself owns mobile service provider Ufone, which competes with Pakistan Mobile Communications Ltd's Mobilink, Telenor ASA's local subsidiary, and a unit of China Mobile Ltd. Noting that his company is also conducting a due diligence of Warid Telecom Ltd, a smaller competitor, Mr Irshaid said: "I foresee consolidation as a natural phenomenon."

Prime Minister Nawaz Sharif, who won office in May, has increased tax levies on Pakistan's telecommunications industry. He has agreed to a loan with the International Monetary Fund and is aiming for national economic expansion of 4.4 per cent in the fiscal year that began 1<sup>st</sup> July, up from an estimated 3.6 per cent in the year ended 30<sup>th</sup> June.

© As prospective competitors Ooredoo (previously Qatar Telecom) and Norway's Telenor move closer to launching services in Myanmar, the national telecom ministry Myanmar Posts and Telecommunications (MPT) said it is in talks with international providers including France Télécom to help with an expansion.

"We are now discussing a joint venture agreement with a foreign giant," U Aung Maw, the managing director of MPT, told the *Myanmar Times* on 15<sup>th</sup> September on the sidelines of the Myanmar Connect 2013 conference in Nay Pyi Taw.

While he declined to name the companies, Mr U said that MPT, which is to become a corporation separate from the ministry, had held discussions with firms from France, Singapore, Japan, and other Western countries.

A bidding process had earlier selected Telenor and Ooredoo as winners of two mobile licences, with a consortium of France Télécom and a Japanese firm finishing third.

Domestic entities MPT and Yatanarpon Teleport (YTP) also possess licenses, while MPT has the sole existing mobile infrastructure and customer base in Myanmar.

## 欧盟计划终止移动电话漫游收费, 展望一个单一、高科技的电信工业

欧盟主席约瑟·曼纽尔·巴罗佐 (Jose Manuel Barros) 9月11日称: 对支离破碎的欧元区电信市场进行一次大整合“对欧洲的战略利益和经济的前进必不可少。”为此, 欧盟力争在28个国家地区废除移动电话漫游费。该被提议的立法意为, 到2014年7月, 客户在其他欧盟国家旅行时将无需为打入的电话付费, 且两年后所有的漫游费用都将被取消。它还希望欧盟国际长途固定电话的价格上限达到国内长途电话费用相一致。

这项须经欧盟议会和欧盟成员国政府批准的计划, 旨在协调集团分散的电信市场, 减少繁文缛节, 并鼓励在新兴高速网络投资以激励增长。欧洲目前拥有数百家移动电话及固定电话运营商, 遍布28个成员国。更明显的是, 其在新移动科技方面的推广, 例如第四代 (4G) 服务, 却落后于美国、亚洲、和非洲。“拉哥斯都有4G手机,” 委员会评论道, “布鲁塞尔却没有。”欧盟负责立法的专员尼莉·克罗斯 (Neelie Kroes) 称目标为无论身处欧洲何地所有的电话费用均相同。她声称: “欧盟客户在欧盟地区出国旅行时不应该付额外的国际长途费用。”

克罗斯女士对网络运营商可能试图通过提高国内电话价格来弥补他们漫游损失的关注不多。她说, 甚至新的立法给了客户更多电话和互联网供应商选择的情况下——包括那些在欧盟地区以外的国家——这个行业内激烈的竞争将使得价格保持低位。欧盟的执行机构欧盟委员会宣布欧洲“(无法)错过如此唾手可得的的目标, 可以全力驱动二十一世纪的数字经济。”欧盟委员会称一个单一的电信市场能够为该地区的国内生产总值 (GDP) 增加大约1% (超过1320亿美元)。

① 欧盟委员会为欧洲开发单一电信市场的计划却从全球行动通讯系统协会 (GSMA) 得到了一个否定的答案, 该协会的移动电话运营商成员和相关公司支持现有2G (第二代) 蜂窝网络协议。在认可克罗斯专员和她的团队对抗紧迫的时间轴为开发他们提议所作的承诺和努力同时, GSMA称欧盟委员会应更妥善解决地区增长、就业和竞争力的挑战上。GSMA的报告《欧洲移动通讯经济2013》强调随着移动技术不断的转变诸如健康、教育、运输和能源产业, 欧洲经济可能从中获益颇多。为了最大化这些潜在发展, 协会提倡前瞻性政策和规章制度以激励投资, 创造新的岗位、及在电信行业推动创新。GSMA的总干事安妮·鲍沃特 (Anne Bouverot) 称: “改革将会为未来十年欧洲数字经济的投资和创新设立框架。”

## 对华为而言, 5G不是一项技术而是一整套系统和“物联网”的关键

“一直雄心勃勃的华为科技有限公司已经开始了其5G的构想: 提速10倍达到10兆字节/秒, 所需的光谱增加1000倍, 同时还是FDD/TDD暴政的终结。”

《休闲阅读》(Light Reading) 的罗伯特·克拉克 (Robert Clark), 报道了领导华为5G技术开发的童文 (Tong Wen) 最近的声明, 中国电信设备制造商提供了200名研究人员参与5G研发, 被描述为“(我们)的首要项目之一。它将真正打开‘物联网’大规模连接的前沿。”

确实雄心勃勃。童先生相信到2020年5G技术成熟时, 物联网将驱使全球范围内的无线连接数量增加到10,000亿, 而且这个数量在2030年之前可能再增加10倍。(华为展示其5G的能力, 7月22日) 根据华为人的观点, 该厂商视5G为4G、3G和Wi-Fi的延伸——而非取代者。根据童先生的观点: 在接下来

的十年, 华为期待解决一些问题, 诸如浸入式的连接, “所有的物品都联入网络, ”。

克拉克先生写道: 自2009年以来华为就致力于5G的工作, 与全球范围内20个左右的教育机构合作, 其中包括哈佛、剑桥以及香港科技大学。华为称自己在原型设备上领先, 已经完成了50兆字节/秒的吞吐量演示。

5G的引入也能推进无线技术标准整合的引入。童先生推测全双工 (同时在相同频率上的双向通信) 将取代离散频分及时分模式, 其分裂了3G和4G的开发效果。

② 但是克拉克先生指出上述能力加强严格的需求。他在lightreading.com上写道: “华为预计5G需要频谱数量比目前无线通讯所达到的数量的还要多1000倍, 其中很多在极端高频。”目前分配给无线的最高波段为LTE TDD和WiMax的3.5GHz, 虽然WiMax能在固定无线频率66GHz部署工作。

## 电信其他新闻.....

③ 华为的其他新闻, 该公司称其2010至2013年期间在欧洲的研发投资加倍, 并预计在接下来的5年中再次加倍投入。《激情无线》(FierceWireless) (9月13日) 的麦克·达诺评论称“引人注目”的承诺象征着该厂商期望巩固其在欧洲以及更为宽广的全球市场的地位。

④ Com Hem, 瑞典最大的线缆多系统运营商 (MSO) 正拓展其网络, 推出的宽带最高下行速度为500Mbps, 最高上行速度为50Mbps。目前对一百万以上的家庭而言可以每月138.03美元价格获得, 新的线路使得Com Hem在高度渗透的瑞典高速互联网市场中面对面的竞争者中增加了诸如Telenor和TeliaSonera这的对手。8月21日, 《多频道新闻》(Multichannel News) (纽约) 技术编辑杰夫·包姆加特纳 (Jeff Baumgartner) 观察到Com Hem声明提供了有关速度的“一些现实世界的证据”即今天的DOCSIS 3.0平台能提供的速度。他同时写道: “确实紧密贴合欧盟委员会的数字日历, 其号召网络服务供应商为全民提供的宽带下载速度在2020年前至少到到30Mbps。同样是在这一年, 至少50%的欧洲家庭认购这项能提供最低100Mbps的服务互联网服务。”

⑤ 《华尔街日报》于9月13日报道, 英国的沃达丰集团已经达到了收购德国互联网及有线电视公司卡贝尔德意志公司 (Kabel Deutschland AG) 的目的, 尽管建议一些股东继续持有以获得更高价格。在此前一天, 沃达丰称超过75%的卡贝尔公司的股东已经同意沃达丰以100亿美金收购这家德国最大的有线电视公司。该交易被认为是沃达丰发动的政变, 其希望利用卡贝尔的固定网线在欧洲最大的经济体推广移动电话。收购卡贝尔使得该英国运营商提供速度更快宽带互联网服务还意味着沃达丰将无需在为使用德国电信公司 (Deutsche Telekom AG) 的网络而付费。

记者埃克·亨宁 (Eyck Henning) 和皮特·埃文斯 (Peter Evans) 写道: 收购卡贝尔公司可能只是英国电信公司拉开欧洲交易的序幕。两周之前, 沃达丰已经同意以1300亿美元的价格出售其在美国威瑞森无线公司 (Verizon Wireless) 45%的股份——一个能使其“拥有更强火力以开展欧洲战略的行动”。沃达丰管理层已经宣布他们的计划是投资意大利市场同时还表现出对西班牙市场的兴趣。分析师认为威瑞森的交易同样可能减少沃达丰机会, 在美国的销售结清之后, 其本身也可能成为收购的目标。

## Telecom

### Fears that American giant Verizon could snap up spectrum off-limits to Canadian incumbents heats up a debate on foreign ownership

Reports that the US carrier Verizon may want to buy Wind Mobile, and possibly also the struggling Mobilicity, as a way into Canada's telecommunications market have agitated the big three Canadian providers – Bell, Telus and Rogers – prior to an auction of wireless spectrum in January.

As explained by Canadian Press political journalist Jennifer Ditchburn in the *Toronto Star*, under the present system the federal government limits how much spectrum the big domestic ('incumbent') companies can buy up. Intended to encourage smaller players to come to the table, this policy would, at least in theory, stimulate competition and put downward pressure on prices across Canada.

But those smaller players could be bought up by a firm like Verizon, which might then snap up the spectrum that is off-limits to the incumbents. Ms Ditchburn wrote: "Because those big Canadian firms aren't allowed to bid on all the spectrum available, that could drive down the size of auction bids and give Verizon a potentially good deal."

On 26<sup>th</sup> August the Fraser Institute, a Canadian public policy think tank, argued in favour of another expedient for healthy competition in the wireless market: Ottawa should do away with limits on foreign ownership and other constraints on domestic telecoms.

A report cited by the *Star* is the work of a senior fellow at the politically conservative Fraser, who flatly rejects the assumption that handicapping the incumbents does anything to promote effective competition in the telecom sector. Wrote Steven Globerman: "Preventing large incumbent carriers from restricting competition can and should be addressed through the federal Competition Act rather than by such means as spectrum auction caps."

In Mr Globerman's view, getting rid of the remaining barriers to foreign entrants into the Canadian marketplace would induce a more beneficial fear: that of hostile takeovers, with their powerful incentive to the Canadian incumbents to remake themselves for greater efficiency.

