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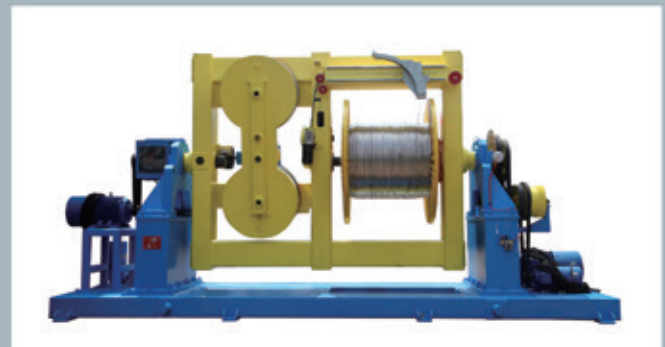
XBΦ500-Φ2500 Cantilever type single twisting machine



SJΦ1000-Φ2500 Double twist stranding machine



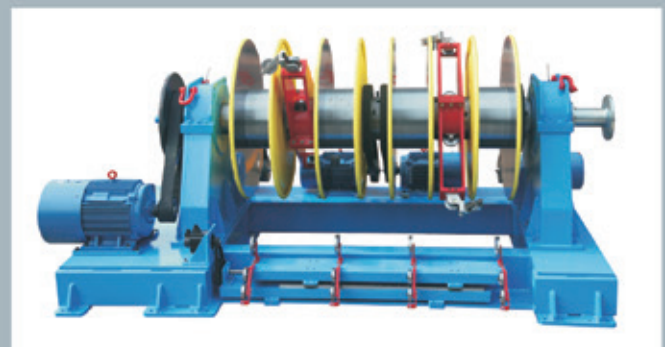
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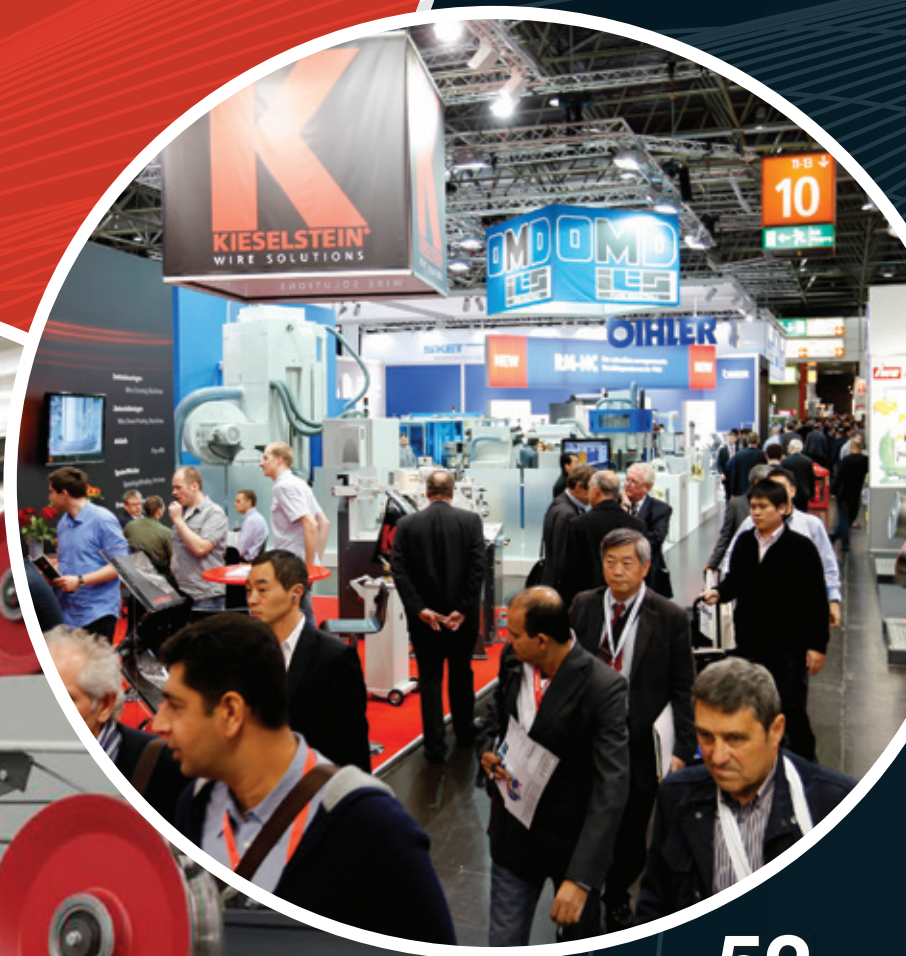
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Visit us from April 4-8, 2016 at the wire/tube in Düsseldorf, Germany.

Hall 9, Booth A41

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关参数的精准同心度测量技术
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Wire & Cable ASIA is published six times a year. It is distributed throughout North and South-east Asia to registered readers in wire, cable and wire component producer and consumer industries. Annual subscriptions are available from just US\$80.

《亚洲线缆》一年出版六期，面向整个北亚、东南亚地区的电线、电缆和线材制品的生产商和用户发行。订阅一年：欧元140；英镑120；美元195。



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wire 2016 – new products, machines and technologies

New technologies, modernisation, advancement, meeting old friends and making new ones. Düsseldorf is, again, about to become THE centre for all things wire and cable.

The German city plays host to wire 2016 from 4th to 8th April when organisers are expecting more than 70,000 visitors to attend the exhibition at the Fairgrounds.

It is hardly surprising that much of this issue of *Wire & Cable ASIA*, and the March issue of sister publication *EuroWire*, is devoted to the five-day exhibition.

Companies will be launching new products, new machines will be at the forefront, new technologies displayed for the first time.

You can read about some of the advancements made in our coverage, which starts on page 52. This is the ideal place to start to plan your way around the halls, take in some of the companies exhibiting and embrace the new technology on offer.

That technology and the latest news are also available for readers in the early sections of the magazine.

Free copies of our magazines are available from our stand at the North Entrance, and on stand 11D26. Feel free to stop by and collect them or simply to get a warm welcome from all the INTRAS staff.



David Bell
Editor

When and where

2016

11–14 May:
Lamiera –
trade exhibition –
Bologna, Italy
Organisers:
Ucimu-Systems
Fax: +39 0226 255 894
Email:
lamiera.esp@ucimu.it
Website:
www.lamiera.net

2016

8–9 June:
Wire Expo –
trade exhibition –
Uncasville,
Connecticut, USA
Organisers:
Wire Association
International
Fax: +1 203 453 8384
Email: sales@wirenet.org
Website: www.wirenet.org

2016

26–29 September:
wire China –
trade exhibition –
Shanghai, China
Organisers:
SECRI and Messe Düsseldorf
(Shanghai) Co Ltd
Fax: +86 216 169 8301
Email:
shanghai@mdc.com.cn
Website: www.wirechina.net

2016

5–7 October
Wire and Cable India –
trade exhibition –
Mumbai, India
Organisers:
Messe Düsseldorf India
Pvt Ltd
Fax: +91 112 697 1746
Email: info@wire-india.com
Website:
www.wire-india.com



○ Quick rolling line from Eurolls

Consolidation leads to a stronger Eurolls

DURING the past year Eurolls SpA has consolidated its position offering technically advanced integrated wire production/processing solutions for both the industrial wire and reinforcement sectors.

This position has been further strengthened by the complete integration of recently acquired Vitari, thereby maximising the synergies with the Eurolls Machinery Division, and the consolidation of its China office, Eurolls Machinery Shanghai Ltd.

This has led to a number of new developments, such as the compact in-line cold rolling system which can be directly connected to successive wire collection and/or processing units,

in conjunction with the other well known Eurolls products such as:

- traditional cold rolled and high resistance/ductility reinforcement
- straightening and cutting lines
- compact wet drawing and dry drawing/rolling multi-pass wire production lines
- production equipment for welding wire from stick electrodes to CO₂/flux core welding wires including TIG straightening
- high-speed LRPC wire and strand lines
- double twist stranders

Acclaimed cassettes have also enhanced the existing range of Eurolls equipment and accessories.

Together with its standard equipment range, Eurolls also manufactures tailor-made special lines designed specifically in accordance with customer specifications.

Under the Vitari brand name, Eurolls offers:

- straightening and cutting machinery (with end embossing/chamfering units)
- complete series of chain link fencing, barbed wire, gabions and nail making machinery
- technologically advanced range of high resistance chain production lines.

Eurolls SpA – Italy
Website: www.eurolls.com



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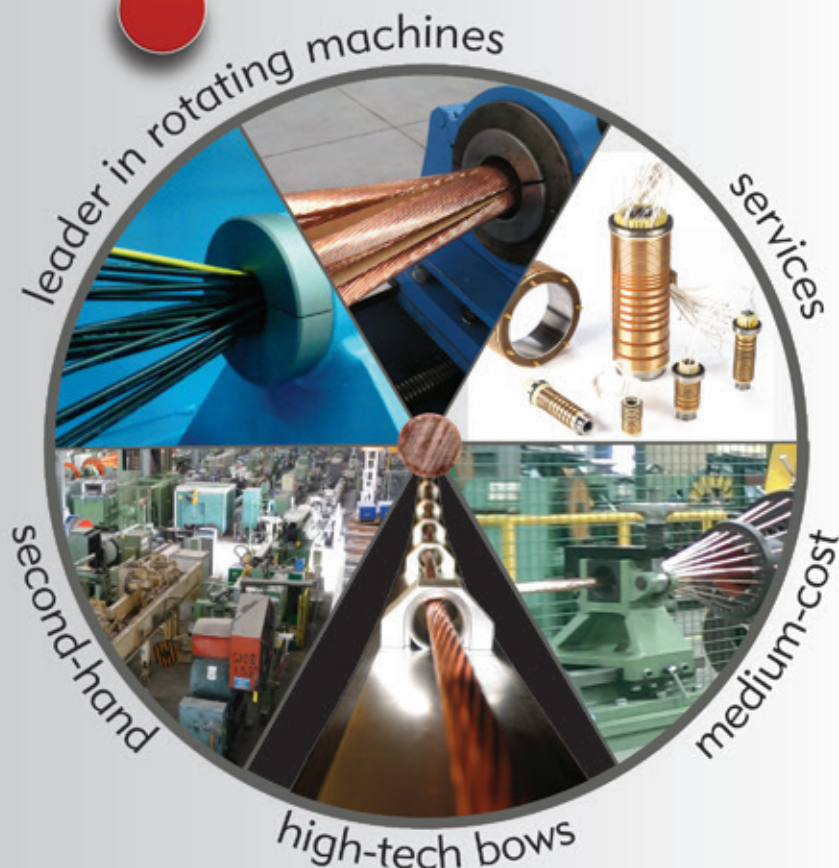


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Distinguished career award recipients are named

THE Wire & Cable Manufacturers' Alliance has announced the recipients of its 2016 Distinguished Career Award. The 32nd annual awards dinner and investiture ceremony will take place on 7th May 2016, in Hartford, Connecticut, USA, at the Connecticut Convention Center.

The recipients are:

Doug Brenneke, vice president R&D, chief technology officer, Belden; Peter Chase, executive chairman, Chase Corporation; Tom Jordan, president and CEO, T & T Marketing Inc; Mike Mennone, vice president/general manager, nuclear division, RSCC Wire & Cable; Michael Monti, vice president of manufacturing, industrial, construction and specialty products, General Cable Corp; Rahul Sachdev, executive vice president, Wire & Plastic Machinery Corp; Carlos Sanchez, vice president and general manager, electrical wires division North America, Nexans Canada; and Peter Schlichting, president, Quirk Wire Company Inc.

The Wire & Cable Manufacturers' Alliance continues the over 30-year tradition of recognising industry professionals, started by the late Dick and Harriet Callahan, founders of the Wire & Cable Clubs of America.

Nominations for this award are received from the WCMA

website. Candidates are first reviewed by a committee of prior award recipients through a ballot process.

The WCMA board of directors then makes final selections based on an individual's character, credibility, and commercial or technical contributions during their career.

The WCMA was established in June 2004 as a non-profit association to succeed the Wire & Cable Clubs of America.

WCMA is a corporate membership organisation for manufacturers of low to high voltage electrical, electronic and fibre optic wire and cable with an established manufacturing base in North America, as well as industry suppliers, service providers, affiliated companies and organisations serving the cable manufacturing and processing industry.

WCMA produces premier events that bring owners, executives, and key managers together for networking, the exchange of information, and to promote the wire and cable industry.

The Wire & Cable Manufacturers' Alliance – USA
Website: www.wcmainc.org



**THE REVOLUTION IN
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\$57m Newark Bay contract for Korea's LS Cable

LS Cable and System (LS C&S) has been awarded the Bergen-Linden Corridor project by Public Service Electric and Gas (PSE&G), the largest electric and gas service provider in New Jersey, USA. The contract will be worth around \$57 million.

LS C&S will supply and install a new 345kV underground cable system between Bayway and Bayonne, to deliver electricity to northeast New Jersey and address power shortage issues in the region.

Key challenges for this project are the manufacture, transportation and installation of new underground cables across the Newark Bay.

The cables will pass through conduits installed by the horizontal directional drill method, which demands continuous cables longer than 7,000ft (2.2km) and special care and handling of large reels to and at the site.

Mr Jae-In Yoon, president of the business unit in LS C&S, said that the experience gained with Southern Maryland Electric Cooperative, when LS C&S successfully completed the 230kV

Patuxent River crossing project, was instrumental in winning this contract.

LS Cable & System – South Korea
Website: www.lscns.com

Solomon Islands link

An undersea cable project for Solomon Islands is expected to be in its operational phase by October 2016.

Asian Development Bank (ADB) social development specialist Ninebeth Carandang has confirmed that the project will be financed through an Asian development fund loan together with grant funds and equity brought in by the Solomons Oceanic Cable Company.

The submarine cable is proposed to be sourced from Sydney, Australia. Major components of the network will be an international link from Sydney to Honiara, and domestic links from Honiara to Auki and from Honiara to Noro.

The cable project is expected to help improve the country's connectivity to the rest of the world, offer new domestic and regional economic opportunities, reduce communication costs and improve service delivery.

Asian Development Bank – Philippines
Website: www.adb.org

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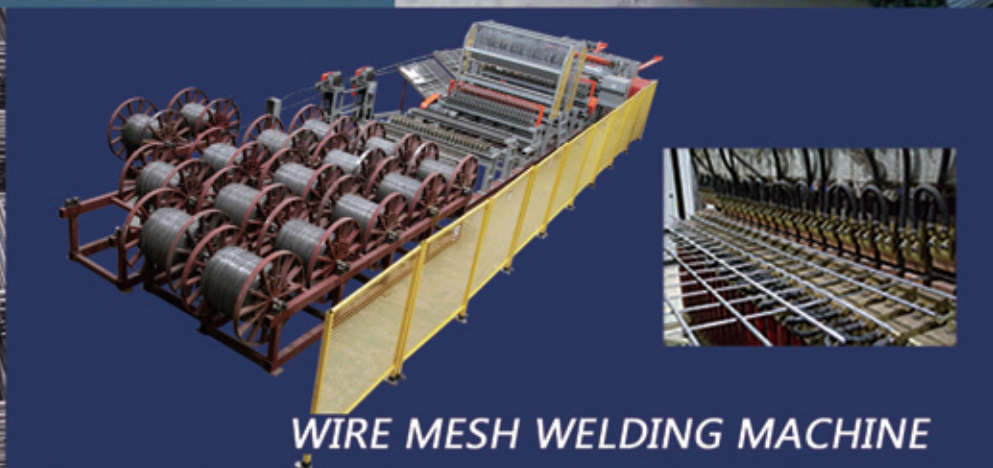
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○ The new swager, thought to be the largest in the wire rope industry

Aloha to cable

Alcatel-Lucent Submarine Networks has signed a turnkey agreement with Bluesky Pacific subsidiary Amper SA, for a 9,700km submarine cable system across the Pacific Ocean.

The Moana Cable will link New Zealand and Hawaii when completed in 2018. The system will have two main segments: the first 8,000km segment, based on two fibre pairs, will connect New Zealand to Hawaii serving Samoa and American Samoa and significantly enhancing route diversity for New Zealand; the second 1,700km segment, based on one fibre pair, will link the Cook Islands to the Samoa hub.

The cable will be the first long haul submarine cable in the Pacific Islands region relying on the latest 200Gb/s transmission technology, with ultimate capacity between Hawaii and New Zealand of 20Tb/s.

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

Amper SA – Spain
Website: www.amper.es

Talurit's swager record?

TALURIT AB's latest swager, with a capacity of 4,200 tons, is the largest swager yet manufactured by the company, and thought to be the largest serial-made swager within the wire rope industry.

The 4,200-ton swager is the first in a series of three machines commissioned from Talurit AB and is

bound for Kakogawa in Japan. The swager is developed for making a mechanical splicing of an eye on a wire rope with a diameter up to 152mm. Wire rope swaged in these sizes is often used in the offshore industry, when securing oil platforms.

Talurit AB – Sweden
Website: www.talurit.se

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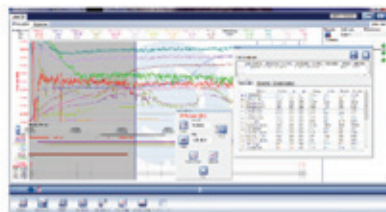
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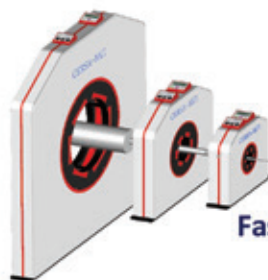
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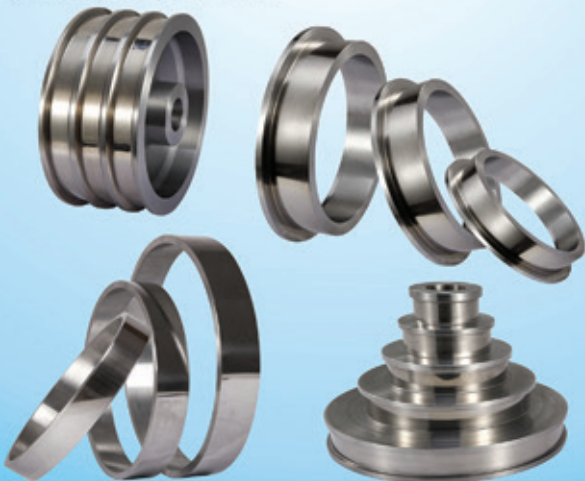
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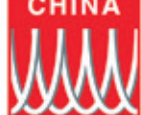


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Range of reels on offer from GMP



○ A selection of the reels on offer from GMP Slovakia

GMP Slovakia produces steel reels, take apart reels and handling equipment for the wire and cable industry.

The company has had the certification ISO 9001:2008 for the quality management system since 2009 and is now also certified ISO 14001:2004 for the environmental management system and BS OHSAS 18001:2007 for the occupational health and safety management system.

The take apart reels and special equipment (tilters, lifters, rolling systems) are CE marked. All the products are high quality and manufactured for long-term durability.

GMP Slovakia's range of products includes not only reels and drums for wire and cable, but different models of tilters and lifters.

The tilting unit type TU/M can carries reels or coils up to five tons. It works by transmitting the movement from the motor to the tilting unit by a chain.

It is provided with safety barriers (hardware and optical) and with all the documentation required by law. The equipment must be placed in the ground according to GMP Slovakia's technical team instruction.

It is possible to supply a rolling system, where the operator can place the reel in horizontal axis position for the strapping operation.

For smaller reels the TL model is available: the operator expands the jaws of the tilter by the handles and tilts the reel 90°. This device is suitable for reels up to 800mm flange weighing one ton.

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

wire Düsseldorf coverage starts on page 52

Qualifying rounds for Dubai project

FROM an initial entry of 95 companies, only 18 remain for consideration in the pre-qualification round to bid for an 800MW solar project within a solar park in Dubai. The solar park was originally planned to reach 3,000MW of total capacity by 2030, but the Dubai government has since announced a planned increase to 5,000MW.

One confirmed bidder is Saudi Arabia's Abdul Latif Jameel (ALJ) Energy and Environmental Services. "[ALJ] is based in Dubai and is continuously growing its local capabilities to support our participation in the renewable energy programmes in the region and beyond," said Roberto de Diego Arozamena, chief executive of ALJ Energy and Environmental Services.

Dubai expects 25 per cent of its power generation from solar energy in just 15 years, with the Mohammed bin Rashid Al Maktoum solar park playing a major role.

Mohamed El-Farnawany, the director for strategic management and executive direction at Abu Dhabi's



○ Mohamed El-Farnawany, the director for strategic management and executive direction at Irena. Photograph courtesy of iisd.org

Territory expansion

Reelex Packaging Solutions is expanding the territory of one of its sales representatives, Warbrick International Ltd.

Based in Warrington, UK, Warbrick represents Reelex in the UK and Ireland, and now the Netherlands, France, Germany and Switzerland. It also serves as an EU distribution point for payout tubes used in every Reelex® package, including the new EcoCore™ payout tube system.

Reelex Packaging Systems – USA
Website: www.reelex.com

international renewable energy agency (Irena) said that Dubai proves that solar is competitive to fossil fuels.

He added, however, that renewables are still relatively new in the UAE region, so proactive steps are necessary to accelerate their deployment.

The Middle East solar industry association expects that the Dubai Clean Energy Strategy 2050 will result in \$13.6 billion in solar energy investment.

International Renewable Energy Agency – UAE
Website: www.irena.org

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14,530km WACS cable now live after upgrade

HUAWEI Marine has announced that the recently completed 14,530km system upgrade of the west African cable system (WACS), is now live, having completed a stringent customer certification and testing programme.

WACS is owned and operated by a consortium of 18 international and regional carriers. When first launched in 2012, WACS was deployed with 10G technology, and an initial design capacity of 5.12Tbps.

An upgrade to 100G uses Huawei's third generation soft decision-forward error correction (SD-FEC) and bit-interleaved technologies that guarantee the compatibility of 100Gb channels with the 10Gb channels originally deployed. WACS' design capacity has now increased to 14.5Tb.

"Thanks to the efficiency and expertise of Huawei Marine's delivery team... the WACS upgrade was completed smoothly and on time, fulfilling our on-going commitment to our

customers," said Vishen Maharaj, chair of the WACS consortium's management committee.

"The increasing reliance on Internet and mobile applications, high-definition video, and other data intensive applications such as cloud services are fundamental drivers underpinning the increasing demand

for bandwidth," said Mike Constable, CEO of Huawei Marine.

"The additional capacity now available on the WACS submarine cable will greatly enrich international communications."

West African Cable System
Website: www.wacscable.com

Hengtong's 75 per cent stake in Aberdare

Hengtong Optic-electric Co Ltd, a Chinese power and fibre optic cable manufacturer, is to acquire a 75 per cent stake in Aberdare Cables Proprietary Limited, and a 100 per cent stake in Aberdare Holdings Europe BV Limited.

Aberdare Cables Proprietary, founded in 1946, is among the biggest cable makers in South Africa, offering low and medium voltage electrical cables to industry segments including power transmission and distribution, railway, petrochemical, and residential construction.

Aberdare Holdings Europe includes the wholly owned Cables de Comunicaciones Zaragoza SL (CCZSL) of Spain, and Portugal's Alcobre-Condutores Electricos SA.

Hengtong Optic-electric Co Ltd – China

Website: www.htgd.com.cn

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Rebar starts rolling



○ Rebar rolling mill supplied by Primetals Technologies for Kalika Steel Alloys. Photograph courtesy of Primetals Technologies

A NEW rebar rolling mill, supplied by Primetals Technologies to Indian steel producer Kalika Steel Alloys Pvt Ltd, is now running at all the required performance parameters.

The mill was erected in the Jalna in the state of Maharashtra and will produce about 250,000 metric tons of rebar per year from low carbon steels.

Primetals Technologies developed the plant design specifically for small- to medium-size production capacities, allowing projects to be implemented comparatively quickly and economically.

Kalika Steel is a producer of structural steels. The company produces billets from sponge iron using induction furnaces.

Kalika Steel aims to expand its production with the new rolling mill in order to serve the growing Indian construction sector. With the new rebar mill, Kalika Steel now hosts billet production and rebar rolling at the same location.

Primetals Technologies supplied the complete mechanical and electrical equipment as well as the automation systems for the rebar rolling mill, which produces reinforcing steels with diameters of between 8mm and 40mm, in lengths of between 9m and 15m.

The rolling mill consists of 18 Red Ring stands, followed by a 54m-long cooling bed and machines for bundling the rolled bars. The mill processes billets with a cross-section of 130mmx130mm and a length of 9m.

Rolling speed is up to 13m per second. An induction furnace raises the billets to the necessary starting temperature of 950°C.

Kalika Steel Alloys Pvt Ltd – India
Website: www.kalikasteels.com

Primetals Technologies – UK
Website: www.primetals.com

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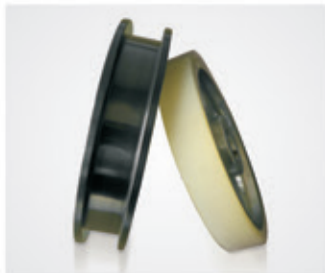
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Delfingen continues Asia expansion with new India plant



○ The entrance to the new plant in Pune, India

DELFINGEN, a global automotive supplier and manufacturer of on-board network protection solutions and fluid transfer tubing, has celebrated the official opening of its new, state-of-the-art manufacturing facility in Pune, India.

Established in Pune in 2013, following the acquisition of the company Kartar, Delfingen has just moved to a newly constructed plant with over 6,000ft² area, in accordance with the group's industrial excellence standards.

The new facility will enable the company to increase its production capacity and accommodate business growth for the Indian market.

The Pune plant's operations include 150 co-workers specialised in the manufacturing of extruded protection tubing for wiring harnesses, profiles for seat trim fastening and technical tubing for fluid transfer.

The grand opening ceremony was attended by Gérald Streit, CEO, and the Delfingen executive committee, together with many customers and business partners.

"Delfingen continues to execute the globalisation pillar of our proven strategy. India is an attractive region with strong growth potential and this new facility allows us to provide local production of the highest quality and will deliver exceptional value to our customers," said Mr Streit.

Damien Personeni, executive vice president, said: "The development of the Indian automotive market is of

significant importance to our global growth as it will become soon the fourth largest after China, US and Japan.

"This investment reflects our commitment to serve our growing base of customers and will enable us to offer the excellent customer service, innovative products, new technology and efficient manufacturing processes our customers expect here in India."

The festivities were conducted in a traditional way with 'Ganesh Vandana' followed by a lamp lighting ceremony and traditional Indian dances.

Delfingen Industry SA – France
Website: www.delfingen.com

Volvo a new client

Leoni now counts the Volvo Car Corporation among its passenger car customers. According to the first order from the Swedish car manufacturer, Leoni will supply wiring harnesses for future Volvo Cars models.

Leoni will be able to support Volvo Cars' growth objectives on a worldwide basis, being present with research and development capacities as well as seven production facilities for wiring systems in the Americas and Asia.

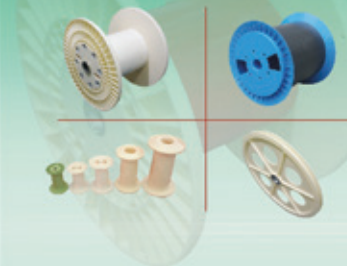
Having Volvo Cars among its clientele, Leoni enlarges its customer base, moving forward on its own growth path.

Leoni AG – Germany
Website: www.leoni.com

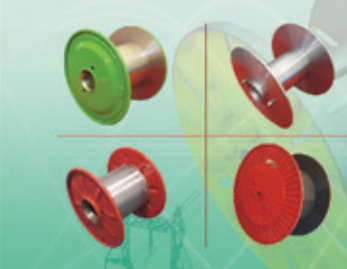
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○ Eurolls提供的快速滚轧生产线

合并使Eurolls集团更强大

在过去的一年里，Eurolls SpA为工业线材和强化行业供应技术先进的综合性线材生产和加工解决方案，进一步巩固了其市场地位。

Eurolls与旗下品牌Vitari完全整合，与Eurolls Machinery Division最大限度地发挥协同效应，以及加强与中国办事处

Eurolls Machinery Shanghai Ltd的合作，从而进一步巩固了其领先的地位。

这意味着新的发展成果，例如新的紧凑型在线冷轧系统可直接连接到连续线回收或加工设备，与其它知名的Eurolls产品协同运作，具体如下：

- 传统冷轧和高度抵抗/韧性增强

- 矫直切割生产线
- 紧凑型湿拉和干拉/滚动多通道线材生产线
- 从焊条到二氧化碳/药芯焊丝包括TIG 矫直的焊丝生产线
- 高速LRPC线材与绞线生产线
- 双捻绞线机

广受好评的辊模强化了Eurolls现有系列设备及配件。

除了标准设备之外，Eurolls还为客户量身定制特殊生产线。

Eurolls旗下品牌Vitari供应：

- 矫直与切割机（带有端压花/倒角装置）
- 完整系列的锁链接围栏、铁丝网、金属筐和制钉机械
- 技术先进的电阻链生产线

Eurolls SpA – 意大利
网址: www.eurolls.com

所罗门群岛连接

所罗门群岛海底电缆项目预计于2016年10月正式投运。亚洲开发银行(ADB)社会发展专家Ninebeth Carandang已经确认项目将通过亚洲开发基金贷款与补助资金及Solomons Oceanic Cable Company权益资金共同出资。海底电缆拟从澳大利亚悉尼采购。网络的主要组成部分将是一个国际、国内连接，国际连接从悉尼到霍尼亚拉，国内连接从霍尼亚拉到奥基和从霍尼亚拉到诺如。该电缆项目有助于改善该国与世界其它各地的连通性，为国内和地区经济发展创造新的机遇，降低通信成本和提高服务质量。

Asian Development Bank – 菲律宾

网址: www.adb.org



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WGSB 系列重型卧式编织机
- LRBJ series vertical taping machine
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- WRBJ series horizontal taping machine line
WRBJ 系列卧式绕包机生产线
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Talurit公司的锻造机记录?