- ❖ As of Ms Ditchburn's writing, it appeared that the incumbents had no intention of retooling either their fears or their perceived major adversary. The big three telecoms launched a "Fair for Canada" campaign and have taken out full-page ads asserting that Verizon would be getting preferential treatment under the current auction rules.
- ❖ A strongly contrarian "Real Fair for Canada" campaign promptly sprang up, and issued the following challenge to 'Robellus' – the Canadian incumbents Rogers, Bell and Telus. ('Dear Robellus: Let's get real,' 30<sup>th</sup> August):
  - You have over 90 per cent of the wireless spectrum already. How can you justify wanting more? How can you even pretend that that is fair to ANY new player?

- Why would your loyal customers whom you treat with respect and never overcharge leave you for Verizon?
- You have just raised your plan rates by 40 per cent for basically nothing, so why would we nag the government to help you hurt consumers even more?
- If you run your companies so efficiently and are really ready for competition, then why is it you only operate in Canada?
- Money doesn't grow in some magical orchard that you own. It comes out of our pockets. But you learned that in business school...[we] hope.

## Energy

### Quieter-running wind turbines might deliver an incidental energy benefit

"Noise created by giant wind turbines is high on the list of barriers to renewable energy deployment, with NIMBY ('Not in my backyard!') and health complaints threatening or at least delaying a number of projects around the world."

Writing in *IEEE Spectrum*, a journal of the Institute of Electrical and Electronics Engineers, Dave Levitan went on to note that noise is also related to energy efficiency. In a development he deems a 'win all around, apparently,' the research division for turbine manufacturing giant GE says it has devised a method of reducing noise and boosting output from the wind turbines.

Working with Sandia National Laboratories in Albuquerque, New Mexico, on noise abatement, GE Wind Energy (Fairfield, Connecticut) utilised the Red Mesa supercomputer which, when it began operations in 2010, reached speeds of 500 teraflops that made it the tenth-fastest computer in the world. [Editor's note: "Teraflops" is not a typo. A teraflop is a measure of computing speed equal to one trillion floating-point operations per second.]

At Sandia, GE said, the Red Mesa was set to run a program (high-fidelity large eddy simulation), created by Stanford University (California), for projecting detailed fluid dynamic phenomena and resulting wind blade noise. ('Supercomputing a Quieter Wind Turbine,' 19<sup>th</sup> August).

After three months of monitoring these runs, the researchers believed they had gained "valuable insights that were used to assess current engineering design models, the assumptions they make that most impact noise predictions, and the accuracy and reliability of model choices."

While pronouncing this "a bit vague," Mr Levitan was able to report a promising result from the experiment. According to GE, a turbine rotor design that is quieter by one decibel equates to a two per cent increase in annual energy yield.

With 240 gigaWatts (gW) of wind power forecast to be installed around the world over the next five years, that two per cent increase could in fact be worth five gigaWatts.



- ❖ Energy efficiency aside, reducing noise could cut down on NIMBY fights when it comes to getting wind projects built, and could perhaps allow the turbines to be built slightly closer to where people live.

Here, Mr Levitan may be over-optimistic. While largely anecdotal, reports of health problems traceable to wind turbine noise (and of ‘shadow flicker,’ the strum of shadows and reflections cast by the whirling blades) are persistent and worrisome.

What is clear, in Mr Levitan’s view, is that ‘cutting down on noise would benefit pretty much everybody, whether or not they live near turbines.’

## ‘Toxic tower’

### Green? Greenish? Or quite otherwise? Challenging the environmental credentials of a much-praised building in Manhattan

When the Bank of America Tower on New York City’s Avenue of the Americas was dedicated, in 2010, the billion-dollar, 55-storey crystal skyscraper was hailed as one of the world’s most environmentally responsible high-rise office buildings. In two powerful endorsements of its greenness, it was awarded Leadership in Energy and Environmental Design (LEED) Platinum certification – the first ever for a skyscraper; and it had as a tenant the environmental movement’s biggest celebrity, former US vice-president Al Gore.

However, according to data released by New York City in autumn of 2012, the building termed by its developer ‘the most sustainable in the country’ in fact produces more greenhouse gases and uses more energy per square foot than any office building of comparable size in Manhattan.

It uses more than twice as much energy per square foot as the 80-year-old Empire State Building. And it also performs worse than the Goldman Sachs headquarters, perhaps its closest counterpart in the city – and with a lower LEED rating.

Writing in the *New Republic* this past summer, New York-based journalist Sam Roudman declared that the energy inefficiency of ‘Bank of America’s Toxic Tower’ is not “just an embarrassment: it symbolises a flaw at the heart of the effort to combat climate change.” (‘New York’s ‘Greenest’ Skyscraper Is Actually Its Biggest Energy Hog,’ 28<sup>th</sup> July).

Supplying some context for his indictment, Mr Roudman noted that buildings contribute more to global warming than any other sector of the world economy.

In the US, they consume more energy and produce more greenhouse gas emissions than every car, bus, train and jet plane combined; and more, as well, than all American factories, taken together. “When we’re not travelling between buildings, we’re inside them,” he wrote. “And that requires energy for everything from construction to heating and cooling to running appliances.”

How, then, could the Bank of America Tower have commended itself to the non-profit US Green Building Council (USGBC), which unveiled LEED in 1998 as a way to measure a building’s environmental footprint?

This has grown into the most popular certification system anywhere for green buildings, with some 50,000 structures either certified or in the certification process globally.

“A stamp from LEED signals ‘green’ to the public, and it’s good for more than just [public relations],” wrote Mr Roudman. “Some certifications can be cashed in for tax credits. In fact, many cities, states and federal agencies now require new buildings to work with LEED.”

### Going platinum

The explanation for the Bank of America Tower’s LEED certification may be found in the programme’s point system, which takes into account such factors as building materials, air quality, water conservation and – of course – energy performance. When enough points are accumulated, the project is rated Certified, Silver, Gold or Platinum (the highest rating).

While LEED has helped create a market for sustainability, Mr Roudman asserted that real-estate developers have been able to rack up points for relatively minor environmental interventions. He cited a *USA Today* series from October 2012 which found developers accruing points by posting educational displays throughout a building and installing bike racks.

The 50 points earned by the Bank of America Tower (two more than needed to be certified Platinum) included those awarded for building near public transportation; protecting or restoring habitat in Bryant Park, the landmarked public space under its windows; and working with a LEED-accredited professional.

This last was ‘most important,’ according to Mr Roudman, who wrote: “LEED certified the building under its programme, which it designed for developers who have either no clue or no control over what their tenants might do inside the building.” While its owner presumably knew what would be going on inside the Bank of America Tower, the developer and architect had no control over how much energy would be required to support those activities.

- ❖ As noted in ‘New York’s ‘Greenest’ Skyscraper,’ the biggest drain on energy in the Bank of America Tower is its trading floors: giant fields of workstations with five computer monitors to a desk. Assuming no one turns these computers off, in a year’s time one desk uses roughly the energy that would keep a 25-mile-per-gallon car engine going for more than 4,500 miles.

The servers supporting all those desks also require enormous energy, as do the systems that heat, cool and light the massive trading floors after normal business hours. These spaces take up nearly a third of the Bank of America Tower’s 2.2 million total square feet.

- ❖ Mr Roudman acknowledged that many of the Bank of America Tower’s ‘bells and whistles’ prevent it from consuming even more energy – and much of the

energy it does draw comes from cleaner sources than it otherwise might have. The building developers also showed him improved energy numbers for last year, set for official release by the city in September.

But, he said: "The fact that the Bank of America Tower became slightly less energy intensive is hardly a triumph for the environment."

## American researchers credit lower-priced solar panels from China to highly developed supply chains and economies of scale

"A study of the photovoltaic industries in the US and China shows that China's dominance in solar panel manufacturing is not driven solely by cheaper labour and government support, but by larger-scale manufacturing and resulting supply-chain benefits." (*Energy & Environmental Science*).

Reported in the journal of the London, UK-based Royal Society of Chemistry (RSC), the study grew out of work at the US Department of Energy's National Renewable Energy Laboratory (NREL) and the Massachusetts Institute of Technology (MIT).

A bottom-up cost model was developed to examine the underlying causes for the shift in the global manufacturing base of photovoltaics from the US and Europe to China, which as of 2011 produced 63 per cent of the world's solar panels.

As described by the RSC, the NREL/MIT team assumed the perspective of a multi-national firm evaluating locations for a solar panel manufacturing facility in the US and in China.

The economic analysis predicted how the firm would decide by examining a factor called Minimum Sustainable Price (MSP) for monocrystalline silicon solar panels to be produced in both regions. The MSP posits the minimum price at which a company can sell its products while still realising an adequate return for itself.

Using industry-validated figures from the first half of 2012, the researchers estimated an MSP of \$1.19 per Watt for US solar panels, compared to \$0.91 per Watt for Chinese solar panels, representing an MSP differential of \$0.28 per Watt and a 23 per cent price advantage to the Chinese product.

The study cited density of production and the China-based manufacturer's use of local suppliers, providing it with access to lower-priced materials. ('Cheaper Chinese Solar Panels Are Not Due to Low-Cost Labour,' 5<sup>th</sup> September).

NREL senior analyst Al Goodrich, the lead author of the study, said: "These advantages, which are not indigenous to China, could be replicated by manufacturers based in other countries if comparable scale could be achieved."

❖ In the meantime, American solar panel producers hoping to narrow the gap with their Chinese counterparts face an intransigent fact: MSP costs in the US are higher than the market price of the product.

Tonio Buonassisi, an associate professor of mechanical engineering at MIT and co-author of the RSC report, said: "That's why improved technology is essential."

Professor Buonassisi has in mind an ideal: a photovoltaic module with high efficiency, lower materials costs, streamlined and scalable manufacturing, and unquestionable reliability.

"The photovoltaic modules you can buy today have a few of these attributes," he said. "But not all of them together."

## A shift in the Chinese energy sector toward cleaner-burning operations means leaner times for American coal exporters

The coal industry of the US provides another example of the extent to which the fortunes of American companies are linked to what goes on in China. Having pinned its hopes on exports to counter a declining market at home, the domestic industry is scaling back those ambitions as demand from abroad starts to ebb. The main cause of the step-down, experts say, is a weakening in Chinese demand.

Energy correspondent Clifford Krauss of the *New York Times* noted that, for most of the last decade, China's urgent energy needs accounted for more than 50 per cent of world coal demand, driving up international coal prices and stimulating mining activity around the globe.

"With Australia and Indonesia straining to produce for China," the Houston-based Mr Krauss wrote, "South Korea and Japan increasingly looked to the United States for future supplies, stimulating interest in the building of several export terminals in Oregon and Washington State and on the coast of the Gulf of Mexico."

Now, however, after years of mounting imports of coal to fuel its growing economy, China has taken a number of steps to slow those imports. It has modernised domestic mines, made coal-fired electricity plants more efficient, and stepped up development of nuclear and renewable power.

To help curb air pollution, China in late summer announced a ban on construction of new coal-fired plants around Beijing, Shanghai and Guangzhou. The plan will shift new power plant construction to natural gas and nuclear and solar power.