Talurit AB最新锻造机生产能力4,200吨,是迄今为止公司制造的最大型锻造机,被认为是钢丝绳行业最大型连续制造锻造机。

产能4,200吨的锻造机是Talurit AB推出的首款系列三机,将销往日本加古川。该锻造机开发用于机械拼接钢丝绳上的索眼,直径最大达152毫米。这些尺寸锻造的钢丝绳通常运用于海洋工业,以保护石油平台。

Talurit AB提供的锻造机能力在20-4,200吨之间,每年销往世界各地约100个国家和地区。

Talurit AB – 瑞典
网址: www.talurit.se

○ 新型锻造机,被认为是钢丝绳行业最大型机



欢迎到电缆

Alcatel-Lucent Submarine Networks和Bluesky Pacific子公司Amper SA签署了交钥匙工程合作协议,前者将负责承建一条穿越太平洋的海底电缆系统,该光缆系统长度超过9,700千米。

该光缆名为Moana Cable,将连接新西兰和夏威夷,计划于2018年建成。Moana Cable系统项目分为两个主要部分:第一部分总长8,000千米,包括两个光纤链路,连接新西兰和美国夏威夷,服务萨摩亚和美属萨摩亚,同时加强新西兰的路由分集服务;第二部分总长1,700千米,包括一个光纤链路,连接库克群岛和萨摩亚。

Moana Cable还将连接更多的太平洋岛屿国家,如纽埃、汤加和库克群岛,毗邻新西兰到夏威夷干线,以及法属波利尼西亚,靠近库克群岛。Moana Cable项目将是太平洋岛屿区第一条采用最新200Gb/s传输技术的长途海底光缆系统,夏威夷和新西兰之间最终总容量达到20Tb/s。Amper首席执行官Jaime Espinosa de los Monteros和Moana Cable主席表示:“此次投资Moana Cable项目与Amper加大在太平洋地区的市场份额战略一致,同时也符合Bluesky连接太平洋社区的愿景。”

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

Amper SA – 西班牙 网址: www.amper.es

杰出职业生涯奖 年度获奖者公布

电线电缆制造商联盟(WCMA)已宣布2016年度杰出职业生涯奖获奖名单。第32届年度颁奖晚宴和授职仪式将于2016年5月7日在美国在康涅狄格州哈特福德的康涅狄格州会展中心举行。获奖者分别是: Belden研发部副总裁兼技术总监 Doug Brenneke; Chase Corporation 执行主席Peter Chase; T & T Marketing Inc公司总裁兼首席执行官Tom Jordan; RSCC Wire & Cable核部门副总裁兼总经理Mike Mennone; General Cable Corp 制造、工业、建筑与特殊产品副总裁Michael Monti; Wire & Plastic Machinery Corp执行副总裁Rahul Sachdev; Nexans Canada北美电线事业部副总裁兼总经理Carlos Sanchez; Quirk Wire Company Inc 总裁Peter Schlichting。

电线电缆制造商联盟继续在超过30职业生涯中做出杰出贡献的人选中,选出新一届年度获奖人,该联盟是美国电线电缆俱乐部的后续组织,由已故的Dick和Harriet Callahan共同创建。获奖者提名可参阅WCMA网站。候选人首先通过投票,然后接受获奖者委员会的审查后产生。WCMA董事会再根据个人的品质、信誉和职业生涯中所作的商业或技术贡献做出最终的选择。WCMA成立于2004年6月,作为一家非盈利性贸易协会,是美国电线电缆俱乐部的后续组织。WCMA是生产基地位于北美的高压电气、电子和光纤电线电缆领域知名制造商的企业会员组织,包括行业供应商、服务提供商、关联公司和服务于电缆制造与加工的组织。WCMA举办盛大的活动,企业主、行政人员和管理人员会聚一堂,为互联网、信息交流和促进电线电缆行业发展创造了平台。

The Wire & Cable Manufacturers' Alliance – 美国
网址: www.wcmainc.org

韩国线缆厂家乐星电缆有限公司获得5700万纽 华克湾大桥合同

LS Cable and System (LS C&S) 已经获得了Public Service Electric and Gas (PSE&G) 授予的贝尔根-林登走廊项目的合同, PSE&G 是美国新泽西州最大的电力和天然气服务供应商。合同总价值约5700万美元。LS C&S将负责供应和安装Bayway 和 Bayonne之间新的345kV地下电缆系统,为美国新泽西州

东北部提供电力,解决该地区电力短缺问题。这个项目的挑战是制造、运输和安装穿越纽瓦克湾的新地下电缆。

这些电缆将穿过水平定向钻法安装的管道,这需要电缆长度逾7,000英尺(2.2千米)和现场特别要小心处理大型卷轴。LS C&S业务部门总裁Jae-In Yoon先生

表示,我们之所以能够赢得这一新的订单,是因为我们与Southern Maryland Electric Cooperative合作的过程中积累了丰富的经验,我们成功完成了230kV Patuxent River穿越工程。

LS Cable & System – 韩国
网址: www.lscns.com

提供广泛系列的卷轴

GMP Slovakia 为电线电缆行业生产钢卷轴、拆开卷轴和处理设备。公司自2009年就通过了质量管理体系ISO 9001:2008认证，现已通过了环境管理体系ISO 14001:2004认证和职业健康安全管理体系BS OHSAS 18001:2007认证。

拆开卷轴和专用设备（倾斜器、升降机和滚轧系统）都是CE标志。所有产品确保高质和经久耐用。

GMP Slovakia产品系列包括线缆卷轴、工字轮、不同型号的倾斜器和升降机。倾斜装置TU/M能够装载高达5吨的卷轴或线圈。它是通过链子传递来自电机的运动到倾斜装置来工作的。它配备有安全屏障（硬件和光学）和所有法律要求的文件。根据GMP Slovakia 技术团队的建议，设备必须放置在地面上。

另外，还可提供一个滚轧系统，操作人员可以将卷轴放在水平轴位置上，便于捆扎操作。对于较小卷轴TL型可供选择：操作人员通过手柄扩大倾斜器的狭口，倾斜卷轴90°。此装置适用于800mm的卷轴，法兰重达1吨。



○ GMP Slovakia 供应一系列卷轴

GMP Slovakia – 斯洛伐克
网址: www.gmp-slovakia.com

迪拜项目开始招标

迪拜太阳能园区内800MW太阳能项目起初有95家公司入围竞标，现在只剩18家公司进入预审阶段。

太阳能园区原先计划到2030年总规模达到3,000MW，但迪拜政府现宣布增加到5,000MW。

沙特阿拉伯Abdul Latif Jameel (ALJ) Energy and Environmental Services确认将竞标该太阳能园区项目。“[ALJ]总部在迪拜，公司不断增强本地能力，以支持参与本地及以外的可再生能源项目，” ALJ Energy and Environmental Services行政长官Roberto de Diego Arozamena表示。

迪拜预计在短短15年内太阳能发电占比达到25%，Mohammed bin Rashid Al Maktoum太阳能园区将在能源战略中发挥重要作用。

阿布扎比国际可再生能源机构 (Irena) 战略管理主任兼执行董事Mohamed El-Farnawany表示，迪拜已证实太阳能比化石燃料更具有竞争力。他补充说，不过在阿联酋地区可再生能源还比较新鲜，因此必须采取积极主动的措施加快部署。

中东太阳能行业协会期望2050年迪拜清洁能源战略将投资136 亿美元于太阳能。



○ Irena战略管理主任兼执行董事Mohamed El-Farnawany, 照片来源: iisd.org

International Renewable Energy Agency – 阿联酋
网址: www.irena.org

领域扩张

Reelex Packaging Solutions目前正在拓展其最信任的销售代表Warbrick International Ltd的业务范围。

Warbrick International基于英国沃林顿，是一家拥有70多年历史的家族企业，长期以来一直在英国和爱尔兰代理Reelex业务，现已拓展到荷兰、法国、德国和瑞士。

Warbrick还作为欧盟支出管的分发点，该支出管用于Reelex®的所有封装中，包括新的EcoCore™支出管系统。

Reelex Packaging Systems – USA
网址: www.reelex.com

恒通75%股票在亚伯达

中国电力和光缆制造商 Hengtong Optic-electric Co Ltd 拟收购 Aberdare Cables Proprietary Limited 75% 股权和 Aberdare Holdings Europe BV Limited 100% 股权。

Aberdare Cables Proprietary成立于1946年，是南非最大的电线电缆制造商，公司为输配电、铁路、石化和住宅建筑提供中低压电缆。

Aberdare Holdings Europe 分别拥有全资子公司西班牙 Cables de Comunicaciones Zaragoza SL (CCZSL) 和葡萄牙 Alcobre-Condutores Electricos SA。

Hengtong Optic-electric Co Ltd – 中国
网址: www.htgd.com.cn



○ Rebox DST at Dongbei Special Steel Group at Salina, China

Energy-efficient Linde

REBOX DST is Linde's energy-efficient process for inline continuous treatment of stainless steel wire.

In a conventional operation line, after the finishing block of the rolling, the coiled wire is cooled down to ambient temperature and then heated up again in batch annealing furnaces. Using the Rebox DST (Direct Solution Treatment) process, the rolled wire is instead fed directly into a continuous operating furnace fired with flameless oxyfuel.

With Rebox DST the heating takes place from 850 to 900°C instead of from ambient temperature and with an energy efficiency that is more than twice that of batch annealing. The time required for the operation is reduced by more than 90 per cent.

Other important advantages with Rebox DST include a much higher uniformity of the material properties after the treatment, for example tensile strength variations of less than $\pm 10\text{N/mm}^2$. The temperature uniformity in the process is excellent. Also the scale losses are substantially reduced, typically by one per cent point.

The existing Rebox DST installations treat wires from 4.5 to 20mm with 1,100mm coil diameter. The fuels used include LPG, natural gas, and generator gas (gasified coal). The currently largest installation, in Korea, can process up to 72.5 tonnes per hour.

At Dongbei Special Steel Group in China, a new state-of-the-art Rebox DST annealing furnace was brought

into operation in 2010. The flameless combustion uses a low calorific fuel with an energy content of 1,500 kcal/Nm³.

Periodically, blast furnace top gas (BFG) with a CV at 835 kcal/Nm³ has been successfully used in this installation. Recently, Yongxing Special Stainless Steel, also of China, awarded Linde a turnkey contract for a 60 tonnes per hour Rebox DST installation, to be commissioned by the end of 2016.

Rebox DST is an example of how Linde helps its customers to increase production efficiency, save fuel consumption and decrease emissions.

The Linde Group – Germany
Website: www.linde.com

Ready for today's challenges and the future

ZUMBACH Electronic has developed process monitoring, control and data acquisition systems for the past 58 years. It is well known for its focus on reliable and maintenance-free systems, and the USYS processors are used worldwide for the processing of data.

Experience shows that the USYS series is preferred for the modular approach when a configuration according to customer specifications, support and actualisation is to be simplified.

With Zumbach's concept of modular extension modules, the customer invests only in what he really needs to match the required measurement and control challenges, and thus reaching quality requirements.

Different modules are available to cover any challenge and provide any solutions for applications such

as sheathing and core line extrusion with Jacketmaster, data communication and coax cables with Cellmaster, and Wallmaster for wall thickness, concentricity and OD measurement and control of any tube, pipe and cable. Special Barmaster software offers solutions for centreless grinding, bar peeling as well as any other cold steel/metal application.



Optional LCD touchscreen (top), and the USYS IPC1e (left) and USYS IPC 2e (right)

The flexible processors with CPUs, E/A card and process-specific intelligence from Zumbach's extensive software library can be integrated into almost every process and production line (USYS Web server), USYS data log, USYS report manager, and OPC server software.

The economic and space-saving USYS IPCe hardware complements the USYS family of processors. It offers the flexibility to mount the processor in a convenient location while mounting the LCD touchscreen at a more appropriate location or the operator.

Thanks to all these different possibilities, the price-performance solution can be offered to best suit the customer's application.

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



ALUMINUM CLAD STEEL WIRE

ACS as per ASTM B415
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Conductivity : from 20%-40% etc.



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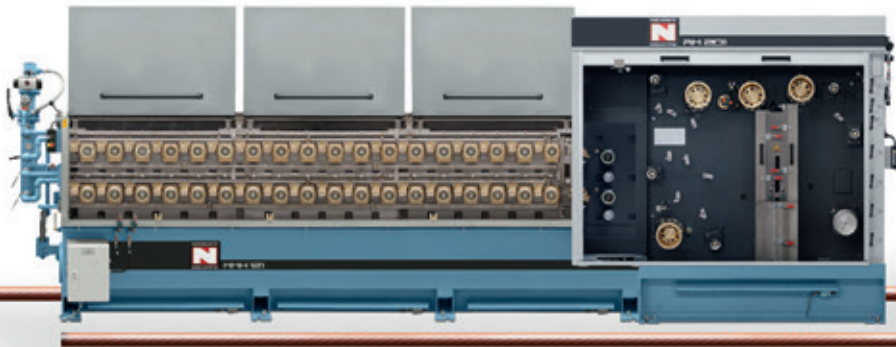


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Hybrid assemblies from Northwire

NORTHWIRE, a subsidiary of the Lemo Group, has been officially certified by Lemo to build and repair SMPTE hybrid fibre optic cable assemblies.

Fully compatible with Lemo push-pull connectors – including the hybrid electrical/fibre optic 3K series – Northwire’s SMPTE 311 and ARIB versions are also compliant to RoHS2, REACH, ANSI and UL 758 AWM.

Resistant to crush, impact, abrasion, cut and VW-1 flame testing, the Lemo and Northwire combination is said to “ensure quality and performance for rugged outdoor broadcast applications”.

“In addition to celebrating our one-year anniversary within the Lemo group, Northwire has the pleasure of expanding our interconnectivity suite of products and services with Lemo to offer fully certified SMPTE and ARIB end-to-end solutions,” said Mike Schauls, VP of operations and engineering.

“Around the world, our Lemo colleagues in the United Kingdom, Germany, Benelux, Japan, China, Singapore and the United States are equipped with fibre termination facilities and we are pleased to complement their efforts and expand Northwire’s HD broadcast offering to our valued customers,” he added.

Northwire project managers, in collaboration with research and development, will focus on expanding SMPTE and ARIB product lines with halogen-free flame retardant, low smoke zero-halogen, low smoke halogen-free, riser, plenum rated and low temperature interconnectivity solutions.

Northwire Inc – USA

Website: www.northwire.com

EcoStrip is a show debut

Schleuniger demonstrated some new additions to its range at the 2016 IPC Apex Expo, the conference and exhibition at the Las Vegas Convention Center, USA.

Schleuniger debuted its newest cut and strip machine, the EcoStrip 9380. This flexible machine is designed for expanded capabilities due to its quick-change transport unit for belts, rollers and shortmode, and is compatible with a wide range of accessories, including pre-feeding, marking, stacking and coiling. An intuitive colour touchscreen user interface minimises training and set-up times.

Schleuniger – Switzerland

Website: www.schleuniger.com

LUKAS
ANLAGENBAU GMBH

At Wire Show Duesseldorf 2016, a Vertical Taping Machine with Vertical Oven will be exhibited. We would appreciate welcoming you to our booth, no. 12 B 22.

Lukas Anlagenbau GmbH is a family owned company, established in 1959, that produces customer-specific equipment for the wire and cable industry.

The focus of our products is complete taping lines for producing taped or wrapped conductors with tape materials like PTFE, Kapton, Mica, Paper, etc.

We also produce special cables for medical and aircraft applications, our taping lines can be found at many well-known suppliers worldwide.

Furthermore our product range covers single components like pay-offs, capstans, caterpillars and take-ups, up to complete rewinding lines and fine wire drawing lines for non-ferrous materials.

During recent years our development has been advanced by a focus on energy and size reduction.

At this year’s wire show we answer this request with new components that are intended to solidify our top position in taping machines for magnet wire applications and to extend our business in the cable industry with cost-optimized and easy-to-integrate taping and heating solutions.

This should make our products more competitive especially to the Asian market.

At our newly designed and enlarged booth 12B22 we are looking forward to meeting new and existing customers.



www.lukas-anlagenbau.de

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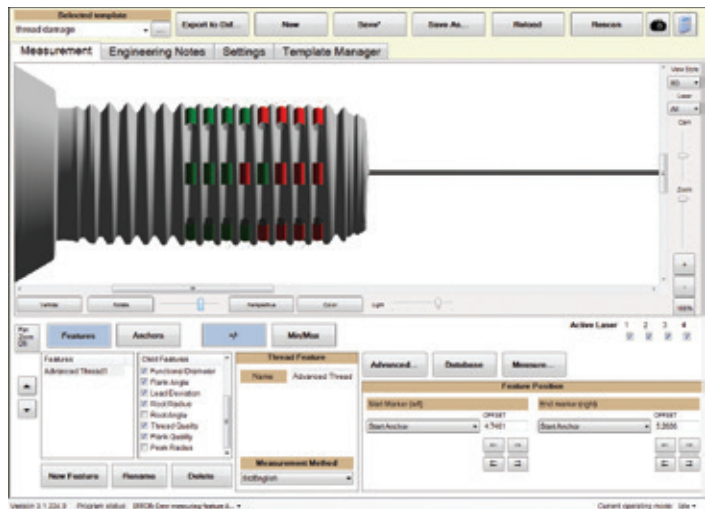
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www.messe-duesseldorf.de



- Laser topography can provide a detailed 3D image of the part, detecting dents, flatness, chips and dimensional characteristics

Eliminating defective fasteners

AS manufacturers look to lightweight materials for improved fuel economy, the associated fastening problems necessitate zero defects through 100 per cent inspection.