Mr Krauss reported: "Those initiatives, along with slowing Chinese economic growth, have undercut expectations for rising imports and helped produce an overabundance that has sent world coal prices plummeting by more than 30 per cent from last year."

American coal companies are prominent among those curtailing their mining activities and shelving export projects from Australia to the Gulf of Mexico, especially for thermal coal used to produce electricity.

A half-dozen export terminals planned for the Gulf and the Pacific Northwest have already been cancelled. ("US Coal Companies Scale Back Export Goals," 13<sup>th</sup> September).

At the beginning of 2012, the US coal industry had plans to expand port capacity by an additional 185 million tons. But those hopes have faded.

American coal exports this year are expected to decline by roughly five per cent from record exports of 125 million tons in 2012, and many industry observers look for the decline to quicken in 2014.

❖ Energy experts project that China, with its increasingly conservationist energy policies, may no longer be a net importer of coal by 2015. Accordingly, 2013 is a 'watershed year for global coal markets,' according to a Goldman Sachs report cited by Mr Krauss. "The window for thermal coal investment is closing."

American coal companies get the message. Anthony Yuen, a Citigroup energy analyst, told the *Times*: "Global coal prices right now are not supportive of large-scale US coal exports."

## Automotive

### Among younger car shoppers, 'Buy American' is not the imperative it once was

According to the results of a survey conducted by AutoTrader.com and presented 23<sup>rd</sup> August at an Automotive Press Association event in Detroit, only 38 per cent of millennials (born between 1982 and 2002) say it is important to them to buy a car assembled in the United States.

The advisory site for shoppers compared that with 53 per cent of Generation X (born 1962-1982) and 60 per cent of baby boomers (the first generation after World War II).

As reported by *Detroit Free Press* business writer Nathan Bomey, AutoTrader also said that some 48 per cent of millennials consider it important that their vehicle reflect their personality. The personality factor mattered to 38 per cent of generation X and 34 per cent of baby boomers.

Young millennials said the brands that most fit their personalities are, beginning with the favourite: Audi, Honda, Mercedes, BMW and Toyota. Older millennials picked Audi, Mercedes, Chevrolet, Honda and Toyota.

As to what this means for US car makers, Isabelle Helms, senior director of research and marketing analytics at AutoTrader, drew the obvious conclusion. "It is important," she told Mr Bomey, "for domestics not to hang their hats on 'Made in the USA' to the same extent they did in the past."

❖ Another problematic finding for American automakers is that many young car shoppers do not like the current process for buying a vehicle.

AutoTrader said that about 56 per cent of millennials would prefer to avoid interacting with a salesperson, an aversion acknowledged by 49 per cent of Generation X and 37 per cent of baby boomers.

Only 47 per cent of the younger cohort consider their dealer to be trustworthy, compared with 64 per cent of car shoppers aged 35 and up.

Ms Helms said that reaching young people is important because millennials will account for 40 per cent of car purchases in the US by 2020.

### Traditionally for high-end cars and trucks, leasing is extended to the less affluent shopper – and the rewards come fast

Somewhat at variance with the worrying tone of the previous item, the US auto industry has steadily increased production throughout the year to meet rising demand; and it reported another month of double-digit increases in August.

Sales of 1.5 million vehicles – a 17 per cent gain over the same month of 2012 – put seasonally adjusted annual industry sales at a post-recession high of 16.09 million, up from 14.49 million a year before.

As a possible explanation for the surprisingly strong sales results, analysts and auto dealers noted a recent trend in the producers' use of leasing, traditionally a way of making high-end cars and trucks more accessible to interested shoppers daunted by a high sticker price.

Now, with consumer confidence increasing and credit more readily available, increasingly the strategy is being extended to moderate-priced vehicles – to good effect.

According to *edmunds.com*, a resource for car buyers and enthusiasts, leasing figured in 16 to 20 per cent of new-car transactions in the US in the years leading up to the recession, with activity concentrated at the high end. In 2013, through August, leasing was a factor in 26 per cent of new-car purchases.

Detroit's Big Three (General Motors, Ford and Chrysler) reported August sales increases of 14.7 per cent, 12 per cent and 11.5 per cent, respectively.

The average monthly lease payment was \$408, down from \$416 in 2012, according to *Experian Automotive*, which analyses industry data.

#### In brief . . .

❖ Auto maker Toyota Motor Corp plans to invest more than \$28 million to expand its powertrain operations at two facilities in the Ann Arbor area of Michigan.

According to the *Detroit Free Press*, the expansion announced on 5<sup>th</sup> September by the Toyota Technical Center (Ann Arbor) is expected to focus on design, evaluation, and calibration for new engine and transmission projects at the Japanese company's North American plants.

**Dorothy Fabian**  
Features Editor

## 电信新闻

## 害怕美国巨头威瑞森 (Verizon) 抢购加拿大本地企业的频谱禁区, 对外资所有权的讨论升温

报道称美国承运商威瑞森可能要通过收购风移动公司(Wind Mobile), 可能还有苦苦挣扎的移动都市公司(Mobilicity), 作为进入加拿大电信市场的途径, 之前一月的无线频谱拍卖已经使得加拿大三大供应商: 贝尔(Bell)、泰勒斯(Telus)、和罗杰斯(Rogers)心神不宁了。正如加拿大新闻社(Canadian Press)政治记者詹妮弗·迪奇本(Jennifer Ditchburn)在《多伦多星报》(Toronto Star)写道: 在现行制度下, 联邦政府限制大的国内(本地)公司可购买频谱的数量。为了鼓励较小的参与者能参与进来, 至少在理论上在加拿大境内刺激了竞争和给予降价的压力。

但是那些小的参与者可能被一家诸如威瑞森这样的企业收购, 其之后可能将对于本地企业而言的禁区频谱收购得一干二净。迪奇本女士写道: “因为这些大的加拿大企业不准收购所有这些可得频谱, 那将降低竞标的规模并给与威瑞森一个潜在的划算交易。” 8月26日, 加拿大公共政策智囊非沙研究(Fraser Institute), 辩称为了无线市场的良性竞争其赞同另一个权宜之计: 渥太华应当废除对海外所有人的限制和其他对国内电信公司的束缚。

一篇《星报》(Star)的报道称: 在政治上保守的非沙高级研究员所作的是, 断然拒绝了假设, 即任何机会均等的竞争方法以促进电信行业的有效竞争。史蒂文·格鲁伯曼(Steven Globberman)写道: “用阻碍竞争的方式阻止大的本地承运商能够并可以通过联邦竞争法案解决而不是通过类似频谱拍卖上限来解决。” 在格鲁伯曼先生的眼里, 去掉现有的阻碍外资进入加拿大市场的障碍将会引发更多有利的恐惧: 敌意收购, 带着他们对加拿大本地企业强烈的动机, 为获得更大的效益改变自己。

- ❖ 正如迪奇本女士所写的那样, 看起来本地企业虽然惧怕或觉察到他们重要对手的来临, 但仍旧没有重组的意图。电信三巨头发起了一项“为了加拿大的公平”活动, 并采用了整版的广告称威瑞森在目前竞拍规则下将获得优待。
- ❖ 一个强烈的反潮流“对加拿大真正公平”的运动适时涌现, 并对“罗贝斯(Robellus)”发出挑战——加拿大本地的罗杰斯、贝尔、泰拉斯。“亲爱的罗贝斯: 让我们来真的吧”, 8月30日你已经拥有超过90%的无线频谱。你怎么证明想要的更多是合理的? 你怎么可以假装对任何新进者来说是公平的?
- ❖ 为什么你的那些平时用尊敬的态度对待也从从不向他们索价过高的忠诚的客户会离开你投靠威瑞森?
- ❖ 你已经提升了你的包价40%而几乎没有任何改进, 那么为什么我们打扰政府以帮助你更多的伤害消费者呢?
- ❖ 如果你管理你的公司如此有效并已经做好了竞争的准备, 你为什么你只能在加拿大经营呢?
- ❖ 钱并不是从你拥有的什么魔术果园里种出来的, 它是从我们的口袋里流出来的。但是你是从商业学校里学到的……(我们希望)。

## “毒塔”

## 环保的? 貌似环保的? 或是其他? 质疑备受赞誉的曼哈顿建筑环保证书

2010年当位于纽约市美国大道的美国银行大楼被投入使用时, 这座数十亿美元, 55层高、晶莹剔透的摩天大楼曾被作为世界上最具环保责任的高层写字楼而受到欢呼。在两个因其环保而被授予的证书中, 一个是节能与环保设计领袖(LEED)颁发的白金级——首度为摩天大楼颁奖; 而另一个则是美国前副总统戈尔, 环保界最具威望的名人成为其租客。

然而, 根据纽约市2012年秋季公开的数据, 这座被开发商称之为“全国最具可持续性”的建筑事实上产生了更多的温室气体, 与曼哈顿可供比较的写字楼相比每平方英尺所耗费的能源更多。其每平方英尺所耗费的能源相当于80年之久的帝国大厦整整两倍。其表现与高盛总部相比也更糟糕, 高盛可能是纽约规模上最接近美国银行大楼的建筑——却获LEED较低的评级。

在今年夏天《新共和》(New Republic)的驻纽约记者山姆·罗德曼宣称“美国银行毒塔”的能耗低下并非“仅仅是一个窘境; 其象征努力应对气候变化的核心问题上的败笔。”(纽约的最环保大厦其实是最大的能源黑洞, 7月28日)为了支持他所控诉的内容, 罗德曼先生评论建筑业相比世界经济的其他行业对全球变暖的温度贡献更大。在美国, 它们消耗了更多的能量并产生更多的温室气体排放, 比每一辆车、巴士、火车、飞机加在一起都多; 此外, 还超过美国所有工厂的总和。“我们不是在建筑物间穿行, 就是身处其中,” 他写道。“从基建到加热到制冷到使用电器每一件东西都需要能源。”然而, 之后, 美国银行大楼能推荐自己给非盈利的美国绿色建筑委员会(USGBC)吗? 该委员会1998年开始用LEED作为一种衡量建筑物环境足迹的方式。它已成为对任何地方的环保建筑来说都是最受欢迎的认证系统, 全球有大约50,000建筑经过认证或处于认证过程中。“一枚来自LEED的邮票有着‘绿色’标志展示给公众, 它的好处远远大于(公共关系),” 罗德曼先生写道。“一些证明可以通过抵税额度兑现。事实上, 在很多城市, 州以及联邦政府机构现在需要新的建筑与LEED一起工作。”