Manufacturers looking to reduce weight (or for cost savings) have turned to lightweight materials like aluminium, plastics, zinc and magnesium. The associated fastening issues require zero defects as production speed and quality depends on them.

The fastener industry is increasingly relying on higher resolution 3D inspection of billions of fasteners. Gauging, sorting and cylindrical part inspection systems incorporating laser, vision and eddy current for dimensional measurement and determining metallurgical defects are now used for high-speed inspection of many fasteners.

The introduction of lightweight materials has made zero defects a particular challenge when the fasteners are still steel.

Quality control is critical because even small defects can cause big problems in working with lightweight materials, such as having to rework engine blocks if male threaded fasteners strip out of threaded holes.

To address these production and quality issues, the increasing use of lightweight materials is requiring high-speed 100 per cent fastener sorting as well as more inspection capability from fastener sorting machines.

Laser and vision-based machines can provide 100 per cent high-speed 3D fastener inspection. General Inspection, for example, uses 3D information from multiple laser beams to detect defects that may only be on one side of the part, such as damaged threads. Laser topography can provide a detailed 3D image of the part, detecting dents, flatness, chips and dimensional characteristics.

General Inspection – USA

Website: www.generalinspection.com

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Hall 11/G60

A photograph of three people on a sailboat deck. One person in a yellow jacket is in the foreground, another in a red jacket is in the middle, and a third in a white jacket is in the background. They are all focused on a task, likely related to the boat's rigging or equipment. The background shows a blue sea and a cloudy sky.

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3

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Non-contact temperature measurement in high-voltage cable production

FOR the production of high-voltage cables, quality is an essential factor. Failures of the cable, for example, can not only cause loss of reputation but also extremely high costs for the manufacturer. High-voltage cables are now equipped with cross-linkable polyethylene insulation, XLPE*. The manufacturing of the cable and the cross-linking of the insulation are part of a continuous process in CCV** or VCV*** lines.

In order to generate the optimal cross-linking of PE insulation molecules, the XLPE material has to be heated in the CV-lines to a defined temperature. The extruded cable passes through a closed pressurised tube until all three layers of the insulation are completely heated and cross-linked.

To speed up this process and increase the efficiency of production, it is recommended to heat up the wire from approximately 100°C to 120°C prior to entering the crosshead. Due to this method, the insulation is not only heated from the outside but also from the inside. Therefore, a faster cross-linking of the plastic material is achieved.

In this context, the Sikora temperature measuring device Wire-Temp 6050, for product diameters from 5mm to 50mm, offers reliable temperature measuring values. By using the measuring data, which is taken by the device directly after the conductor preheating, the operator is able to precisely adjust the heating of the conductor according to the calculated needs. Therefore, the Wire-Temp technology ensures an optimal process efficiency, which is distinguished by continuity and repeatability of the process.



○ The Wire-Temp 6050 is designed for conductor diameter up to 50mm

*XLPE: Cross-linked polyethylene, **CCV: Catenary continuous vulcanisation, ***VCV: Vertical continuous vulcanisation

Sikora AG – Germany

Website: www.sikora.net

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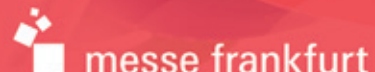
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State-of-the-art control systems at Whitelegg

WHITELEGG Machines has shipped a machine that will be used to wind body scanner coils for a Korean multinational company.

This is the first machine of its type on which Whitelegg has installed state-of-the-art servo-controlled axes, together with an intuitive touchscreen graphical user interface and a PLC with custom software for controlling the overall process and a touchscreen HMI.

For the end user, these features translate into the following benefits:

- monitor and maintain a constant tension in the material being wound
- layer wind the material very accurately
- layer control for spooling and de-spooling
- programmable winding with an onboard memory for storing winding programs
- data logging for each winding so that the number of turns, pitch and winding tension can all be recorded



○ The latest large coil winder from Whitelegg

Whitelegg developed and manufactured the first MRI (body scanner) winding machines in the world in 1982. This then-new technology was developed at Oxford University, which led to locally formed companies producing the first full body scanners. Eventually half a dozen companies were spawned from the initial manufacturer in and around Oxford, one of which was Oxford Magnet Technology.

This company became the first volume manufacturer and was supplied with over a dozen machines by Whitelegg.

Oxford Magnet agreed to license this technology to other medical equipment manufacturers, resulting in Whitelegg receiving machine orders from GE of the USA, Siemens in Germany and Furakaiwa in Japan. The first body scanner was built in a concrete bunker outside Oxford.

Oxford Magnet Technology was purchased by Siemens, since when Whitelegg designed and manufactured a special-purpose machine for winding small coils from special materials, with sophisticated tension control.

All of Whitelegg's large coil winding machines are built to customers' specifications and the latest machine is capable of winding coils of 2,000mm maximum diameter, with lengths of up to 2,000mm, and with a maximum coil weight of 4,000kg.

An integral de-spooler is servo-controlled and operates in conjunction with the servo-driven main rotation axis and the tensioning pulley, with a load meter providing the necessary feedback for the tension control system. All of the servo motors and servo drives are Lenze products,

and FMS Force Measuring Systems provided the tension control load meter (comprising a load cell and amplifier). A further servo motor controls the axial movement of the de-spooler as each turn of wire is laid down adjacent to the previous turn.

The HMI for this machine is entirely new and has been developed by Whitelegg specifically for the manufacture of body scanner coils.

The graphical touchscreen interface prompts the user to enter parameters such as the number of layers, the number of turns, the traverse position and the wire tension.

The HMI is mounted on an arm that traverses the length of the machine as winding progresses in order that the operator always has the best possible view of the winding process.

Additional push buttons are installed on the HMI housing to control the de-spooler, and a joystick provides for manual fine control of the de-spooler traverse. Another set of push buttons on the reverse of the machine, where the de-spooler is mounted, allow for easier set-ups.

The use of state-of-the-art servos and a specially developed HMI and control program offers clear benefits for end users.

Whitelegg Machines Ltd – UK
Website: www.whitelegg.com

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New MES features for optimised planning



○ The bottleneck-orientated scheduling of ADVARIS Cable MES optimises production processes and improves reliability of delivery

ADVARIS Informationssysteme has released the latest version of the detailed planning and scheduling module of its cable manufacturing execution system (MES). It is now possible to read in data of a customer enquiry – such as article number, quantity and desired deadline – and from them automatically identify the best possible delivery date.

The detailed planning and scheduling module makes a comparison of the request data with the firm's current production data. This provides the sales department with a fast, reliable and verifiable basis for confirming the date to the customer.

Another new feature is a special process for dealing with bottlenecks. Potential bottlenecks among the machines are pinpointed and the sequencing of orders is optimised accordingly. This feature cuts setup times to a minimum and enables deadlines to be reliably met.

"Every minute of downtime saved at a machine bottleneck counts double. The rest of the factory is planned around this, ensuring that, as far as possible, machines where potential bottlenecks may occur are supplied with the relevant materials just-in-time," said Advaris CEO Dr Manfred Moser.

"Bottleneck" planning is complemented by the Advaris MRO module (maintenance, repair and overhaul). By initiating preventive maintenance based on continuous condition monitoring of the machines, Advaris MRO ensures that the relevant machine is actually operative and available at the specified time.

Another advantage of the detailed planning and scheduling module is that it also enables production employees' qualification profiles for operating specific machines and dealing with specific product types to be defined and compared.

Once these profiles have been entered, the planning module represents the need for personnel, itemised according to qualification, machine and time period, thus simplifying the deployment of personnel.

Advaris Informationssysteme GmbH – Germany
Website: www.advaris.com

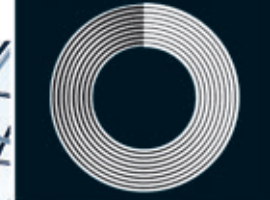
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○ 在中国东北特钢集团(萨莱纳)的 Rebox DST

林德的高效能技术

Rebox DST是林德公司高效的不锈钢丝在线连续处理工艺。

在传统的操作线上,经过细拉机后,成卷线材冷却到环境温度,然后在箱式退火炉完成再加热。

而使用Rebox DST(直接固溶处理)工艺,轧制钢丝直接喂入由无焰氧化燃料燃烧的连续工作炉。

使用Rebox DST技术,从850 - 900°C开始加热,而不是从环境温度开始,能效比箱式退火炉高两倍以上。

而操作所需时间减少了90%以上。

使用Rebox DST技术的其它重要优势包括处理后材料特性保持高度一致,比如,抗拉强度变化小于 $\pm 10\text{N/mm}^2$ 。过程中受热均匀。同时氧化皮损耗大大减少,常常是百分之一。

现有Rebox DST装置能处理4.5到20毫米的线材,线盘直径1100毫米。

使用的燃料包括液化石油气、天然气和发生炉煤气(气化煤)。目前最大的一台装置安装在韩国,每小时能处理72.5公吨。

在中国东北特钢集团,新一流的Rebox DST退火炉于2010年投入使用。无焰燃

烧采用能量含量为 1500kcal/Nm^3 的低热值燃料。该装置还可以周期性地使用能量含量为 835kcal/Nm^3 的高炉煤气(BFG)。

最近,中国永兴特种不锈钢厂也授予林德一份每小时60公吨的Rebox DST装置的交钥匙合同,该装置于2016年年底试运行。

ReboxDST就是林德帮助客户增加产量,节省燃油以及减少排放的一个很好的例子。

The Linde Group – 中国
网址: www.linde.com

迎接今天和明天的挑战

Zumbach Electronic 58年来一直从事开发过程监测、控制与数据采集系统。众所周知,这些系统可靠,无需维护,在世界各地USYS处理器普遍被用于处理数据。经验表明,如果根据客户规格构造,USYS系列首选模块化,支持与实施都将被简化。

由于Zumbach模块化扩展理念,客户只需投资于真正匹配的测量要求和控制方面的挑战,从而达到质量的要求。

不同的模块可涵盖任何挑战,并为各种应用提供解决方案,比如Jacketmaster用于护套和芯线挤压,Cellmaster用于数据通信和同轴电缆,Wallmaster用于壁厚、OD测量和控制任何管与管道和电缆。特殊

Barmaster软件为无心磨削、棒材剥皮及其它冷钢/金属应用提供解决方案。

来自Zumbach广泛软件库的处理器具有CPUs、E/A卡和特定加工智能,非常灵活,几乎可以集成到所有的工艺和生产线(USYS Web服务器)、USYS数据记录、USYS报表管理和OPC服务器软件。

节约成本与空间的USYS IPCe硬件进一步完善了USYS系列处理器。USYS IPCe提供了在方便的位置安装处理器的灵活性,同时,LCD触摸屏也被安放在一个方便工作人员操作的地方。



可选的触摸式液晶屏(顶部), USYS IPC1e(左)和 USYS IPC 2e(右)

所有这些不同的可能性最终实现了该高性价比解决方案是客户应用的最理想选择。

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

混合光纤电缆组件

Northwire Inc是Lemo集团的子公司,已获Lemo正式批准,负责制造和维修SMPTE混合光纤电缆组件。由于完全兼容于Lemo推拉式连接器 - 包括混合电气/光纤3K系列 - Northwire公司SMPTE 311和ARIB版本也同样符合RoHS2、REACH、ANSI和UL 758 AWM的要求。因为具有耐挤压、抗冲击、耐磨损切割和VW-1燃烧测试等特点,Lemo和Northwire组合据称“能够为牢固的户外传送应用提供可靠的质量与性能保证”。

“值此Northwire 加盟Lemo集团一周年之际, Northwire扩大了多连接器电缆技术产品与服务的范围,以提供完全认证的SMPTE和ARIB端对端解决方案,”运营与工程副总裁Mike Schauls先生表示。

“Lemo工作人员遍布世界各地,包括英国、德国、比荷卢经济联盟、日本、中国、新加坡和美国,他们都配备有光纤端接设备,乐意为我们的增值客户效劳和扩大Northwire的高清传送,”他补充说。Northwire项目经理们与研发部门紧密合作,将致力于扩充SMPTE和ARIB无卤阻燃、低烟无卤、立管、阻燃型和低温互连解决方案的产品范围。

Northwire Inc – 美国

网址: www.northwire.com

展会阵容强大

Schleuniger Inc将在美国拉斯维加斯会议中心举办的2016年美国国际线路板及电子组装技术展览会(2016 IPC Apex Expo)上展出公司主打线材加工设备,并推出一些创新产品。

Schleuniger将展示最新的EcoStrip 9380型切剥机。该机设计灵活,能够为皮带、滚筒和短周期模式快速更换传送装置,并且与广泛的配件兼容,这些配件包括预输送、标识、堆放和卷取。直观的彩色触摸屏用户界面减少了培训和设置时间,可选的Schleuniger软件,使得EcoStrip 9380能够轻松与各种网络集成。

另外,Schleuniger还将展示其UniCrimp 100新型压接机,这是一种台式机,提供高达两吨力。安全防护装置可完全打开,以方便进入工作区域,提供简单快捷的转换、调整和时间设置。UniCrimp 100满足市场上的绝大多数应用,为高达6mm² (10 AWG)的线材提供优质压接。

同时,Schleuniger还将展出新型机器ShieldCut 8100,为各种屏蔽电缆提供快速安全的切割和编织屏蔽层去除服务。

Schleuniger – 瑞士

网址: www.schleuniger.com

MES新功能进一步优化生产

Advaris Informationssysteme最近发布了最新版电缆制造执行系统(MES)详细的计划与排产模块。现已能够读取客户咨询数据 - 比如文章号、质量和最后期限,并自动识别可能的最佳交货期。为了做到这一点,详细的计划与排产模块将需求数据与公司目前的生产数据进行比较,从而为销售部门与客户确认日期提供快速、可靠和可核查的基础。另一项新功能是处理瓶颈的特殊工艺。机器之间的瓶颈被精确定位,订单顺序相应被优化。这一功能将设置时间降至最低,妥善满足最后期限。

“机器上节约的停机时间,分秒都很珍贵。工厂的其他部门都将据此来安排工作,尽可能提高机器的生产效率,这时可能导致潜在的瓶颈,因为相关材料正赶上供应。这将会降低半成品的数量,最终占压资金,”Advaris CEO Manfred Moser博士表示。“瓶颈”计划通过Advaris MRO模块(维护,维修和大修)得以完善。基于机器的连续状态监测而启动预防性维护,Advaris MRO确保相关机器实际操作,并可在指定时间内操作。详细计划与排产模块的另一优势是能够根据生产人员的资历操作不同的机器和应对特定的产品类型。一旦输入这些配置数据,计划模块代表人员需求,根据资历、机器和时间段详细列明,因此简化了人员部署。这样,每一生产批次都可提供修订的证明文档,以确定只有经过适当培训的合格人员才能被使用。

Advaris Informationssysteme GmbH – 德国
网址: www.advaris.com

更高分辨率3D检测设备保证紧固件无缺陷

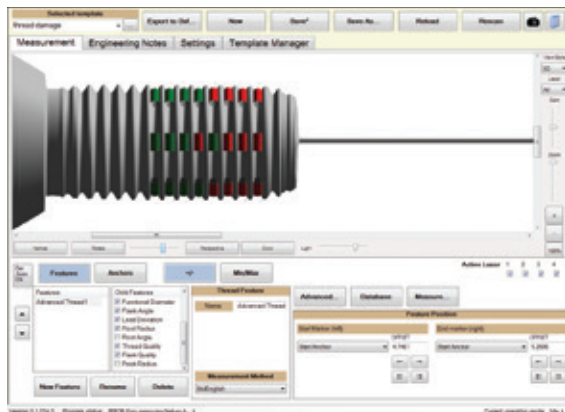
制造商寻求轻质材料以提高燃油的经济性，相关紧固问题必须通过100%检测，保证零缺陷。

从汽车、卡车和重型设备到航空、农业和高容量电气/电子，各个行业的制造商都希望降低重量（或节约成本），他们都纷纷转向轻质材料，如铝、塑料、锌和镁。相关紧固问题要求紧固件制造商确保零缺陷，这是因为生产速度和质量完全取决于此。