## 获得白金评级

美国银行大楼获得LEED认证的理由可以在认证程序的得分制度中得到答案, 其将诸多因素考虑在内, 诸如建筑材料、空气质量、节约用水——当然——能源表现。当足够的得分累加了, 该项目被评为合格、银、金、或白金(最高的评级)。当LEED帮助为可持续性创造一个市场时, 罗德曼先生评论称房地产开发商有能力通过相对较小的环境干预而获得高分。他引用《今日美国》(USA Today)自2012年10月的一系列文章, 该系列发现开发商可以通过在整栋建筑中安装教育意义的展示设备或安装自行车停车架来获取积分。美国银行大楼获得的50个积分(超过认证为白金积分两分)包括那些因为靠近公共交通; 保护或保存布莱恩特公园(Bryant Park)栖息地, 其窗户底下标注的公共空间; 以及与LEED认证的专业人士合作。这最后一条是“最重要的,” 罗德曼先生写道: “LEED用它的程序来认证建筑, 该建筑由开发商设计, 开发商往往对租客在建筑内做什么毫无头绪也无法控制。”当它的主人大致了解在美国银行大楼内部将会干什么时, 开发商和建筑师对需要多少能源以支持那些行动毫无控制权。

- ❖ 正如在“纽约的‘最环保’大厦”评价的那样, 美国银行大楼最大的能源吸食者是交易大厅; 占地巨大的工作站, 每张办公桌上有5个电脑显示器。如果无人关闭这些电脑, 在一年时间内一张桌子使用的能源大约能使一辆引擎为25英里/每加仑的汽车前行4,500公里。支持这些桌面电脑的服务器同样需要大量的能量, 在普通的营业时间结束后, 这个巨大的交易大厅的加热、制冷、灯光、及照明系统也同样需要大量的能量。这些空间占用了接近美国银行大楼总计220万平方英尺的三分之一。
- ❖ 罗德曼先生认为美国银行大楼很多“花里胡哨”的阻止其消耗更多能源——很多能源确实来自相对其他来说更清洁的资源。该建筑的开发商展示了其去年改善的能源数字, 在9月由市政府正式发布。但是, 他说: “事实上美国银行大楼变得稍微不是那么能源密集型也很难成为环保的胜利。”

## 美国研究者称中国太阳能电池板较低的价格源于高度发展的供应链和经济规模

“一项中美的光电研究报告显示中国在太阳能电池板制造业上的优势地位并不仅是由更为低廉的劳动力价格和政府支持,



还因为更大的生产规模及其产生供应链效益。”(能源与环境科学)位于英国伦敦的杂志《皇家化学学会》(Royal Society of Chemistry) (RSC) 报道称该研究脱胎于美国能源部的国家可再生能源实验室(NREL)和麻省理工大学(MIT)的研究。自下而上的成本模型被开发以检验全球光电制造基地从欧美转移到中国的根本原因,在2011年63%的全球太阳能电池板产自中国。如《皇家化学学会》所描述,可再生能源实验室和麻省理工团队假定从一个跨国企业的角度为美国和中国的太阳能电池板生产厂选址做评估。经济分析预测企业将如何通过测试一个名为单晶硅太阳能电池板能在两个地区生产的最小可持续价格(MSP)因素做决定。

MSP即假定公司能出售其产品的并为自身获得足够回报的最低价格。使用业界认证的自2012年数字,研究人员估计美国的太阳能电池板的MSP为1.19美元每瓦特,相比而言中国的太阳能电池板为0.91美元每瓦特,意味着MSP的差价为0.28美元每瓦特且中国产品具有23%的价格优势。该研究称产品密度以及在在中国的生产商的当地供应商,为其提供了低价格的原材料。(“中国太阳能电池板价格低廉的原因并非是低廉的劳动成本,”9月5日)。NREL的高级分析员阿尔·古德里奇(Al Goodrich),本研究的首席作者称:“这些优势,并非中国的土生优势,如果规模相似可以被其他国家的制造商所复制。”

❖ 与此同时,美国太阳能电池板制造商希望与中国竞争对手之间的差距缩小但面临一个不可调和的事实:在美国的MSP高于产品在市场上价格。托尼奥·伯纳西斯(Tonio Buonassisi),麻省理工机械工程副教授及RSC报告的合作作者,称:“这就是为什么改进技术是必要的。”伯纳西斯教授已经构思了理想产品:一个高效的光电模块,原材料成本低,最新型及规模化的制造,以及无可置疑的可靠性。“今天你能买到的光电模块具备某些上述属性,”他说。“但是不具备以上所有一切。”

## 中国能源工业朝清洁燃烧经营方向的转变意味着美国煤炭出口商的萧条时刻的来临

美国煤炭工业提供了另一个例子即某种程度上美国公司的财富与中国发生的一切息息相关。寄希望于出口以弥补不断下滑的家乡市场,由于海外的需求退潮国内工业的雄心也已开始缩减。专家称下滑的主要原因是中国的需求减弱。《纽约时报》能源业通讯记者克利福德·克劳斯评论称,在上一个十年的大多数时间,中国迫切的能源需求占世界煤炭总需求的50%以上,抬高了国际煤炭价格并在全球范围刺激了开采行动。“随着澳大利亚和印度尼西亚开始为中国产煤,”身处休斯敦的克劳斯写道,“韩国和日本对未来供应越来越指望美国,激发了在俄勒冈州和华盛顿州以及墨西哥湾见招几个出口终端的兴趣。”

然而,现在,在多年不断增加煤炭进口为其不断增长的经济提供燃料之后,中国已经开始采取一系列措施减缓那些进口。国内的煤矿已经现代化,使得燃煤发电效率更高,提升核能和可再生能源的发展。为了帮助抑制空气污染,中国在去年夏天宣布在北京、上海、广州周边禁止修建新的燃煤工厂。该计划将新建设的发电厂转变为天然气、核能和太阳能。克劳斯先生报道称:“这些倡议,随着中国经济慢慢增长,已经削弱了进口上涨的预期并造成生产过多,使得世界煤炭价格自去年以来直线下滑了30%。”美国煤炭公司在这些缩减采矿行动尤为突出,并搁置从澳大利亚输出到墨西哥湾的项目,特别是用于发电的动力煤。6个原本计划为海湾和太平洋西北地区的出口终端被取消了。(“美国煤炭公司缩减出口规模目标,”9月13日)。2012年年初,美国煤炭工业计划拓展额外的1.85亿吨的港口能力。但这些希望已经破灭了。今年美国煤炭出口预计相比2012年1.25亿吨的出口记录下降5%,很多行业观察家预计在2014年下滑会加快。

❖ 能源专家预测中国,随着其自然资源保护论者的能源政策,到2015年为止可能不再会是一个煤炭净进口国。因此,2013年是一个“全球煤炭市场的分水岭年度,”根据有克劳斯先生引

用的高盛公司报告。“热能煤投资的窗口被关闭了。”美国煤炭公司获得了信息,安东尼·阮(Anthony Yuen),花旗银行能源分析师,告诉《泰晤士报》:“全球煤炭价格现在不支持大规模美国煤炭出口。”

## 汽车行业新闻

### 在较年轻的汽车购买者中,“购买美国货”已经不再势在必行了

根据由AutoTrader.com进行的研究和位于底特律的汽车新闻协会大会8月23日发布报告称:只有38%的千禧一代(1982年至2002年出生)称对他们而言买一辆在美国组装的汽车是重要的。该购车者咨询网站称:与被遗忘的一代(1962年至1982年)相比较约53%的被遗忘的一代认为购买美国组装的汽车很重要,婴儿潮一代(二战后的第一代)比率为60%。据底特律自由新闻商业作家南森·波曼(Nathan Bomey)报道,AutoTrader同样称大约48%的千禧一代认为他们的车彰显个性十分重要。个性因素影响了38%的被遗忘的一代和34%的婴儿潮一代。年轻的千禧一代称最符合其个性的品牌依次是:奥迪、本田、梅塞德斯、宝马和丰田。年长的千禧一代则选择奥迪、梅塞德斯、雪佛兰、本田和丰田。对于这对美国汽车制造商意味着什么,伊莎贝尔·赫尔姆斯(Isabelle Helms) AutoTrader调研与营销分析高级主管称得出现察结论。“这很重要,”她告诉波曼先生,“对国内汽车制造商来说不要在像过去那样,带上他们‘美国制造’的帽子。”

❖ 对美国汽车制造商而言另一个问题的发现是很多年轻的购车者不喜欢目前的购车流程。AutoTrader称大约56%的千禧一代倾向于避免与销售人员进行互动,49%的被遗忘一代和37%的婴儿潮一代承认厌恶。只有47%的年轻一代认为他们的销售商是可信的,与之相比35岁以上的购车者信赖销售商的百分比是64%。赫尔姆斯女士称接触年轻人是很重要的,因为在2020年之前美国千禧一代汽车购买量将达到40%。

### 传统上高端轿车和卡车营销战略:租赁——延伸到不太富裕的购买者——而回报来的更快

与以前担忧的语调有些不同,美国汽车工业已经整整一年都稳步增产以满足增长的需要;同时它还在8月报道了另一个双位数的增长月份。销售了150万辆车——相比2012年同期增长了17%——经季节性调整后年度行业销售达到了自衰退以来的高点1,609万,高于一年之前的1,449万辆。对于这个令人惊讶的销售结果的可能性解释为,分析家和汽车销售商评论称制造商最近使用租约的趋势,一种传统的方式,使得高端汽车和卡车对被高价吓到的顾客更具吸引力。现在,随着顾客信心的增加和信贷更易获得,这种战略不断的被增加近中等价位的汽车并获得良好的效果。根据汽车购买者和有购车意图者的资源网站edmunds.com的统计,租赁指数在美国新车交易从衰退以来的16%上升到了20%,租赁活动主要集中在高端汽车。2013年,租赁占整个8月新车购买量的26%。底特律3巨头(通用汽车、福特和克莱斯勒)报道称8月销售分别增加了14.7%、12%和11.5%。根据行业数据分析机构益佰利汽车(Experian Automotive)的分析,每月平均租费为408美元,与2012年的416美元相比有所下滑。

### 简要新闻.....

❖ 汽车制造商丰田汽车公司计划投资超过2800万美元拓展其在密西根州安阿伯(Ann Arbor)地区的两间工厂的传动系统营运。根据《底特律自由新闻报》(Detroit Free Press),于9月5日的由丰田技术中心(安阿伯)宣布的扩张预计将专注于为这家日本公司北美工厂的新引擎和传动项目设计、评估和校准。

专栏编辑: Dorothy Fabian





# *Wire & cabling* for the *transport* *industry*

Land. Sea. Air. Space. The case could be made that the field served by transport applications is the widest in the wire and cable industry: a universe of moving parts in which faultless performance must be guaranteed across the broadest possible range of military, industrial, commercial and personal interests.

Airline pilots and firefighters are heavily reliant on the safety and reliability of their equipment. But so are users of snowmobiles and recreational

watercraft, whose machines are no less dependent on the soundness of their wired electromechanical systems.

Serving so many masters is a heavy responsibility, but one welcomed by the companies reviewed in this section of Wire & Cable ASIA. Whether a failure would threaten catastrophe or “mere” inconvenience, they take the view that it shouldn’t happen. Whatever mode of transportation is involved, that ideal of zero tolerance for error has them all covered.



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## Keeping up today with tomorrow's market trends

The market for wires and associated on-board wiring systems for the transport industry is undergoing dramatic change: The number of electric and electronic components used for vehicle operation, safety or comfort is growing, new drive technologies in the automotive sector came in, for which electricity is indispensable, and there is a generally increasing pressure to reduce weight.

Where technically feasible, cable manufacturers are researching ways of replacing copper conductors with alternative conductors. The reasons are based on the need to reduce the weight of the cables themselves and the fact that copper prices have been increasing enormously for years.

As far as dimensions are concerned, a trend towards smaller wire and cable diameters can be observed. For copper cables the cross sections are limited to 0.35mm<sup>2</sup>, with values as small as 0.13mm<sup>2</sup> for copper alloys being within practical range. A further reduction to 0.09mm<sup>2</sup> would also be possible in production terms, but certain elements such as terminations and connections still remain to be certified.

Just as wires now have to meet higher requirements, so does the insulation. With a view to reducing outer diameters to the minimum possible and taking account of the costs of halogen-free and other high-quality plastics, cables with ultra-reduced insulation wall thicknesses (UTW – ultra thin wall) were introduced, for example of 7 x 0.21mm design and with a conductor cross section of 0.22mm<sup>2</sup>.

The insulation on the compacted strand has a wall thickness in the region of 0.15mm.

Cables with smaller dimensions and good electrical conductivity which also have enhanced mechanical properties at the same time (with regard to tensile strength and flexural strength) can be manufactured from copper alloy wire. Signal wiring is increasingly using conductive wires made of copper alloys with higher tensile strength (such as CuMg, CuAg and CuSn). This enables the cable cross section to be reduced from 0.35mm<sup>2</sup> to 0.13mm<sup>2</sup>.

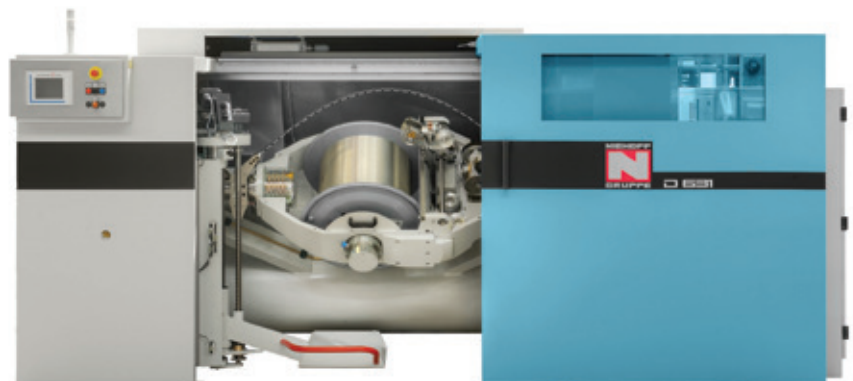
Copper cables with bigger cross sections are increasingly being substituted by aluminium or aluminium alloys in order to save weight and costs. Aluminium wires have already been used for battery cables for some time. Depending on the vehicle manufacturer, the aluminium cables used have cross sections of down to 2.5mm<sup>2</sup> and in some cases are even used for signal cables.

Automotive cable manufacturers are currently researching new types of alloys, among other things, capable of delivering certain mechanical strength and high bending flexural strength under higher temperatures for the engine area, as well as minimising cold creeping.

In order to keep up with these trends, the manufacturers of such high quality wires and cables need refined equipment which operates economically and can be used to produce reliably and efficiently today's and tomorrow's cables.

Maschinenfabrik Niehoff has developed machinery adapted to the requirements of wires made of copper, copper alloys, aluminium and aluminium alloys which cover all production steps as well as processing to strands and handling. Some examples are the electronically

○ The D type double twist buncher from Niehoff



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○ The MMH 104 type multiwire drawing machine with RMA 201 type annealer

controlled MSM type rod breakdown machines, the MMH series multi-wire drawing machines with more than 1,100 units working worldwide, the double twist bunching machines of the D series and the wire and cable handling system NPS.

The MMH 104 type multi-wire drawing machine with RMA 201 type annealer has been specially developed for wires made of aluminium and aluminium alloys.

The D type double twist bunchers are built in seven different sizes and cover a cross section range from 0.013mm<sup>2</sup> to 107mm<sup>2</sup> (copper wire). Compared to conventional bunchers, energy consumption and noise emission are significantly reduced.

The reasons are their one-bow design and the aerodynamically optimised ECO-Bow together with a state-of-the-art energy saving drive technology. By means of the automatically working optoelectronic NBAT (Niehoff Bunching Automatic Traverse) system the spools are perfectly filled and can be paid off tangle-free and without wire damage even at very high speeds.

The Niehoff Package System (NPS) is particularly foreseen for automotive wires and designed to spool automotive wires coming from extrusion lines with a particular wire laying technology onto collapsible NPS multi-way spools. The spools made of ABS plastic offer a secure, stable and tangle-free package both when full or partially empty, enable highest pay-off speeds and require much less return shipping space than traditional spools and packages of the same capacity.

Another advantage for the users of Niehoff systems is that the company supports customers with comprehensive process knowledge, professional after sales services and expedient customer services. Users of Niehoff technology therefore have the tools at hand to benefit from all developments in the cable sector.

**Maschinenfabrik Niehoff GmbH – Germany** Website: [www.niehoff-gmbh.info](http://www.niehoff-gmbh.info)

## Expanding footprint in Asia

Delfingen has acquired the Indian company Kartar Wire Industries to expand its footprint in Asia.

Kartar, founded in 1981, is a manufacturer of plastic extruded tubing, profiles and sleeves used in the protection of electrical wiring harnesses and the fastening of car seat covers. Kartar, with sales revenue of €3.5m, has two manufacturing locations in Pune (Maharashtra) and Gandhinagar (Gujarat), supplying major OEMs and automotive tier-suppliers in India.

The acquisition of Kartar is an important step in Delfingen's strategy to speed up its development in Asia and to strengthen its position in automotive wiring harness protection solutions, while supporting its local and international customer base on the fast growing Indian market.

**Delfingen SA – France**

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## Understanding the importance of cable cleats

By Richard Shaw, managing director, Ellis

The costs associated with the construction and maintenance of any transport infrastructure project are exceptionally high – as is the pressure to maintain a safe and reliable environment for those using the transport services they provide access to. Therefore, it would seem extremely remiss if one significant installation aspect was frequently neglected.

According to Richard Shaw, managing director of British cable cleat manufacturer Ellis, there is one such aspect – and worryingly it is related to electrical power cable installations.

The importance of cable cleats is frequently underestimated. What this means in practice is that instead of being treated as a vital element of any electrical cabling installation, they are lumped in with the various sundry items and seen as fair game for cost-cutting. But for any electrical installation to be deemed safe, cables need to be restrained in a manner that can withstand the forces they generate, including those generated during a short circuit, and this is specifically what cable cleats are designed for.

Without them, the dangers are obvious – costly damage to cables and cable management systems, plus a risk to life posed by incorrectly or poorly restrained live cables. All of which is in stark contrast to the stringent safety requirements of any transport infrastructure project, especially those that see thousands passing through each and every day.

Unfortunately, it is not just a question of installing any old cleat. It has to be correctly specified for the project in hand. If not, the cables may as well be secured with plastic cable ties. The reason being that different cable cleats are designed to withstand specific forces. Putting this in layman's terms, the only thing underspecified cleats will do in a short circuit situation is add to the potentially lethal shrapnel.

One reason for this worrying level of confusion is that the market is very much manufacturer driven. Therefore, the choice of product tends to be reliant on third party certification – in the form of a short circuit testing certificate – but unfortunately this can be misleading.

For example, it is not uncommon for manufacturers to claim a given short circuit withstand at a given cleat spacing and legitimately provide third party certification to support this. However, the overlooked fact is that the quoted short circuit withstand is only valid for a cable diameter equal to or greater than the diameter of the cable used in the test. If the project in question uses smaller cables (and the fault level and spacing is the same) then the force between the cables is proportionally greater and the certification inappropriate.

Plainly and simply, you cannot say that a specific cable cleat has a short circuit withstand without qualifying the statement. So instead of claiming a withstand of 150kA you would need to say that a cable cleat has a short circuit withstand of 150kA when securing 43mm cable in trefoil at 300mm centres.

To me, the only way of rectifying the issues surrounding cable cleats is through their adoption as short circuit protection devices – a move that would give them the same degree of importance as fuses or circuit breakers and leave no one in any doubt about ensuring their correct specification.

The reasoning behind this suggestion is simple. In the event of a fault, the forces between cables reach their peak in the first quarter cycle, which is the point that cable cleats earn their crust.

In contrast, circuit breakers typically interrupt the fault after three or even five cycles by which time, if the cleats are underspecified, the cables will be long gone, meaning the expensively assembled circuit breaking system will never be given the opportunity to be tested.

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○ *Novorail, Sydney, a success story for Ellis*

This change isn't going to take place overnight, and so specifiers and engineers need to take steps to aid the correct specification of cable cleats. Perhaps key is being aware that levels of cable protection can be enhanced by selecting only products that are classified in section 6.4.4 of the International Standard (IEC 61914:2009). What this means is that the cable is guaranteed to still be intact and operable after a short circuit, as opposed to just the cleat.



○ *Managing director Richard Shaw*

Unfortunately, eradicating the problem isn't that simple. Most specifiers and engineers are diligent when it comes to system design. Where the problems really begin is when the specification reaches the buyer. At which level there isn't the technical understanding of cleats and instead the focus is far more on cost.

Should a buyer see a specification for 4,000 of our Emperor cable cleats it is natural that they may look elsewhere to find a better per unit price. The issue, though, is that the specification is particular to the project and the product, having been set according to the strength of the cleats and their spacing along the cable. As such, any change in the type and strength of cleat will result in a change in the numbers required, which in turn will have a knock-on effect on price. Therefore, if a buyer is intent on changing the specification they really need to look at overall as opposed to per-unit cost.

Looking at things from a budgeting point of view, it is fair to say that certain initial costs would be increased by adopting practices that ensure the correct specification of cable cleats. But if you consider the kind of sums involved in replacing an entire cable management system due to a short circuit occurring and causing irreparable damage it is easy to see the point of the additional expense.

Ellis is the only leading manufacturer in the electrical industry that focuses solely on cable cleats. Many of its products have London Underground (LUL) approval and are extensively used in the transport industry. Notable specifications include the Channel Tunnel Rail Link, Lantau and Airport Railway in Hong Kong and, most recently, the Novo Rail project in Sydney.