紧固件制造商长期以来在生产前依赖筛选来排除缺陷，但实际上，冷镦、移动和车金属螺纹都是无法预测的。每一块的外观缺陷，包括毛刺、划痕、螺纹损伤或头部裂缝，以及尺寸测量诸如螺纹参数、长度、直径、锥度、半径、直线度、垂直度、凹槽深度和头部凸起都必须进行检测。

紧固件行业越来越多地依靠更高分辨率、3D检测数十亿紧固件。计量、分拣和圆柱形部件检测系统结合激光、视觉和涡流用于尺寸测量和确定冶金缺陷正广泛应用于高速检测紧固件，从螺栓、螺钉、螺母和圆柱形部件到螺母、垫圈、配件和套管等。

虽然制造商早就要求供应商达到零缺陷，但紧固件材料仍然是钢，推出轻质材料仍然是一个不同寻常的挑战。



○ 激光分布能提供部件的3D图像，检测凹痕、平整度、芯片和尺寸特征

“随着人们的目光转向铝体，例如在Ford F-150中，你不能像焊接传统钢那样焊接，”General Inspection主席Mike Nygaard先生表示，General Inspection专业开发高速测量与分拣紧固件测试系统。

“实际上，有几十亿自冲铆钉（SPRs）被使用，它们的尺寸、内径尺寸和其它属性必须准确无障碍。其关键不仅要确保钢紧固件不损坏嵌入其中的铝或轻质材料，而且要紧紧锁住，不会松动。”

质量控制至关重要，因为即便是很小的缺陷都有可能导致轻质材料在运作过程中出

现大问题，举例来说，如果外螺纹紧固件剥离出螺纹孔，就需要重启发动机。如果SPR孔中有障碍物，或者尺寸有误，铆钉也可能会掉落或不再紧固，这些可能都会成为严重的质量隐患。

为了解决这些生产和质量问题，制造商越来越青睐轻质材料，这就要求高速100%紧固件筛选和紧固件分拣机具有更多的检测能力。

目前，激光视觉机器可以提供100%高速3D紧固件检测。比如，General Inspection使用来自多个激光束的3D信息检测缺陷，这些缺陷可能仅在部件的一侧，如螺纹被损坏。激光图像，实际上能提供一个详细的3D图像，包括检测凹痕、平整度、芯片和尺寸特征。

最精确的高分辨率使得紧固件检测机器能够测量小至两微米的总误差。

“紧固件生产企业期望最理想的紧固件检测机器每分钟能够分拣300-1,000个部件，而且精度和部件覆盖要比普通分拣机更好，”Nygaard先生补充说。“机器应足够灵活，能够适应数千种不同的部件编号，同时能平衡灵活性和速度。”

General Inspection – 美国
网址: www.generalinspection.com

用于高压电缆生产的无接触式温度测量系统



○ Wire-Temp 6050 适用于导体外径达50mm

生产高压电缆，质量是一个重要因素。电缆发生故障，不仅名誉受损，而且导致成本增加。高压电缆现在都具有交联聚乙烯绝缘XLPE*。电缆生产和绝缘交联是CCV** 和VCV***生产线连续工艺过程的一部分。

为了使聚乙烯绝缘分子具有最佳的粘附力，交联聚乙烯材料需要在CV生产线中进行预热。挤压电缆通过一个封闭的加压管，直到所有的三层绝缘完全加热和交联。为了加快这一进程和提高生产效率，建议在进入十字头前加热导线从大约100°C到120°C。这种方法使得绝缘层不仅从外部而且从内部进行加热。因此，塑料材料实现了更快的交联。

在这方面，Sikora温度测量仪Wire-Temp 6050适用于外径5mm - 50mm的产品，提供可靠的温度测量值。通过使用测量数据，导体直接进行预热，操作人员能够根据计算需要精确调整导体加热。

因此，Wire-Temp技术能够保证最理想的加工效率，整个加工过程具有连续性和可重复性的特点。

*XLPE: 交联聚乙烯, **CCV: 悬链式连续硫化, ***VCV: 垂直连续硫化

Sikora AG – 德国
网址: www.sikora.net

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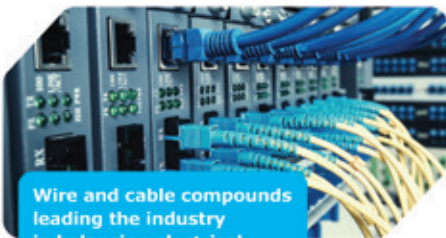
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India Insight

Odisha seeks grid top-up

IN a move to resolve the power crisis in Odisha, the Grid Corporation of Odisha (Gridco) has sought permission from Odisha Electricity Regulatory Commission (OERC) to purchase power from private companies.

Gridco director PK Pradhan said: "We have filed a petition with OERC to purchase power from private companies. Though OERC has stipulated a price of Rupees 2.75 per unit, the companies are asking for Rupees 3.20 per unit."

OERC is reluctant to allow Gridco to purchase power at the higher rate as it will ultimately mean higher prices to consumers.

"If there is an additional expenditure for Gridco, then it will have to raise the power tariff next year," said former OERC member K C Badu.

Opposition congress and BJP are demanding that the state government subsidises the power purchase because the state has failed to meet its internal demand.

State BJP vice-president Prithviraj Harichandan said: "Given the mismanagement and losses in power distribution, it is likely that the state government will increase power tariff, putting additional burden on the consumers."

Meanwhile, the ruling party's spokesperson, Amar Satpathy,

confirmed that the state government is aware of the power situation and is planning to purchase power to safeguard the interests of the consumers.

The Grid Corporation of Odisha – India
Website: www.gridco.co.in

Back to school with fibre

NeST Group is partnering with Amal Jyothi College of Engineering (AJCE), Kanjirapally, to establish a fibre optic training centre at the college campus.

The new training centre will provide students with training from Light Brigade Inc, USA, in a wide variety of fibre optics-related topics, combining theory with hands-on field experience. The students will also have the opportunity for industrial placements at NeST Group's fibre optic manufacturing facility, and to learn from industry experts.

It is anticipated that the training will enable students to find suitable placements with leading fibre optic companies, both in India and abroad, where there is a shortage of trained manpower. The classes commenced in January.

NeST Group – India
Website: www.nesttech.com

Addressing the power deficit

The energy-deficient state of Uttar Pradesh has drafted a solar mini-grid policy to provide electricity to rural areas, while Uttar Pradesh Electricity Regulatory Commission (UPERC) has initiated discussions on the electrification of remote villages through the mini-grids.

Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA) director Dr Kajal said: "The mini-grid policy is ready. The energy department will soon send it to the state cabinet for approval."

Apart from public sector firms, private companies will be encouraged to establish mini-grid projects ranging from 10kW to 500kW.

A consumer will be able to draw power from these independent grids when the main grid fails to meet demand. It will also help millions of households yet to be linked with the conventional power grid.

In a recent meeting, chaired by UPERC chief Desh Deepak Verma, it was decided to grant special status to mini-grids as they would facilitate rural consumers who do not have access to a reliable electricity supply. Solar grids will also help in reducing UP's carbon footprint.

Issues such as tariff regulation, minimum supply commitment, and compatibility with distribution companies and safeguarding of investment will be resolved when the state government approves the policy draft.

UP has a power supply deficit of around 2,000MW. The state government has set a target of 500MW of solar power projects in the next two years, aided by major private investment.

"We have signed many power purchase agreements in this regard," Dr Kajal confirmed.

Government of Uttar Pradesh – India
Website: www.up.gov.in

Customs duty call

The Steel Wire Manufacturers Association of India (SWMAI) is calling for a heavy reduction in customs duty on wire rods.

The newly elected president of the association, Vijay K Vedmutha, believes that a zero customs duty would help the industry procure raw materials at globally competitive prices, and cater to both domestic and international demand for steel wires. Mr Vedmutha added that industrial growth in developing economies is a major growth driver for the steel wire industry.

"There is a plethora of growth opportunities for [the] Indian steel wire market. Rapidly expanding construction, infrastructure, telecom and manufacturing industries bode

well...and low oil prices would also act as a factor to generate overall positive net impact on growth," Mr Vedmutha said in a statement issued by the SWMAI.

He maintains that the proposed Steel and Steel Products (Quality Control) Order, 2015, will lead to rising costs of steel inputs which, in turn, will make the products of micro, small and medium enterprises uncompetitive.

Steel Wire Manufacturers Association of India – India
Website: www.swmai.org

Brake bugs

Mumbai's suburban local trains have been hit by a red ant infestation. The insects recently attacked the cables and insulators of a train's electro-pneumatic brakes, forcing the driver to use the secondary brake system.

"There is no need to panic as the braking system is foolproof. There are three other brakes to ensure that there are no problems in the running of the train.

"Ants are difficult to control, but regular pest control is carried out," assured Narendra Patil, chief PRO of Central Railway.

Every 18 months, all brake cables undergo pest control during regular overhauling. Apart from this the authorities try to ensure that there are no anthills inside the car shed, where trains are parked in large numbers.

Central Railway – India
Website: www.cr.indianrailways.gov.in

Solar bids hit new low

After several delays, the Indian National Thermal Power Corporation (NTPC) is calling for tenders under the 3,000MW Phase II Batch 2 JNNSM programme.

The first auction under this batch closed with SunEdison placing the winning bid of Rs4.63/kWh for a 500MW solar project in Andhra Pradesh. This bid is the lowest made in India to date.

"Bids are falling faster than component costs and there is a concern that this is a race to the bottom for solar bids in India," said Raj Prabhu, CEO and co-founder of Mercom Capital Group.

"The pent-up demand due to auction delays is leading to aggressive bidding in an effort to capture market share with an assumption that component costs will continue to fall, no matter what. This is a risky strategy considering the global market trends over the next 12 months."

There are around 5,500MW of projects due to be auctioned within the next few months, from the NTPC and the Solar Energy Corporation of India (SECI).

Indian National Thermal Power Corporation – India
Website: www.ntpc.co.in

Widely disliked, American cable companies find that some angry customers are inclined to act out their grievances

On 16th December an apparently disaffected user of cable services caused the evacuation of a Comcast call centre in Colorado Springs, Colorado, USA, following a bomb threat. As reported by Daniel Frankel of *FierceCable*, the police response to a Comcast employee's discovery of "a suspicious note" kept the building empty for half a day. The incident was the latest in a sporadic but worrying series in the USA. Also last year, in March, a woman was accused of threatening to blow up a local Time Warner Cable facility in Lincoln, Nebraska, after she was allegedly stood up for an appointment.

In another episode cited by Mr Frankel, in July 2014 a man was indicted for making a bomb threat to a local Comcast facility in Quincy, Massachusetts. Going back further, in July 2012 police in Duluth, Minnesota, said that a man "upset over his Internet service" was arrested for threatening to "blow up and burn" a Charter Communications payment centre. "If one were to judge based on surveys of the American consumer, Comcast and other cable companies are regarded more or less as the bane of everyone's existence," wrote Michael Tanenbaum of *PhillyVoice* (12th December). Speaking at the 2015 *Business Insider* annual conference held in New York in December, CEO Brian Roberts of Philadelphia-based Comcast acknowledged that cable companies are held in low regard and shared his views on why this should be so.

Perhaps betraying a hint of grievance, Mr Roberts pointed out that the global cable industry has grown an average eight per cent to 12 per cent a year over the past decade, and noted that Comcast alone spends some \$13 billion to \$14 billion a year on procuring content for its subscribers. Google is free, Facebook is free, Mr Roberts reminded the industry executives gathered in New York. If Comcast is not, there is a reason for that: "Every movie star. Every athlete. Every possible piece of content – we pay." Even so, he said, "If you drop a channel, you're incredibly unpopular. If you pass along a rate increase, you're incredibly unpopular." Then, adding perceived insult to injury, the company commits what Mr Roberts calls "foot faults": the technician on a house call doesn't show up on time; or the remedy doesn't fix the problem. This, in the opinion of the head of the largest cable company in the world by revenue, is "the essence" of the public relations problem of cable service providers.

Already a highly mature region for mobile, Europe is set to see further benefits from investment and advances in 4G technology

According to "The Mobile Economy: Europe 2015", a new report from the GSMA, the contribution to European GDP by the mobile industry is set to increase over the next five years on the back of increasing mobile operator investment in 4G networks and services.

The association of some 800 mobile operators worldwide forecasts that the contribution will increase from €500 billion in 2014 to €600 billion by 2020, as markets across the region benefit from improvements in productivity and efficiency.

As reviewed on 3rd December by *TelecomTV*, also London-based, the GSMA expects these advances to be brought about by the adoption of new mobile technologies that include machine-to-machine (M2M) communications.

On-going mobile operator investment in 4G network quality and coverage across Europe will, it predicts, see 4G accounting for 60 per cent of the continent's mobile connections by 2020, up from 20 per cent today.

The GSMA outlook is the more remarkable in light of the already very high European mobile subscriber levels. The estimate of 430 million unique subscribers at the end of 2015, representing 79 per cent of the population, makes Europe the most highly penetrated mobile region in the world – nearly ten percentage points ahead of North America.

With 450 million unique mobile subscribers (representing 81 per cent of the population) forecast for Europe by 2020, there would appear to be limited room for subscriber growth.

But Alex Sinclair, acting director general and chief technology officer at the GSMA, points out that Europe's mobile operators have invested heavily in 4G over the past few years despite challenging macroeconomic and regulatory conditions. Expressing an expectation that investments in 4G deployments, capacity and spectrum will be sustained for the remainder of the decade, he told *TelecomTV*, "Mobile subscribers in Europe are now benefiting from download speeds that far exceed the global average and are taking advantage of a range of innovative new services made possible by next-generation networks and devices."

➤ As specific instances of mobile industry leadership in European digital innovation, Mr Sinclair cited areas such as mobile commerce, smart manufacturing, smart homes and smart health. Additionally, mobile networks are providing a platform for Internet of Things (IoT) opportunity. The number of cellular M2M connections in Europe are forecast to grow from 68 million this year to 182 million by 2020, a 22 per cent CAGR (compound annual growth rate). The GSMA report also noted growing interest in Europe in the use of low-power wide-area (LPWA) solutions, which will play an important role in connecting a range of IoT devices.

A modest proposed rate change is seen as boosting Canada's economy even as it eases the tax burden on telecom providers

The recent publication of a study by the Conference Board of Canada – an Ottawa-based independent, not-for-profit research organisation – reflects a growing awareness of the economic benefits to be expected from a flourishing telecom sector.

The study, "From Landline to Mobile Broadband: Tax Drivers of Investment for Canada's Telecom Industry", was produced for the board's Centre on Tax Analysis, Fiscal Incentives and

Competitiveness (TAFIC). It found that raising the capital cost allowance (CCA) for investment in telecom equipment from 30 per cent to 50 per cent would add \$163 million to Canadian gross domestic product (GDP) and support 1,660 permanent full-time jobs. ("Economic Benefits Flow from Increased Depreciation Writeoff for Telecommunications Investments," newswire.ca, 1st December)

For telecom providers, the cost of investing in network infrastructure is deducted from income using a depreciation schedule. Accelerating the CCA rate would permit businesses to write off the cost of the new investment more quickly. "Over the past two decades, telecommunications companies have built their wireless networks largely from scratch across a large, sparsely populated geography," said Paul Darby, the executive in charge of managing the technical aspects of the Conference Board's economic modelling and forecasting work. "They now face the challenge of moving to a new generation of broadband technology."

Helping to address that challenge, the proposed rate change would also remedy an inequity. The Conference Board report noted that, in comparison with the current rate of 30 per cent for telecom equipment, the rate applicable to manufacturing equipment is 50 per cent – even though both investment categories have nearly identical depreciation rates around ten per cent.

Elsewhere in telecom . . .

➤ Matters of taxation are also the fore in the telecom industry of the USA, where late last year three major trade groups sent a letter to all senators warning that Internet customers are under "imminent threat" of higher taxes and fees from a Federal Communications Commission (FCC) decision to reclassify Internet service providers as common carriers (in Britain, contract carriers).

As reported by Mario Trujillo of the Washington-based political website *The Hill*, a temporary tax ban featured prominently in a 2014 debate over the FCC's net neutrality order, meant to ensure

that Internet service providers treat all web traffic the same. It was argued that construing Internet providers as common carriers would open up their customers to a number of taxes at the state level. ("Telecom Industry Ties Internet Tax Ban to Net Neutrality," 14th December) The FCC rejects the claim, but opposition to reclassification persists among broadband Internet providers. The current ban on Internet-related taxes applies only to state and local governments; the federal government is not prevented from imposing taxes on Internet access.

➤ The German research firm GfK found that smartphone sales growth in the Middle East and Africa (MEA) contributed to the strongest global smartphone sales on record for a third-quarter period.

Sales worldwide in the July-September period of 2015 increased 7.4 per cent year-on-year to 323.7 million units, while the value of sales rose by 5.9 per cent to \$95.3 billion. The average selling price (ASP) of smartphones was down two per cent year-on-year at \$294. The editor of *FierceWireless:Europe*, Anne Morris, reported on 25th November that GfK attributed the record quarterly sales performance to three markets: China, which returned to growth; MEA; and the Asia-Pacific region (APAC). In MEA, unit sales were up 16 per cent year-on-year to reach 41.1 million.

Most countries in this region experienced an increase in units sold compared to the same quarter of 2014, "with Egypt achieving very strong growth of 39 per cent year-on-year." The growth over-all in the third quarter prompted GfK to forecast growth of 13 per cent in the final quarter of 2015, bringing total annual sales to 1.3 billion.

➤ As reported by Mohamed Alaa El-Din of *Daily News Egypt* (9th December), the Chinese telecom equipment giant Huawei is in negotiations with the Egyptian Ministry of Investment to build a plant for assembling smartphones in the Suez Canal Area. According

to a Huawei Egypt official, the Egyptian government has pledged strategic partnership with Huawei in implementing projects in the area. At least some of the output of the plant is slated for the African market.

In other news from *Daily News Egypt* in December, Egyptian telecoms are worried that a recently enacted maximum wage law will impede their ability to attract the best personnel. The law caps salaries in Egypt at around \$5,400 a month, with some exceptions allowed. Medhat Khalil, the chairman and CEO of Raya Holding (Cairo), noted that, when compared to the Egyptian market, telecom sector pay is high in the Persian Gulf countries and farther abroad. He told Mr Alaa El-Din, "Experts seek better opportunities."

➤ The Australian Olympic Committee (AOC) announced a ten-year agreement under which Optus becomes the official telecom sponsor of the Australian Olympic Team for the next three Summer and Winter Olympic and Paralympic Games – through to 2026. The second-largest Australian telecom, Optus both owns and operates network infrastructure and uses the wholesale services of the Australian National Broadband Network. It is a wholly owned subsidiary of Singapore's Singtel.

As reported by Daniel Etchells of *InsideTheGames* (19th December), Australia is set to field one of the biggest teams at Rio 2016, with 450 athletes expected to represent the country. Meeting the costs (estimated at US\$16 million) of sending the squad to Brazil would be impossible, the AOC says, without sponsorship.

➤ Sweden's Ericsson has renewed its agreement with Eastlink, the Canadian quad-play operator, to expand and upgrade the multi-service cable company's 4G LTE and 3G HSPA mobile networks. As announced on 18th December, privately owned Eastlink will continue utilising Ericsson Evolved Packet Core equipment for an additional three years.

The Swedish technology giant remains the exclusive supplier of Eastlink's radio access network equipment.

怨声连天, 美国有线公司发现, 部分愤怒的客户正在将不满发泄出来

12月16日, 科罗拉多州, 科罗拉多斯普林斯的康卡斯特呼叫中心遭遇炸弹威胁, 紧急撤离人员, 原因正是一位对有线服务不满的用户造成的。

FierceCable, Daniel Frankel报道, 康卡斯特员工发现了“可疑信息”, 导致警察将大楼清空近半天左右。此次为最新发生的事故, 类似事故在美国时有发生, 已造成持续的困扰。同样, 去年三月份, 在内布拉斯加州林肯市, 一位女士由于炸弹威胁时代华纳有线设施而被起诉, 原因则是她被爽约。

根据Frankel的报道, 2014年7月, 在麻省昆西市, 一位男士炸弹威胁当地康卡斯特设施。往前追溯, 2012年7月, 在明尼苏达州德卢斯, 警察声称, 他们逮捕了一位男士, 他由于对网路服务不满而炸弹威胁Charter通讯支付中心。

PhillyVoice的Michael Tanenbaum报道(12月12日): “如果对判决基于对美国广大消费者的调查, 那么康卡斯特及其他有线公司才是罪魁祸首”。2015年12月, 在纽约举办的《商业内幕》年度会议中, 总部位于费城的康卡斯特公司CEO Brian Roberts发言承认有线公司目前道德声势较弱, 并分享了他的原因分析。

也许和公众反应不同, Roberts先生指出, 在过去的10年, 全球有线产业以平均8%到12%的速度增长, 仅康卡斯特公司, 每年在吸引用户方面要投入130亿到140亿美元。

Roberts先生提醒纽约会议现场的产业巨头: 现在Google是免费的, Facebook也是免费的, 如果康卡斯特没有免费, 那么肯定是有原因的, 因为“每位影星, 每位运动员, 每个星星点点的内容——都是我们付钱得来的。”

即使如此, 他提到: “如果你(有线公司)取消一个频道, 或者提高点费用, 那么立刻没有了收视率”。随后, 针对近期的“不愉快”, 公司Roberts承认, 并称之为“小犯规”: “由于技师接到电话没有及时出现在用户家里; 或者一些补救没有解决问题。在有线巨头的领导看来, 在这个看业绩收入的时代, 是有线公司的公众关系问题的“本质”。”

作为移动市场成熟的区域, 欧洲预见到未来的获益, 正在打造4G科技

据GSMA最新报道“移动经济: 欧洲2015”, 在未来的五年中, 基于对移动行业在4G网络及服务的投资, 未来五年, 移动产业对欧洲GDP贡献会进一步提升。根据800家全球移动服务商的预测, 随着欧洲市场对产业生产力及效率的改进, 会由2014年的五千亿欧元上升到2020年六千亿欧元。根据同样位于伦敦的《电信TV》12月3日的评论, GSMA看好未来对于新移动技术的引进, 比如M2M(机对机)通讯。

目前移动服务商正在对4G网络质量及全欧洲覆盖进行投资, 据预测, 到2020年, 4G服务在欧洲大陆的移动服务会从现在的20%提升到60%。

基于目前欧洲已有非常高的移动用户市场, GSMA对欧洲的前景非常看好。估计在2015年底, 欧洲移动用户预计有4亿3千万, 占总人口的79%, 这使得欧洲一举成为全球移动服务覆盖最高的区域——高于北美近10%。到2020年, 欧

洲移动用户会提升至4亿5千万(占总人口81%), 之后可增长的空间也许会遇到瓶颈。

但是GSMA首席技术及执行总监Alex Sinclair指出: 近年来, 欧洲的移动服务商对4G的投入巨大, 这对当地宏观经济及调控的情况是大挑战。他对《电信TV》提到: 欧洲对4G的部署、产能、频宽的投入在未来的十年也足够了。欧洲移动用户现在享受到了高速下载(高于全球平均速度)以及很多创新的服务的甜头, 这些服务往往在下一代网络及设备中方能提供。

欧洲移动产业在数字创新方面处于领军地位, Sinclair先生引用如下作为例证: 比如移动商务、智能生产、智能家庭、智能保健。另外, 移动网络为物联网(IoT)的商机提供了平台。欧洲M2M网络的使用数量, 预测从今年的6千8百万提升至2020年的1亿8千2百万, 占CAGR(复合年平均增长率)的22%。GSMA报道也提到, 低功耗广域网(LPWA)在欧洲日趋升温, 这对于未来扩展到物联网是非常重要的。

费用的适当调整对加拿大经济的收益——尽管会缓和电信商的税务负担

近期加拿大咨议局(位于渥太华的非营利研究组织)发布了一项研究报告, 展示了普遍对电信繁荣带来的经济收益的关注。

此研究是为咨议局税务分析、财政激励及竞争力中心所做, 名为“从地面线路到移动带宽: 加拿大电信产业投资的税务驱动”。研究发现, 对电信设备投资的资本成本补贴(CCA)对加拿大GDP的贡献从30%提升到50%, 增加了一亿六千三百万美元, 并提供了1660个全职工作机会。(索引文献: Economic Benefits Flow from Increased Depreciation Writeoff for Telecommunications Investments, newswire.ca, 1st December)

对于电信服务商来说, 对于网络基础设施的投资额可通过折旧从收入中扣除。加速资本成本补贴(CCA)率可以将新投资尽快销账。“在过去的20年, 远程通讯公司已经广泛铺建无线网络, 直至人迹罕至地区”, 咨议局管理经济模型及预测的技术执行官Paul Darby说到, “目前, 这些公司在转型至新一代带宽技术中, 遇到了很大的挑战”。

就此挑战来说, 建议的价格变更也会补救此问题。咨议局报道提到: 较目前费用的30%用于电信设备, 生产设备的费用则占50%——尽管两项投资的折旧率均为近10%。

其他地方的电信..

就赋税而言, 这也把电信产业推到了美国的风尖浪口。在去年, 三家主要贸易集团向所有参议员连书警告道: 联邦通讯委员会(FCC)对于将互联网服务商重新归类为普通运营商(在英国称为协议运营商)的决定, 会将互联网用户置于“即刻的威胁”中。根据华盛顿政治网站“The Hill” Mario Trujillo报道: 一项临时的禁止收税的政策在2014年就FCC的中立性引起了广大的争议。普遍认为, 此措施旨在确保互联网服务商对全部网络信息传递公平对待。争议表明: 这就意味着互联网服务商与普通承运商一样, 要开放其用户资源以征收税费(至州立水平)。(索引自“Telecom Industry Ties Internet Tax Ban to Net Neutrality,” 14th December) FCC反驳此项声控, 但与宽带互联网服务商的坚持分类不同。目前互联网相关税费的禁止, 只适用于各州和当地的政府, 联邦政府有权对互联网连接赋税。

'Close encounters'

Study over a 20-month period in the USA finds 327 incidents in which drones presented a hazard to manned aircraft

Founded in 2012 at Bard College (Annandale-on-Hudson, New York), the Center for the Study of the Drone is a research and education initiative that looks to expand understanding of unmanned technologies.

In "Drone Sightings and Close Encounters: An Analysis", published 11th December, the centre referenced data from the US Federal Aviation Administration (FAA) and the Department of Interior to explore 921 incidents in the national airspace from December 2013 to September 2015.

Co-authors Dan Gettinger and Arthur Holland Michel identified 327 close encounters in which drones presented some level of hazard to manned aircraft, 90 of which involved commercial multiengine jets; and 594 sightings in which drones were spotted within or near manned aircraft flight paths but did not pose immediate danger of collision.

The study found that incidents were more likely to involve multi-rotor unmanned aircraft than fixed-wing drones, and principally occurred far above the FAA's 400-foot ceiling for unmanned aircraft, often within five miles of an airport. The analysis takes into account altitude, distance from airports, drone-to-aircraft proximity, manned aircraft type, drone type, and time of day.

In addition to the authors' findings, the Bard report presents extensive background and details the potential consequences of collisions between manned aircraft and drones.

Mr Gettinger, a co-director of the centre, wrote, "We are looking to furnish stakeholders and the public with a reliable, data-driven guide to the potential risks posed by drones to manned flight."

The full report is available free online at <http://dronecenter.bard.edu/drone-sightings-and-close-encounters>

With hundreds of thousands of drones having been sold in the USA, the FAA on 14th December announced a mandatory registration programme for the remote-controlled aircraft. As of 21st December, owners across the country were required to provide the agency with a name, a physical address and an email address associated with every drone weighing at least nine ounces.

Current owners were given until 16th February to comply, while newly acquired drones had to be registered before being flown for the first time. The \$5 fee will cover an unlimited number of aircraft for three years.

The registry grew out of the recommendation of a task force of pilots, hobbyists, manufacturers and retailers whose input was sought by federal regulators striving to keep the skies safe as drones increasingly share airspace with passenger planes.

Telecommunications

Miami is poised to make additions to its familial and social ties with Cuba: telecom and Internet connections

"Ninety miles away from the fifth-most connected city in the world is the second-worst connected country in the world."

The places cited in the National Law Review (Western Springs, Illinois), a database of legal and business articles, are Miami, Florida, and the island nation of Cuba. And the comparison drawn by José M Ferrer and Yasmin Fernandez-Acuña is indeed very striking.

As noted by the NLR staffers, Miami's growing telecommunications industry has earned it the sobriquet Silicon Beach. Some 90 per cent of data traffic from Central and South America passes through Verizon Terremark's Network Access Point (NAP) facility, located in downtown Miami. The city's development as a technology hub for Latin America has prompted major industry players, including Facebook and Apple, to open regional offices there; and civic leaders are investing in Miami's telecom infrastructure to prepare it to better support the industry.

In stark contrast is Cuba, where only three to four per cent of residences have Internet access. Ostensibly a technology failure, this is considered by many to have more serious implications. Mr Ferrer and Ms Fernandez-Acuña noted that the Foundation for Human Rights in Cuba has launched a Connect Cuba initiative, claiming that the lack of telecom connectivity constitutes a human rights violation.

The reporters pointed out that the prospect of a more open Cuba has wide appeal, irrespective of political conviction. While other American industries face political resistance from legislators who oppose any investment in or business dealings with Cuba for fear of enriching its communist government, the telecom industry is different.

Its traditional association with the free exchange of information makes it a logical facilitator of Cuban exposure to, and contact with, the world outside. ("Cuba's Telecommunications Industry and Miami's Expanding Silicon Beach," 1st December)

This partiality to telecom was not lost on President Barack Obama, whose administration in April 2009 announced a series of policy revisions that authorised US telecom network providers to enter into agreements to establish fibre optic cable and satellite links with Cuba; to sell consumer communications devices there; and to work on projects to improve the island's outdated telecom infrastructure. Even with the USA trade embargo of Cuba still in place, the liberalised rules seemed set to usher in a new era of communication with a vastly more accessible near neighbour.

However, despite the legal clearances, the American telecom companies hung back. The problem, according to the National Law Review, was an absence of clarity in the new regulations. For example, the providers were not certain exactly how close to Cuban territory an American

cable could be placed. “Legal uncertainties translate to financial exposure,” the NLR observed. “This likely contributed to US telecom companies deciding that the cost-benefit analysis at the time counselled against moving into Cuba.”

December 2014 brought a turning point, with the announcement by the White House of its plan to renew diplomatic relations with Cuba after 53 years. This reinvigorated the effort to entice USA telecom companies to enter Cuba.

In September 2015, Washington issued further revisions to the Cuban Assets Control Regulations (CACR) and Export Administration Regulations (EAR) that give the telecoms much better guidance.

In brief, a USA telecom company now may:

- ④ Establish a physical presence in Cuba, including through joint ventures with Cuban entities, to provide certain telecom and Internet-based services
- ④ Enter into licensing agreements related to, and to market, those services
- ④ Import Cuban-origin mobile applications into the USA and hire Cuban nationals to develop them
- ④ Provide certain services related to consumer communications devices exported to Cuba, including training related to their installation, repair and/or replacement

These authorisations and clarifications of what USA telecoms may do in Cuba “seem to have worked,” wrote Mr Ferrer and Ms Fernandez-Acuña.

Sprint was fastest off the mark, becoming the first USA wireless carrier to sign a direct roaming agreement with Cuba’s government-run Empresa de Telecomunicaciones de Cuba (ETECSA). This allows Sprint customers visiting the island to use their phones as they would at home, and reinforces the company’s position in the USA and its telecom presence in Cuba.

Since June of last year Kansas-based Sprint also has had a long-distance interconnection agreement with ETECSA, enabling American customers to call Cuba directly.