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陆地、海洋、空中、太空。运输行业用线缆是电线电缆行业应用最广泛的领域：这个用途广泛的移动部分必须保证性能完美无误，包括在军事、工业、商用和和个人应用。

飞行员和消防员对设备的安全和可靠性非常依赖。但是其他设备如雪地车和游船，电子线路系统的质量可靠是和设备同等重要。

服务众多流域是非常重要的责任，在亚洲线缆这一栏目介绍的公司欢迎提出，一个故障会带来灾难还是“仅仅”不方便，他们认为故障不应该发生。无论任何类型的运输设备，都要求容忍零故障。

## 用未来的市场趋势抓住当前

电缆及相关的运输业板载布线系统市场正经历剧变：用于车辆运作、安全和舒适的电气和电子配件数量不断增加，而汽车行业新的驾驶技术已被引入，因此电力不可或缺，但同时总体上减少重量的压力又不断增加。

在技术可行的地方，线缆制造商正研究用其他导体来代替铜导体。这么做的理由是基于线缆自身减重的需求而实际原因是多年来铜价涨幅巨大。

就所关注的尺寸而言，可观察到趋势为线缆直径变得更小。对铜缆而言横截面并限制在0.35平方毫米，就价值而言0.13平方毫米的铜合金是实用的范围。

继续削减至0.09平方毫米在生产工艺上也是可行的，但是特定的要素例如终端处和连接件将仍有待证实。

如同线缆必须满足更高的要求，绝缘体也一样。随着尽可能减少外部直径及考虑无卤素及其他高质量塑料的成本的观点的普及，拥有极端削减绝缘外层厚度（“UTW”——极端薄外层）的电缆被引入，例如7×0.21毫米的伴随导体横截面0.22平方毫米的设计。

压实股上的绝缘层壁厚约为0.15毫米左右。具有更小规格和良好导电性的电缆同样提高了机械性能（在拉伸强度和弯曲强度方面）同时能被制成更好的铜合金线。

信号配线增加使用具备更高拉伸强度的铜合金导线（例如铜镁、铜银、铜锌）。这使得电缆的横截面能从0.35平方毫米减少到0.13平方毫米。

为了减少重量和成本，横截面更大的铜缆正日益被铝或铝合金所替代。铝质线缆在某些场合早已被用做电池线缆。根据汽车制造商，采用铝材电缆横截面降到的2.5平方毫米在某些场合甚至被用作信号线。

汽车电缆制造商目前正在研发新的合金品种，其中也包括其他事物，如能在高温下为引擎区域提供特定机械强度和承受高弯曲强度、同时还能减少低温蠕变的电缆。

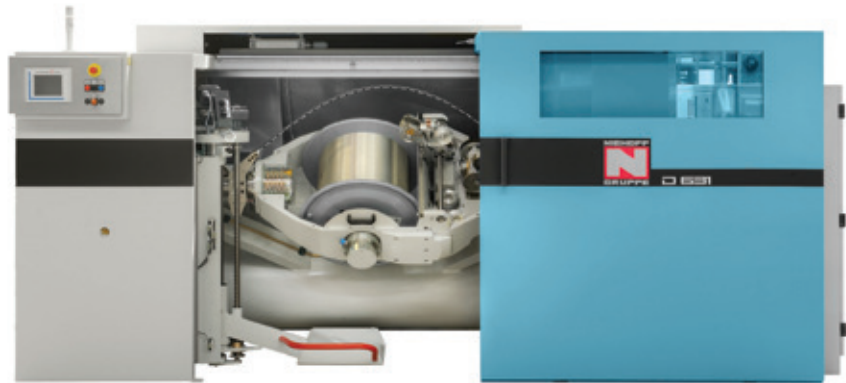
为了跟上这些潮流，上述高质量线缆的制造商需要改良设备，这种设备能经济的运作、高效可靠的生产今天和将来的电缆。

尼霍夫机械制造有限公司（Maschinenfabrik Niehoff）已经开发了适应铜质线缆、铜合金线缆、铝质线缆、铝合金线缆的要求的机械，涵盖包括绞线和处理在内的所有步骤。

一些例子是由电子控制的MSN型粗拉机，在世界范围工作有超过1,100台MMH系列的多重布线拉丝机，D系列双节距束线机和线缆处理系统NPS。



○ MMH104型，多线拉线机和RMA201型退火炉



○ 尼霍夫的D型双节距束线机

MMH 104型多重布线拉丝机和RMA 201型退火处理器专为铝质电缆及铝合金电缆开发。

D型双节距束线机内置7种尺寸，涵盖了横截面从0.013平方毫米到107平方毫米（铜缆线）。与传统的束线机相比，能耗和发出的噪音均大为减少。

原因是他们的单弓设计及空气动力学地优化的ECO弓与最先进的节能驱动技术一起。用自动工作光电子NBAT（Niehoff聚束自动横臂）系统线轴完美的填充甚至在高速运转的同时能无缠结清线且无线损坏。

尼霍夫包装系统（Niehoff Package System）（NPS）明确预见汽车线缆的趋

势并设计通过缠绕来自挤塑生产流水线上的汽车线缆到可拆卸的NPS多通道线轴上。线轴有ABS塑料制成无论是满载还是空转状态下均提供一个安全稳定和无缠绕的组合，使得最高速的清线速度成为可能，且与相同容量传统线轴和组合包相比所需的返回载位空间大大减小。

尼霍夫（Niehoff）系统用户的另一个优势是尼霍夫公司通过全面工艺知识和方便的客户服务为在售后客户提供专业支持。因此尼霍夫（Niehoff）技术的用户随时拥有理想的工具，并将从电缆工业的所有开发中获益。

**Maschinenfabrik Niehoff GmbH – 德国**  
网址: [www.niehoff-gmbh.info](http://www.niehoff-gmbh.info)

## 拓展在亚洲的脚步

德芬根收购印度公司卡塔线缆工业公司（Kartar Wire Industries）并拓展了其在亚洲的脚步。卡塔线缆工业公司，成立于1981年，是一家著名的塑料挤压管材制造商，生产用于保护电缆线束和汽车座套固定的配置和外包装。卡塔，其销售额为350万欧元，拥有两家工厂分别坐落于普纳（马哈拉施特拉邦）和甘地纳加尔（古吉拉特邦），提供给大型原始设备供应商和汽车轮胎供应商。

收购卡塔公司是德芬根加速其亚洲发展并巩固其在汽车线束保护解决方案领导地位之战略的重要一步，同时以快速发展的印度市场为基地为德芬根在当地的和国际上的客户提供支持。

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## 了解电缆夹的重要性

作者: Ellis常务董事理查德·肖

任何与交通基础设施项目相关的基建和维护成本都很高——因为需为使用这些可供接入的交通服务提供一个安全和可靠的环境。因此，如果一个重要的安装问题被经常忽视就显得太掉以轻心。

根据理查德·肖(Richard Shaw)，英国电缆夹制造商Ellis的常务董事的观点，确实存在这个重要却常被忽视的问题——令人担心的是这个问题关系到电力线缆的安装。

电缆夹的重要性经常被低估。意味着在电缆布线安装实践过程中电缆夹被视为一个次要的元素，经常被不同的杂牌电缆夹所替代且视之为节约成本的正常途径。

但是对任何视安全为第一的电力安装而言，电缆需用特别的方法固定使之能承受自身产生的压力，包括在短路过程中产生的压力，这正是电缆夹设计用途。

没有电缆夹，危险显而易见——对电缆和电缆管理系统而言损坏代价不菲，再加上带电电缆未被正确安装或固定而产生的对生命的威胁。

所有这些都与任何运输基建项目的安全要求形成完全的对比，特别是那些每天均有数以千计的人员经过的项目。

不幸的是，不仅是安装任何老的电缆夹的问题。必须按照正确的指示为项目实施控制。若非如此，电缆也可以用塑料电缆扎带固定。原因是不同的电缆夹被设计承受特定的压力。通俗的说，不指定参数的电缆夹唯一能做的是在发生短路时增加潜在致命的弹片。

为这种混乱程度担心的原因是电缆夹市场由数量众多的制造商所引导。因此选择产品趋向于依靠其第三方的证明——一经过短路测试环境的证明——但不幸的是它可以被误导。

例如，制造商通常会宣称一个特定的电缆夹能承受特定的短路压力，同时合理提供第三方证明以支持其观点。然而，被忽视的事实是所引用的短路耐受只有在所用电缆直径等于或大于测试所用电缆直径时方才有效。如果该讨论中的项目使用较细的电缆（同时故障的程度和间距相同）那么电缆之间的压力相应增大，这种情况下证明将不适用。

简而言之，没有合格的声明你不能说一个特定的电缆夹具备短路耐受。因此，称一个150kA的耐受，你需要说一个电缆夹在300mm中心三相电的条件下固定43毫米的电缆时有150kA的短路耐受。对我来说唯一整顿相关电缆夹问题的方法是通过使用短路保护装置——能给予



○ 常务董事 理查德·肖

他们保险丝和断路器同样等级的重要性并确保其正确规范的措施，不容任何疑问。

这个建议背后的理由相当简单。在发生故障时，电缆之间的压力在第一环路到达顶峰，即在该点电缆夹获得它们的保护层。相反，断路器典型的阻止故障在3或甚至5个循环的时间，如果电缆夹不足，电缆将荡然无存，意味着昂贵的已安装的回路阻断系统将无法获得被测试的机会。

这种变化不会突然发生，因此设计者和工程师需要采取措施以帮助调整电缆夹参数。可能关键是认识到电缆保护程度可以被提高，即只需选择国际标准(IEC 61914:2009)章节6.4.4中的分级产品即可。也就是说，能保证该电缆仍是完整的和可运作的，而不仅仅是电缆夹。

不幸的是，解决这个问题并不简单。当进入到系统设计时，大部分的设计者和工程师是称职的。真正出问题的地方是当参数到达买家手里的时候。在这个层面上对电缆夹的理解并非技术层面上的，相反关注更多的是成本。

一个买家应该看4,000个我们皇帝电缆夹的技术参数吗？自然而然的他们会看其他地方以寻找更低的单价。问题是该规范对项目和产品而言是指定的，根据电缆夹的强度和它们在电缆上的间隙设置的。电缆夹型号和强度上的任何变化将导致需求数量的变化，反过来也会造成价格上的连锁反应。因此，如果一个买家想要改变型号，他们的确需要综合考虑而非只关注单位成本。

从预算的观点看待一件事，坚持特定的初始成本是相当正常的，如果采用实践方法确保电缆夹的正确规划将导致成本的增加。但是如果你考虑的更换全部电缆管理系统所需的全部费用与短路造成的无法换回的损失相比，很容易理解这部分额外费用。

艾利斯(Ellis)是电子行业中仅专注于电缆夹生产的唯一翘楚。其很多产品得到伦敦地铁(LUL)的认可并在交通行业获得广泛应用。值得注明的是运用还包括海峡隧道铁路连接，香港大屿山和机场铁路以及，最近的悉尼的诺瓦(Novo)铁路项目。

Ellis - 英国  
网址: [www.ellispatents.co.uk](http://www.ellispatents.co.uk)

○ 诺瓦，悉尼，艾利斯的成功故事





# Automatic precision winding with RobCoil™

By Christensen Holm, Allan Nielsen and Jesper Joergensen – Roblon Industry, Roblon A/S

Winding products on flange reels may make heavy demands on the winding quality in terms of positioning the product accurately, layer by layer.

The precision winding technology has been available as an integral part of high-end take-ups, but as something new a stand-alone machine has now been developed which can be installed in front of the take-up and replace the manual guiding.