- ④ While Miami’s tourism and hospitality industries expect to be the main beneficiaries of the USA’s loosening of restrictions on Cuba, the city’s telecom industry will be paying attention. According to two close observers at the National Law Review, “Cuba’s virtually uncharted telecom territory presents many opportunities for Miami’s Silicon Beach.”

A tale of two cities: Seattle perceives – and resents – partiality to Philadelphia on the part of Comcast

“The Seattle City Council was poised to renew a ten year franchise deal with Comcast on 7th December but, after getting wind of what the cable giant was offering Philadelphia, city officials are delaying their vote and pressing the company for a better deal.” Sue Marek of *FierceCable* was reporting on a letter to Comcast from

Mayor Ed Murray and council member Bruce Harrell, of Seattle, in which the two officials expressed their indignation (they called it disappointment) at their city’s treatment vis-à-vis Philadelphia. (“Seattle to Comcast: We Want a Sweeter Franchise Deal,” 7th December)

As outlined by Ms Marek, Comcast’s franchise deal with Philadelphia was announced on 3rd December after eight months of negotiations. Under its terms, Comcast will expand its subsidised broadband programme, Internet Essentials, to include seniors and will extend enrolment in the programme to low-income Philadelphians over the next five years at a cost to the company of \$2.7 million.

In addition, Comcast pledged \$20 million over the next 15 years to support local public, government and educational programming channels: some \$2 million over its original offer to Philadelphia. An MSO (multiple system operator of two or more cable TV systems), Comcast will moreover install a high-speed network in 200 locations throughout Philadelphia and pay its employees at least the city’s minimum wage of \$12 an hour.

The situation prompts the question, did Comcast – the world’s largest media company – not anticipate that, in 2015, news generated on the East Coast might reach the West Coast in four days? Or did it perhaps expect Seattle to concede the right of Philadelphia-based Comcast to confer a home-team advantage?

If so, it was mistaken. Messrs Murray and Harrell served notice that approval of the Seattle-Comcast deal depended on whether or not the terms offered brought their city into parity with Philadelphia. They wrote: “Having seen [your] commitment toward equity and affordability in Philadelphia, we believe the people of Seattle deserve the same level of commitment.”

- ④ Ms Marek noted that the draft of Comcast’s deal with Seattle already requires the company to offer free cable service to city buildings and schools, as well as to allot \$50,000 a year for the local TV channel. It also calls for Comcast to offer discounted cable service to low-income subscribers and free Internet service to qualifying non-profits.

But Seattle intended to hold off on renewal of its franchise agreement with Comcast until the agreement “is significantly improved.”

Comcast said it was open to discussing terms with Seattle.

Automotive

A long-time favourite brand in China, GM’s Buick will be the first Chinese-made light vehicle sold in the USA by one of the Big Three

“After years waiting for an invasion of Chinese cars that never came, General Motors says it’s going to be the first of

Energy

Detroit's Big Three to offer a Chinese-made model for sale in the USA." In a collaborative article carried by both *USA Today* and the *Detroit Free Press*, Chris Woodyard and Greg Gardner reported that the Buick Envision crossover will go on sale this summer, helping to fill "ravenous demand" in the USA for smaller SUVs at a time when the Chinese economy has weakened. They also noted that the Buick is being imported over the objections of the United Auto Workers union (UAW), which wants it produced at home.

Envision, which made its American debut in January at the North American International Auto Show in Detroit, was a sore subject during the contract talks between GM and the UAW, concluded in November. The model – comparable to the Ford Escape, assembled in Louisville, Kentucky, and the Jeep Cherokee, now assembled in Toledo, Ohio – is large enough to be assembled profitably in the USA.

"[General Motors] should reconsider this decision and place this product into one of their facilities in the United States," the union said in a statement. ("GM's Buick SUV Will Be First to Be Imported from China," 4th December)

While GM, Ford and Fiat Chrysler, together with a number of Asian and European auto makers, have for years built cars in Mexico and elsewhere for import into the USA, China is a special case. About a decade ago, the fear was that cheaply made cars from China would engulf the USA market. Messrs Woodyard and Gardner recalled that Chinese makers even tested the waters at the same big Detroit auto show where Envision bowed in January.

But the peril never materialised. Apart from questions about quality and engineering, China became the world's hottest auto market. As domestic consumers grew wealthier, Chinese automakers had all they could do to satisfy their own market.

Now, Detroit's Big Three (GM, Ford and Fiat Chrysler) could become importers themselves. GM has always had the largest footprint in China, and Ford has been trying to make gains there. Will American consumers care if their cars are Chinese-sourced? Ian Beavis, a veteran auto executive who is now chief strategy officer for consulting firm AMCI Global (Terryville, Connecticut), thinks not. Mr Beavis told *USA Today* and the *Detroit Free Press*, "The country of origin is significantly less of an issue now than it ever was."

The Buick brand has enjoyed immense popularity with Chinese buyers. Now, apparently impelled by expediency, GM sees a way to take advantage of a torrid market for SUVs at a time when its other factories are running full tilt. Hence the made-in-China Buick, to be imported from Yantai where the vehicle has been produced for about a year. Through the first 11 months of 2015 GM sold 127,000 of the cars in China, company spokesman Stuart Fowle told the two automotive reporters.

The Envision has a two-litre, four-cylinder turbocharged engine with six-speed all-wheel-drive transmission. "To do it from scratch would take a long time," said David Cole, chairman emeritus of the Center for Automotive Research. "You can get them [from China to the US] a lot more quickly."

Frustrated by erratic wind and sunshine, 'green' utilities look to an 1890s-era technology: pumped storage hydroelectricity

While rising levels of wind and solar energy production are welcome news to proponents of clean energy everywhere, the surge in renewables has one very significant limitation. It comes, noted the Seattle-based journalist John Roach, "with the challenge of ensuring that electric power is available when customers want it, not just when the wind blows."

Writing in *Yale Environment 360*, published by the School of Forestry and Environmental Studies of Yale University (New Haven, Connecticut), Mr Roach described a technology from the late 19th century that is winning converts today.

Pumped storage hydroelectric facilities – like the \$1.3 billion Cortes-La Muela expansion, completed by Spanish utility giant Iberdrola in 2013 – are typically equipped with pumps and generators that move water between reservoirs.

Using excess electricity – generated, say, from wind turbines during a blustery night – water is pumped from a lower reservoir, such as behind a dam, to a reservoir at a higher elevation. Then, explained Mr Roach, when the wind ceases to blow or the demand for electricity spikes, the water "from on high" is released to spin hydroelectric turbines. ("To Store Renewable Electricity, Utilities Turn to Pumped Water," 7th December)

While the time-tested method may have gone under the radar, it is not in eclipse. In fact, according to Vladimir Koritarov, an energy systems engineer at the Department of Energy's Argonne National Laboratory in Illinois, more than 98 per cent of installed storage capacity globally is pumped hydro.

Among all energy storage technologies, Mr Koritarov told *Yale Environment 360*, "Pumped storage hydropower is still the only one that is mature, reliable, proven, and commercially available to provide large utility-scale energy storage."

And now, prompted by the world's embrace of solar and wind power to help combat global warming, utilities from Italy to China are building new pumped storage hydro facilities as a way of balancing supply and demand across electric power grids.

According to the USA Department of Energy's Global Energy Storage database, currently 292 pumped storage hydro facilities are in operation worldwide, with a total capacity of 142 gigawatts. Another 46 projects, with a total capacity of 34GW, are in development.

According to Chi-Jen Yang, a research scientist at the Center on Global Change at Duke University in Durham, North Carolina, pumped storage hydro is growing fastest

From the Americas

in China, with ten or 15 stations under construction there and a new one coming online every several months. The 3.6GW Fengning station being built in Hebei Province will be the world's largest when it is commissioned around 2022, Dr Yang told Mr Roach. He also noted that China's 22GW of installed pumped storage hydro capacity recently surpassed the 21GW total for the United States and will overtake world leader Japan (at 27GW) in 2018.

The US Federal Energy Regulatory Commission in 2014 issued licences for two new pumped storage hydro stations, both in California. An \$800 million, 400 megawatt (MW) project of the Sacramento utility district at Iowa Hill involves construction of a second reservoir 1,200 feet above an existing water body, with connecting tunnels and an underground powerhouse.

Eagle Crest Energy Co (Santa Monica) is constructing upper and lower reservoirs at the old Eagle Mountain iron mine near Palm Springs: a \$1.4 billion project expected to produce 1,300MW of hydroelectricity.

Several dozen other American pumped storage hydro stations are in the early planning and preliminary study stages. A notable example is the \$2.5 billion, 1,200MW JD Pool project in Washington State. This would site a pair of upper reservoirs between strings of wind turbines on the Columbia Plateau and a lower reservoir, located 2,400ft down the wall of the Columbia River Gorge at an abandoned aluminium smelter near a dam.

Mr Roach wrote: "Planners envision close coordination among Columbia River dams, large arrays of wind turbines, and the proposed pumped storage facilities, which would hold water in reserve during steady winds and unleash it during calm periods."

🌐 Giving some background, *Yale Environment 360* observed that pumped storage hydro was first used in the 1890s to provide greater flexibility for the management of water resources in the Swiss, Austrian and Italian Alps. Widely employed in the 1960s to the 1980s to provide load shifting, the technique saw service mainly at large, inflexible assets.

According to Mr Koritarov, of Argonne National Laboratory, its popularity rose and waned with that of the big nuclear and coal-fired power plants. When these fell into disfavour, he said, "Pumped storage also quit being built."

But not altogether. And signs are strong that the worthy old technique is filling a need in the increasingly ecology-minded world of today.

Steel

Under scrutiny worldwide for its response to a weaker domestic economy, China delivers some surprises on steel

"China is turning out to be a much more effective exporter of its steel products than many people thought,"

GEO Andrew Mackenzie of BHP Billiton Ltd said on 3rd December in Melbourne, Australia, according to a transcript supplied by the Anglo-Australian mining group. "They want to be that top manufacturer and that top exporter."

The success of Chinese steel mills in raising exports as slower economic growth curbs demand at home has indeed defied expectations. David Stringer of *BloombergBusiness* noted that, compared with 2014, mills in China – which account for half of global production – shipped about 25 per cent more steel in the year to October 2015.

Chinese exports may reach 110 million metric tons (mt) for the calendar year, which according to *Bloomberg Intelligence* tops the output of Europe's leading four producers combined. ("China's Booming Steel Exports Have Surprised Market, BHP Says," 3rd December)

Chinese steel exports are unlikely to increase further, Japan Iron and Steel Federation chairman Koji Kakigi said in November. But benchmark prices of iron ore had already tumbled almost 80 per cent from their 2011 peak as demand growth faltered in China, the biggest consumer.

Even so, iron ore exporters, including the world's biggest miner BHP and Brazil's Vale SA, are continuing to raise volumes despite weaker prices, aiming to realise cost savings by fully utilising their networks of mines, ports and railroads.

On that score, days earlier Mr Stringer reported on another trend originating in China. As the nation moves to a consumer-led economy it will need more aluminium "for everything from laptops to coffee capsules."

Imports of bauxite could double over the next decade to support the Chinese aluminium industry, the world's largest.

Wrote Mr Stringer: "The worst commodity slump since the global recession and a collapse in aluminium prices doesn't mean there isn't money to be made from digging up the bauxite ore used to produce the [aluminium] – provided you have the right kind of mine."

🌐 Rio Tinto Group, the world's second-biggest metals miner, is clearly intent on having such a mine. The Anglo-Australian company, with headquarters in London, is investing \$1.9 billion in a new deposit even as the price rout has forced it to slash global capital spending by \$11.5 billion since 2013.

According to Deutsche Bank AG, by 2019 Rio's Amrun project in Australia will be able to unearth high-grade bauxite ore for about \$20 per mt and sell it for around \$50.

After seven years of evaluating Amrun – located near Weipa in northern Queensland state – Rio approved the project on 4th December.

BloombergBusiness reported that most of the bauxite produced will be for sale to China. ("Metals Slump No Hitch for New Rio Mine With 60 Percent Profit Margin," 1st December)

Dorothy Fabian – Features Editor

“近距离接触”

一项在美国为期20多个月的研究发现，327个事故源于无人机对载人飞机造成的危害

巴德学院(Bard College) (位于纽约州哈德逊河畔安娜代尔市)于2012年设立无人机研究中心,旨在通过研究教育增进对无人驾驶技术的认识。在12月11日发表的《无人机观测和近距离接触:一项分析》一文中,该中心援引了美国联邦航空署(FAA)和美国内政部(Department of Interior)的数据,用于调查2013年12月至2015年9月期间发生在美国领空内的921起航空事故。

该文的协同作者丹·甘廷哲和阿瑟·霍兰德·米歇尔认定在327起近距离接触的事故中,无人机对载人飞机产生了一定程度的危害,其中90起事故涉及商用多引擎飞机;总共观测到594次无人机进入或靠近载人飞机航线的事例,但并未即刻引发碰撞威胁。

该项研究发现,相较于固定翼飞机,多水平旋翼无人机更易引发事故,并且大部分事故发生于机场方圆五公里内,远高于美国联邦航空署规定的400英尺无人机航高限制以上的区域。该分析报告包括了海拔、距机场的距离、无人机与飞机间的接近度、载人飞机类型、无人机类型以及当日时间段。

除此之外,巴德学院的报告中还提供了大量的背景调查并详细阐述了无人机与载人飞机碰撞所可能导致的后果。担任该中心联合主任的甘廷哲先生在报告中写道:“我们正致力于向公众和所有的相关人员提供一份可靠并基于数据编写的指导手册,用以指明无人机对载人飞机可能造成的威胁。”

报告全文可参考以下网址免费阅读:<http://dronecenter.bard.edu/drone-sightings-and-close-encounters>

电信业消息

迈阿密正准备加固其于古巴之间的亲情纽带和社交联系:电信和网络联接

“在距离通信架构完善度全球排名第五的城市90英里之外,是排名倒数第二的国家。”

国家法律评论网(伊利诺伊州西泉地区)是法律和商业相关文章的数据库,在其文章中引用的这两个地区是:位于佛罗里达州的迈阿密市和古巴共和国的岛屿。而何塞·M·费雷尔和亚斯敏·费尔南德斯·阿库纳所归纳的对比结果则令人震惊。

正如国家法律评论网工作人员所指出的那样,快速增长的迈阿密电信产业为其赢得了“硅海滩”的称号。大约90%来自中南美洲的数据传输会通过威瑞森Terremark公司位于迈阿密市中心的网络接入点(NAP)。这座城市将成为拉丁美洲技术中心的发展前景促使产业大亨在那里建立地区办事处,其中包括脸书和苹果公司;同时公民领袖也正在投资迈阿密的电信基础设施用以支持产业发展。

而在与之形成强烈对比的古巴,只有3%到4%的居民能够接入互联网。多数人认为表面上的技术故障实际会引发更严重的影响。费雷尔先生和费尔南德斯·阿库纳女士注意到,古巴的人权基金会已发出了一项“连接古巴”的倡议,宣称通讯功能的缺失是对于人权的侵犯。两位记者指出,不考虑政治信仰,建立一个更为开放的古巴具有广泛的吸引力。尽管其他的美国行业面临着来自立法者的政治阻力,后者反对与古巴间进行任何投资或商业交易,以防充盈其共产主义政府的国库,但是电信产业是个例外。电信产业与免费信息交换间的传统结合使其成为促使古巴联系外界

并为外界所知的合理工具。(《古巴的电信产业和迈阿密扩张中的“硅海滩”》,12月1日)对于电信产业的偏好,在奥巴马总统这届政府中也未被忽视,其管理部门于2009年4月宣布将修订一系列政策,用以授权美国电信网络供应商签订协议,建立与古巴间的电缆和卫星链路;在古巴销售用户通讯设备以及设立项目完善岛屿上落后的通讯设施。尽管还未撤销美国与古巴间的贸易禁令,但是这些相对自由化的规则将引领美国进入一个更易于和其近邻通信沟通的新时代。