## Advantages of perfect winding

High quality winding is demanded for a number of different reasons, most importantly to prevent damage of the product. Maximising the product length per reel may be another requirement, and a reel with product positioned perfectly side-by-side from start to finish will give you the best utilisation of the reel capacity. If the product is to be used in a subsequent manufacturing or installation process, the perfectly wound product is likely to increase productivity, as these processes can happen at higher speed and with improved safety.

An example could be fibre optic cables where it is crucial that the cable does not cross during winding, as this would squeeze the cable and make it difficult to install later, eg by blowing it into tight ducts.

○ Precision rewinding unit



○ Precision take-up unit

Attenuation of the signal is another risk of bad winding. When winding steel wires that are used in subsequent production processes, it is important that there is no loose wire on the reel, which could cross when being wound off and potentially cause the reel to lock and thereby break the wire.

Finally, perfectly wound reels also present themselves as nicer to the end-user, a fact which should not be neglected.

## Products/materials

High quality winding will be beneficial to a range of products such as cables, plastic tubes, pipes, wires and thin steel tubes. It is possible to wind different shapes of products including round, square and figure-8. Some features ease the automatic guiding of a product, for example it is easier to wind a less flexible or stiff product with a smooth surface.

The product must be able to withstand the amount of tension needed to position it on the reel. However, when manually guiding a product it is also necessary to apply a certain tension. Using the precision guiding unit would most likely minimise the tension as the positioning of the product happens very close to the reel.

Reduced tension on the product means less pressure on the inner layers and thus the risk of damage to the product is eliminated.

Standard cables and similar products with a diameter of minimum 4mm can be wound with very high quality. Steel wires and steel tubes with even smaller diameters can also be wound using the precision winding unit.

A prerequisite of a perfectly wound reel is that the reel itself is of high quality. The better the quality of the reel, the easier it is to achieve a satisfactory winding of the product.

## Safety

Today it is sometimes necessary to manually guide the cable onto the reel and this process can be both time consuming and dangerous.

The person guiding the product will often have to focus exclusively on the winding process, and depending on the product he may have to stand immediately in front of the take-up.

Standing close to the take-up involves the risk of being jammed between the product and the reel, with serious personal injuries as a result.

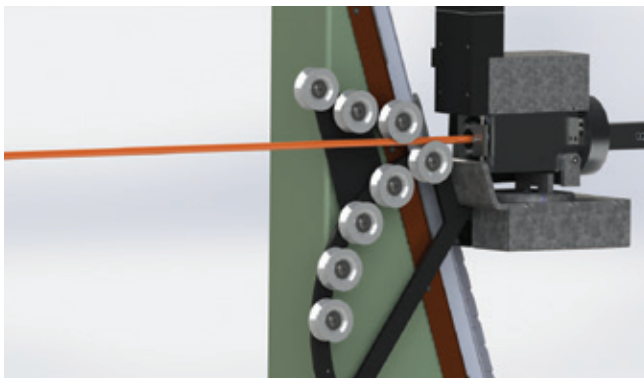
As health and safety requirements become more stringent, it is increasingly difficult to carry out the manual guiding of cable in front of the take-up, because it is completely fenced in.

Even when it is possible to manually guide the cable onto the reel, the distance from the operator to the take-up may prevent a perfect winding.

○ Guide arm



○ Inlet pulleys



## Pulleys

To achieve the best possible control over the product, it is important to guide the product as close to the reel as possible.

It is a key parameter to have as little distance from the pulleys guiding the product to the reel as possible.

The product is guided through a set of pulleys, which are dimensioned according to the diameter of the product. Because of the compact size of these pulleys, the distance to the reel can be minimised. Furthermore, the pulleys are shaped so that they are able to position the product very close to the flange.

The guide arm is fitted with sensors detecting and measuring the distance to the flange, and these sensors ensure automatic change of traversing direction when the cable is next to the flange.

The software controlling the precision winding unit is developed to optimise the quantity of product on the reel, eg by avoiding large gaps at the flanges when changing winding direction. During winding the guide arm turns 180 degrees so that the pulleys are always able to run very close to the flange.

The flange detection system makes it superfluous to key in new parameters when changing to another reel size. The precision winding unit automatically adapts the traversing to the mounted reel and it is not necessary to change end-settings.

When a layer is completed and the next one prepared, the guide arm moves up the ball rail by a distance equal to the product diameter in order to keep the product in its horizontal position.

The inlet of the precision winding unit consists of a number of pulleys, which are mounted in a funnel position and thereby apply a minimum amount of pressure to the product, even though the line height changes as the reel becomes full. Using the precision winding unit makes it possible to fill the reel to the edge of the flanges.

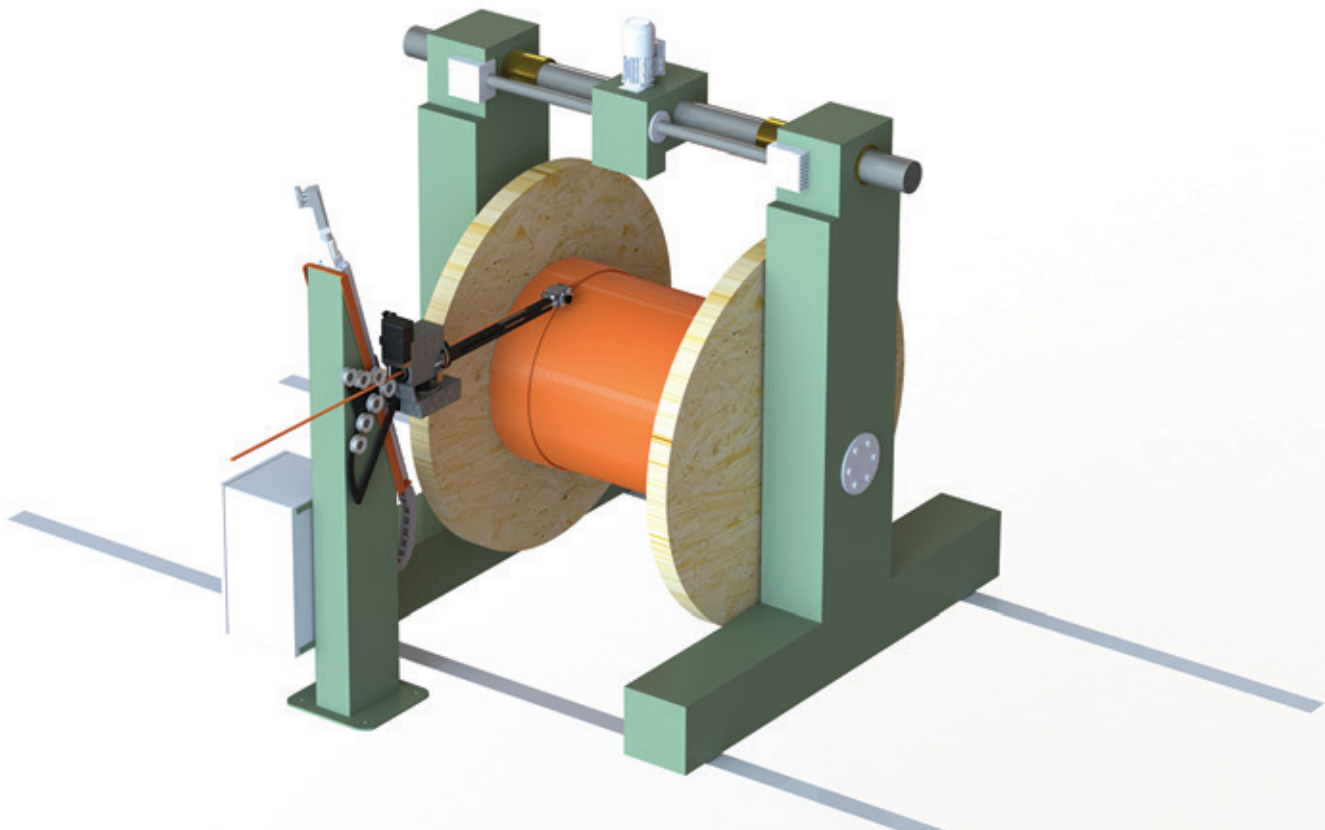
## Reels

It is important to position the product as close to the flanges as possible. Generally, it is recommended that flanges do not deviate more than half the product diameter.

If, for example, a product has a diameter of  $\varnothing 12\text{mm}$ , the flanges must not be more than 6mm off ( $\pm 3\text{mm}$ ). This means that the smaller the product diameter, the higher the demand for perfect reels.

For a number of years Roblon has supplied take-ups with integrated precision winding units, capable of handling reels ranging from  $\varnothing 380$  to  $\varnothing 1,400\text{mm}$  with a max gross weight of 1,800kg, and winding products ranging from  $\varnothing 3$  to  $\varnothing 16\text{mm}$ .

Some of the take-ups have been in use for the last 15 years, winding steel wires with a minimum of maintenance, and this underlines the durability of the technology.



○ *Take-up/winding unit*

## Integration

The new stand-alone precision winding unit can be integrated in existing traversing take-up units and control the traversing speed. The software is developed to be integrated with a minimum of impact on the existing take-up control.

The precision winding unit can exchange signals with the take-up or with the line control by use of either analogue or digital signals. The precision winding unit is based on the latest, low energy PLCs and inverters and as standard supplied with Siemens or Allen-Bradley solutions.

Furthermore, the stand-alone precision winding unit can form part of or exchange signals with the safety circuit of the existing take-up. It is supplied with a CE Declaration of Incorporation for partly completed machinery so that the unit can easily be part of an overall CE certification of the complete production line.

The precision winding unit is fastened to the floor in front of the take-up and covers reel sizes from Ø650 to Ø2,600mm.

It has a very compact footprint and, in most cases, it will be possible to position it inside an existing fencing around the take-up.

The unit is easy to install as it is bolted to the floor by use of four bolts and requires a minimum amount of electrical connections to the take-up.

It is possible to enter a number of recipes that are programmed with the relevant parameters for the different products and dimensions. The recipes can be accessed either from a separate control panel, from the take-up control panel or from the line control.

## Summary

When installing a RobCoil™ together with an existing traversing take-up, the need for manual guiding during winding is eliminated. Manual handling is required only when changing reels.

When an empty reel is inserted, the product must be threaded and fixed to the barrel. The reel is then aligned and the winding may commence.

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# 用RobCoil™进行自动精密卷绕

作者：Roblon Industry, Roblon A/S公司Per Christensen Holm, Allan Nielsen和Jesper Joergensen

法兰卷轴缠绕制品可能在逐层准确定位产品方面对绕组质量提出了很高的要求。精密卷绕技术已经成为高端收线机的一个不可分割的组成部分，但是我们现在发明了一种独立机器，作为一项新产品，这种机器可以安装在收线机前面，代替人工绕线。

## 精密卷绕的优点

虽然我们由于各种各样的原因需要高质量卷绕，但最主要的原因还是防止产品受损。另外一种需求可能是每卷产品长度最大化，将产品在卷轴上从头到尾并排精确地定位将最大化利用卷轴容量。如果这些产品要用于接下来的生产或安装环节，经过精密卷绕的产品很可能会提高生产率，因为这些环节能更高速且更安全地完成。举例来说，光纤电缆中精确卷绕很重要，它保证电缆在卷绕中不会交叠，而交叠会挤压电缆，使它之后很难安装，比如要把电缆吹进狭小的管道中就很难。信号衰减是糟糕卷绕的另一种风险。当绕线钢丝用于后续生产环节时，卷轴上没有松动的电线很重要，因为如果有电线松动，把线绕下来的时候线会交叠，可能导致卷轴锁死，继而弄断电线。最后，精确卷绕线轴也使它们呈现在终端用户面前时更加美观，这是一项不容忽视的事实。

## 产品/材料

高质量卷绕对一系列产品，如电缆、塑料管、管子、电线和薄钢板管都有利。有可能用它来卷绕包括圆形、方形和数字8形状在内的不同形状的产品。产品的一些特征使得自动绕线更容易，例如表面光滑、柔韧度更低或僵直的产品更易卷绕。



○ 精密复卷装置



○ 精密绕线装置

产品必须能够承受把它固定在卷轴上所需的张力。然而，如果手动缠绕一项产品时，也有必要施加一定的张力。使用精确绕线单元很可能使非常近距离在卷轴上固定产品的张力最小化。对产品施加的张力减小意味着对内层施加的压力减小，亦消除了损坏产品的风险。

最低直径为4毫米的标准电缆和类似产品的卷绕质量可以非常高。直径更小的钢丝和钢管也可以用精确绕线设备卷绕。完美卷绕卷轴的一个前提条件是卷轴本身质量要好。卷轴的质量越好，可以实现的产品卷绕满意度越高。

## 安全

现在有时候必须将电缆手动缠绕到卷轴上，这个过程不但耗时且很危险。缠绕产品的人员必须经常完全专注于卷绕过程，根据产品不同，他可能还需要直接站在绕线机前面。站在离绕线机很近的位置加剧了被卡在产品和卷轴之间的风险，有可能导致严重的人员伤亡。随着健康和安要求越来越严格，在绕线机前面进行手动绕线越来越困难，因为机器现在完全用围栏围护着。即使可以把电缆手动缠绕到卷轴上，操作者和绕线机之间的距离也可能阻碍了精确绕线的实现。

## 滑轮

为了实现对产品可能的最好的控制，将产品缠绕在离卷轴尽可能近的地方很重要。使卷绕产品的滑轮尽可能靠近卷轴是一项关键决定因素。

产品由一组滑轮缠绕，滑轮的尺寸由产品的直径决定。由于这些滑轮体积小，离卷轴的距离可以达到最小化。此外，这些滑轮的形状使它们能把产品固定到离法兰很近的位置。引导臂上配有探测离法兰距离的传感器，这些传感器保证当电缆靠近法兰时自动改变运行方向。

为了优化卷轴上的产品数量，如通过避免当改变绕线方向时法兰上出现较大缝隙，我们发明了控制精密绕线装置的软件。绕线进行时，引导臂将旋转180度，以便滑轮能时刻在非常靠近法兰的位置运行。法兰探测系统使得改变卷轴尺寸时键入新的参数变得多余。精密绕线装置自动适应并调整至已安装卷轴上，无需更改终端设置。当已完成一层，下一层开始准备时，引导臂的滚珠导轨向上移动与产品直径相当的一段距离，以便将产品保持在水平位置。

精密绕线装置的入口有很多滑轮，它们被安装成一个漏斗位置，因而即使卷轴满了以后行高发生变化，也能使对产品施加的压力最小化。使用精密绕线装置使得把卷轴填满到法兰边缘成为可能。

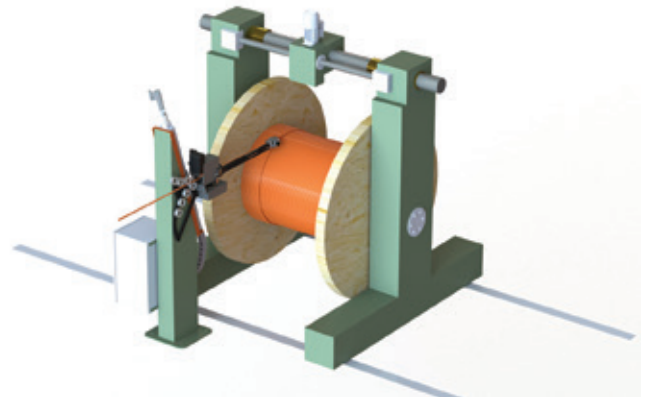
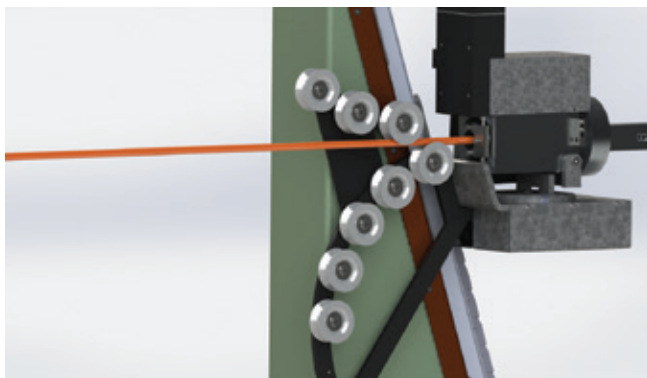
## 卷轴

把产品定位到距离法兰尽可能近的位置上是很重要的。通常，我们建议法兰不要偏离超过产品直径一半的高度。例如，假如一个产品的直径是Ø12毫米，法兰必须不超过6毫米(±3毫米)。这意味着产品直径越小，对精密卷轴的要求越高。多年来，罗伯伦一直供应配有集成精密卷绕单元的绕线机，能够处理直径从Ø380到Ø1,400毫米、最大毛重1,800千克、卷绕产品直径从Ø3到Ø16毫米的卷轴。其中有些绕线机在最近15年内都被用于缠绕钢丝，且需要最小程度的维护，彰显了这项技术的耐久性。

○ 引导臂



○ 入口滑轮



○ 绕线装置

## 集成

这种新型独立的精密绕线装置可以被整合到现有的横移绕线装置上，控制横移速度。我们已经研发了整合以后对现有绕线控制产生最小影响的软件。精密绕线装置可以通过模拟或数字信号与绕线机或者线控交换信号。精密绕线装置以最新的低能量PLC或变频器为基础，作为西门子或艾伦-布德拉利解决方案的标准配置提供。

此外，独立的精密绕线装置能够产生部分信号或者与现有绕线机的安全回路交换信号。半成品机器上的精密绕线装置有一份CE注册声明，使得该装置很容易成为完整生产线整个CE证书的一部分。

该精密绕线装置被固定在绕线机前门上，覆盖了尺寸从Ø650到Ø2,600毫米的卷轴。它占用空间非常小，在大部分情况下，可以把它安装在绕线机现有的护栏内。该装置很容易安装，只需用四个螺栓将其固定在地板上，而且与卷绕的电连接需求很小。根据产品相关参数和直径的不同，可以设计很多种方案。这些方案既可以从单独的控制面板访问，也可以从绕线机控制面板或线控访问。

## 重新开始

当把RobCoil™与现有的横移绕线机一同安装时，绕线时无需再进行手动操作。但更换卷轴时仍需要手动操作。当插入一个空卷轴时，产品必须用螺纹连接并固定到桶上面。将卷轴对齐以后就可以继续绕线了。

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Alcatel-Lucent .....	13	Inosym.....	10, 22	Ridgway Machines.....	13, 24, 27, 34
Associated Engineers & Industrials Ltd.....	17	Integer Research .....	8, 20	Sikora AG .....	30
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Delfingen SA.....	49, 53	Nuclear Power Corporation of India Ltd.....	37	Violi Srl.....	26, 33
Ellis .....	50, 54			Willi Bremer GmbH.....	29, 35

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Ajex & Turner Wire Die Co .....	48	Messe Düsseldorf (Shanghai) Co Ltd – wire China 2014 .....	28
Anbao (Qinhuangdao) Wire & Mesh Co Ltd .....	18	Metalube Ltd .....	15
Bongard Trading GmbH & Co KG.....	49	Rautomead Ltd.....	29
Borouge Pte Ltd.....	9	Ridgway Machines Ltd.....	11
Construcciones Mecánicas Caballé SA.....	1	Samp SpA .....	<b>Inside back cover</b>
Candor Sweden AB.....	31	SF Diamond Co Ltd .....	30
CERSA-MCI.....	23	Shanghai Nanyang Equipment Co Ltd .....	21
Comsuc Technology Development Ltd.....	50	Shanghai Shenchen Wire & Cable Equipment Co Ltd.....	22
Continuus-Properti SpA.....	16	Sheng Chye Enterprise Co Ltd .....	<b>Back cover</b>
Dongguan Zhangli Machine Fittings Co Ltd .....	51	Sikora AG .....	2
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Gala Shrink Fit Pvt Ltd .....	51	UDM Srl.....	3
Guanbiao Electrical Machinery Co Ltd .....	30	Ultimate Automation Ltd .....	19
Huestis Industrial.....	17	WiTechs GmbH .....	48
Jiangsu Qunye Electrical Co Ltd.....	31	Wyrepak Industries.....	13
Joachim Uhing KG GmbH & Co .....	27	Zumbach Electronic AG .....	<b>Inside front cover</b>
Maschinenfabrik Niehoff GmbH & Co KG .....	14		
Messe Düsseldorf GmbH .....	10		



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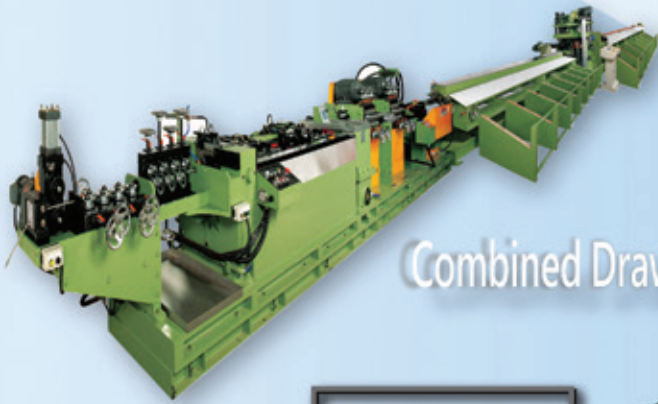


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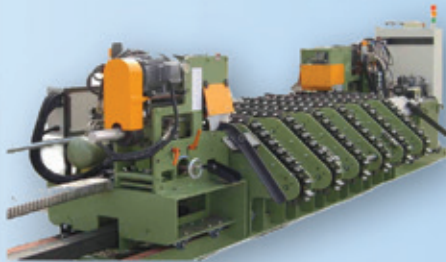
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