然而,尽管法律已经打消了美国电信公司的顾虑,但是根据国家法律评论网所述,问题在于新规定明确度的缺失。例如,供应商并不清楚美国电缆最多可以铺设至离开古巴领土的距离。“法律上的不明确会导致财务风险,”国家法律评论网注意到,“这可能导致美国电信公司依据当前的成本效益分析而做出暂不进入古巴的决定。”

事情在2014年12月出现了转机,白宫宣布计划恢复与古巴已中断了53年的外交关系。这消息再次激发了美国电信公司进入古巴的决心。2015年9月,华盛顿特区进一步发布古巴资产管理条例(CACR)和出口管理条例(EAR)的修订案,为电信产业提供了更好的指导意见。

简言之,美国电信企业可从事:

- ① 在古巴建立实体公司,包括与古巴实体公司建立合资企业,用以提供电信和互联网服务
- ② 可加入该地区市场和上述服务或与之相关的特许权协议
- ③ 将古巴研发的移动应用进口至美国,并允许雇佣古巴公民进行开发;并且
- ④ 为出口至古巴的用户通讯设备提供特定服务,包括与安装、修理和(或)更换相关的培训

这些对于美国电信公司在古巴从事业务的授权以及说明“似乎已经开始发挥作用,”费雷尔先生和费尔南德斯·阿库纳女士写道。斯普林特是业界最快采取行动的公司,它成为了首个与古巴政府运营的古巴电信公司(ETECSA)签订直接漫游协议的美国无线运营商。这项协议使斯普林特的用户在游览该岛屿时,能像在本国一样自由使用手机,同时巩固了该公司在古巴的美国电信公司中的地位。自去年6月以来,位于堪萨斯州的斯普林特已与古巴电信公司签订了一项长途互联协议,使美国用户可直接拨打古巴电话。

⑤ 尽管迈阿密的旅游业和酒店服务业预计将是美国对古巴解禁后的主要受益方,但是该市的电信产业依然值得关注。国家法律评论网的两位密切观察家指出:“古巴几乎空白的电信领域为迈阿密的‘硅海滩’创造了大量机会。”

汽车行业

作为长期以来在中国最受欢迎的品牌,隶属美国三巨头之一通用汽车旗下的别克将作为首款中国制造的轻型汽车在美销售

“在长年等待中国汽车入驻美国市场未果之后,通用汽车宣称其将成为底特律三巨头中第一个为美国市场提供中国制造车辆的公司。”

在《今日美国》和《底特律自由新闻报》联合刊登的文章中,克里斯·伍德亚德和格雷格·加德纳报道称,别克Envision酷越车将于今年夏天开售,旨在趁中国经济疲软之时,满足美国市场对小型多功能车(SUV)的迫切需求。他们同时注意到,该款别克汽车已力排美国汽车工人联盟(UAW)的异议进口至美国,而后者则希望该款车型能在美国当地生产。一月在底特律举办的北美国际汽车展上,Envision完成了其在美国的首秀,但是其却成为通用汽车和美国汽车工人联盟的合同洽谈中一个尴尬的话题,该洽谈

结束于11月。这款车型，相较于在肯塔基州路易斯维尔进行组装的福特翼虎以及在俄亥俄州托莱多进行组装的吉普切诺基，是一款体型足够大而适合在美国进行组装的车型。

“（通用汽车）应当重新考虑他们的决定，并将此款车型的组装地点安置到其位于美国境内的工厂内，”联盟在其一份声明中这样写道。（《通用汽车的别克多功能车将成为首款从中国进口的车型》，12月4日）

尽管通用汽车，福特公司、菲亚特克莱斯勒公司以及一些亚洲和欧洲的汽车制造商多年来在墨西哥等地组装车辆，用以满足美国的进口需要，然而中国却是一个特殊的例子。大约在十年以前，商家非常担忧从中国进口的低价车辆将席卷整个美国市场。伍德亚德先生和加德纳先生表示，一月Envision完成首秀的底特律汽车大展是中国制造商的一次试水。但是这个担忧永远不会变成现实。抛开质量问题和技术问题，中国已成为全球最炙手可热的汽车市场。由于国内消费者消费水平的提高，中国汽车制造商们正不遗余力地满足其本国市场的需求。

能源

受挫于风能和太阳能的不稳定性，“绿色环保”行业将目光投向1890年代的技术：抽水蓄能电站

尽管日益增长的风能和太阳能生产水平对于清洁能源的拥护者来说是喜闻乐见的好消息，但是可再生能源中的浪涛却有一个极大的弊端。正如驻西雅图市记者约翰·洛奇所说：“在用户需要时就能保证电力的供应而不是仅仅在有风的时候才能供应，这一要求对这类能源来说是一个难题。”

在耶鲁大学（位于康涅狄克州纽黑文市）森林和环境研究院发表的《耶鲁360度环境观察》中，洛奇先生指明一项诞生于19世纪末的技术在如今赢得了革新。抽水蓄能电站设施——如同西班牙设施巨头Iberdrola于2013年投入13亿美元完成的Cortes-La Muela扩张计划一样——是通过安装水泵和发电机用以在水库间调引水量的典型方法。

采用大风天风力涡轮机夜晚产生的剩余电力将水从海拔较低的水库（比如大坝后的水库）通过水泵抽取至海拔较高的水库。洛奇先生进一步解释说，在无风的天气条件下或在用电高峰时，释放位于“高位”的水，使其推动水力发电涡轮机转动。（《为了储存可再生能源，公共事业部转向抽水蓄能》，12月7日）尽管这个经得起时间考验的方法曾经受到过世人的瞩目，但是如今已没有那么出名了。事实上，根据就职于美国能源部伊利诺伊州阿尔贡国家实验室的能源系统工程师弗拉基米尔·克里塔罗夫所述，全球超过98%的储备能量是通过抽水蓄能的方式存储的。克里塔罗夫先生告诉《耶鲁360度环境观察》记者：“在所有能源存储的技术中，抽水蓄能是唯一成熟可靠、久经考验并可提供大容量能源存储的市售技术。”

如今，为了应对全球变暖，世界各地都在发展利用太阳能和风能，从意大利到中国，各国的公用事业部都在建设新的抽水蓄能水电设施，用以平衡电力网络的供需。根据美国能源部全球能源储备的数据显示，目前在世界范围内投入运营的抽水蓄能设施共有292座，共能储存142,000兆瓦的电力。其余46座设施项目正在建设中，将能储存34,000兆瓦的电力。就职于北卡罗来纳州达勒姆杜克大学国际变化中心的研究员Chi-Jen Yang指明，抽水蓄能水电设施在中国的发展最为迅速，有10座或15座水电站正在建设中，平均每几个月就会有一座投入运营。Chi-Jen Yang博士告诉洛奇先生，预计将于2022年上线运营的河北省丰宁水电站可储能3,600兆瓦，将成为世界上最大的水电站。他同时注意到中国抽水蓄能水电设施存储的总能量为22,000兆瓦，已超过美国的21,000兆瓦，并预计将于2018年超过日本（27,000兆瓦）。

美国联邦能源监管委员会于2014年签发了两项许可证，用以批准在加利福尼亚州建立两座新的抽水蓄能水电站。这项位于爱荷华山塞克拉门托公共事业区的项目造价8亿美元，可蓄能400兆瓦，包括在现有水体上方1,200英尺处再建设一个水库，由隧道连接并建有地下水电站。鹰冠能源有限公司（位于斯塔莫尼卡）正在棕榈泉边的老鹰山铁矿上下方建设水库：该项目耗资14亿美元，预计可水力发电1,300兆瓦。其余数十座美国抽水蓄能水电站正处于早期规划和初步研讨阶段。其中值得注意的是位于华盛顿州耗资25亿美元，预计发电1,200兆瓦的JD Pool项目。该项目计划在哥伦比亚高原的风力涡轮发电机群和下方的水库间建设两个水库，建设场地位于哥伦比亚河谷堤坝下方2,400英尺处，水坝边一个废弃的铝冶炼厂。洛奇先生写道：“规划者们希望哥伦比亚河水坝、大规模风力涡轮发电机群和即将开建的抽水蓄能设施间能够紧密合作，即在有风的天气条件下能蓄水蓄能，而在无风的情况下释放水能发电。”

钢铁业

被世界紧盯如何应对国内经济走低，中国钢铁业成绩令人意外

“出乎多数人的意料，中国正越来越高效地出口其钢铁产品，”必和必拓集团首席执行官安德鲁·麦肯齐在12月3日于澳大利亚墨尔本接受采访时说，根据英澳矿业集团提供的记录来看，“中国想成为顶级制造商和出口商。”

在由于国内经济增长减缓而减少钢铁需求的情况下，中国钢铁厂还能在出口增长上大获成功，这无疑出乎了所有人的意料。《彭博资讯商业刊》的记者大卫·斯特林格注意到，相较于2014年，截止到2015年10月，占有半数全球产量的中国钢铁业的钢铁货运量增长了25%。根据《彭博情报》提供的数据，整年度中国的钢铁出口量达到1.1亿公吨，超过欧洲四大钢铁制造商的产量总和。（《必和必拓：中国钢铁出口增长势头震惊市场》，12月3日）

日本钢铁联合会主席Koji Kakigi于11月称，中国钢铁的出口量可能不会再进一步增长。但是由于中国国内钢铁需求（也是最大的客户）增长迟缓，铁矿石的基准价格已经从其2011年的最高价格暴跌了将近80%。尽管如此，包括世界最大矿业公司必和必拓公司和巴西淡水河谷公司在内的铁矿石出口商不惜降低价格来实现成交量的持续增长，并通过对其矿山、港口和铁路的充分利用以节约成本。

在这点上，斯特林格先生早些时候报道了中国兴起的另一个趋势。由于中国正发展成为一个以消费者为导向的经济体，它需要更多的铝用于生产“从笔记本电脑到咖啡胶囊的各种产品。”在接下来的十年中，中国——这个拥有全球最大制铝产业的国家，其铝土矿的进口量预计可翻一倍，用以支持产业发展。斯特林格写道：“全球经济衰退以来的最大大宗商品暴跌以及铝价格的暴跌并不意味着挖掘铝土矿（用于生产铝制品）不能带来收益，这取决于是否拥有适用于产品的矿藏。”

世界第二大金属矿业公司力拓集团正明确致力于发掘这样的矿藏。尽管由于矿石价格暴跌，自2013年以来，这家总部位于伦敦的英澳公司不得不削减115亿美元全球资本，但是该公司依然在新的矿区投资了19亿美元。根据德意志银行提供的数据，到2019年为止，力拓集团位于澳大利亚的Amrun项目将挖掘出优质的铝土矿，成本价为每公吨20美元，销售价为每公吨50美元。Amrun位于昆士兰州北部的韦帕市附近，在对其进行为期七年的评估之后，力拓集团于12月4日批准了该项计划。《彭博资讯商业刊》报道称，出产的多数铝土矿将出售给中国。（《金属产业衰退不会阻碍力拓集团从其新矿山获取60%的利润率》，12月1日）

专栏编辑：Dorothy Fabian

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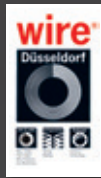
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wire 2016

Düsseldorf, Germany



Show dates: Monday 4th April – Friday 8th April

Show 2016 opening hours:

9am-6pm Monday to Thursday, 9am-4.30pm Friday

Organisers: Messe Düsseldorf GmbH – Germany

Fax: +49 211 456087 7793 Email: wire@messe-duesseldorf.de

The numbers are impressive. More than 70,000 trade visitors are expected as over 1,100 companies from 49 different countries show the latest technology and innovations at wire 2016.

Whether it's wire manufacturing and finishing machinery; process technology tools; materials, special wires and cables; measuring and control technology; or test engineering, it can all be found for five days in one place – Düsseldorf.

Visitors from around the globe will descend on the halls at the Fairgrounds for the largest exhibition in the wire and cable industry.

Those visitors will find an increasing number of exhibitors from India, Taiwan, South Korea and China, along with companies from the traditional production hot spots of Europe.

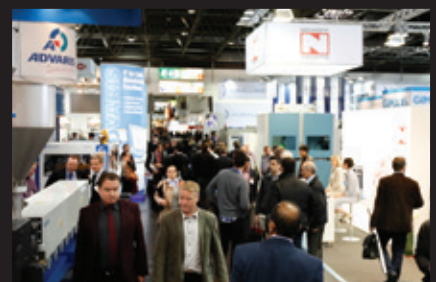
Our coverage starts here and ends on page 72.



www.wire.de



All photos courtesy Messe Düsseldorf





wire 2016 Exhibitors

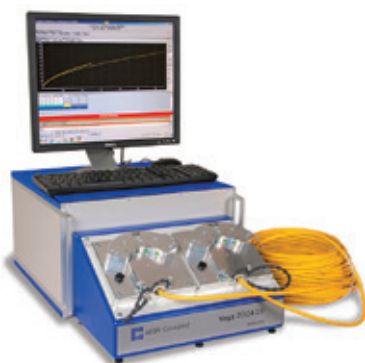


Aesa Cortailod Stand: 10A38

Aesa Cortailod, a Swiss company that innovates in cable quality metrology, will be introducing the latest test products for enhancing quality management and productivity. Driven by a constant commitment to boost customers' yield, Aesa will take this opportunity to meet the main players in the cable industry and demonstrate new capabilities of its test equipment.

A typical set of systems will be available for demo sessions:

- The new Vega DT (Desktop), integrating embedded VNA and PC, offers a compact solution for the measurement of LAN cables. With alien crosstalk (AXT) measurement being required more and more by the existing and coming standards, Aesa developed a specific multi-loading solution, making possible the achievement of such a measurement on four-pairs equipment.
- Another innovation is the new ResTest 1 linear resistance bridge, allowing a reliable and quick measurement of the wire resistivity. This new functionality is a major asset for the validation of drawn wires. ResTest 1 will find its place at the raw material incoming inspection as well as after the drawing process. It results in the improvement of the final cable quality and in the performance of an accurate acceptance test of drawn wires. The existing test equipment on the market solely provides an approximate value (by calculation) of this intrinsic physical parameter.
- The science of Computer Aided Quality (CAQ) is developing in the same significant way as development (CAD) and manufacturing (CAM). CIQ, Aesa's data management system, connects the multiple "quality islands" of the manufacturing plant and stores all the acquired data in a central database. Continuously capturing the process data and identifying the trends in real-time allows customers to drive their processes in a cost-effective and efficient way.



○ New integrated Vega DT unit for LAN cable measurement

The recorded data can not only ensure the conformity of the product but also analyse the long-term trends to enable quality professionals to develop strategies and process improvements. CIQ has been designed taking foremost into consideration the specificities of the cable industry, ie length-based data. CIQ provides an effective solution which can be interfaced with the most commonly used ERP or MES.

With high priority given to knowledge sharing, technical and practical sessions led by specialists will be performed on the stand. On Tuesday morning, 5th April, Aesa will demonstrate the measurement of the resistivity parameter on its innovative ResTest1, the sole equipment on the market able to measure it. On Wednesday morning, 6th April, the company will discuss the EMC and AXT measurement capabilities of the new Vega DT.

Aesa Cortailod – Switzerland
Website: www.aesa-cortailod.com



Ajex & Turner Stand: 11C03

Replacing the traditional ways of wire drawing and compacting, Ajex & Turner has revolutionary VNT dies for copper, aluminium, aluminium alloy, stainless steel, MIG, and high/low carbon wire.

With the boom in wire industry, there is a call for new science to draw materials with both good wear resistance and good surface properties to ensure that the quality of the drawn product is not compromised. Along with VNT dies, the company has also developed lubricants for copper and aluminium, which have the lowest consumption rate, and can solve the problem of copper blackening.



○ The range of dies on offer from Ajex & Turner

The TCD-10 will keep you ahead in the area of die polishing and grinding as it grinds and polishes angles and bearing in one operation, which saves time and energy and is also cost effective. The machine operates at high speed and can recondition dies in a short time period. It provides precise angles on re-cut dies.

Ajex & Turner Wire Dies Co – India
Website: www.ajexturner.com



Bow Technology Stand: 10E40

Based on more than 60 years' experience in double twist, Bow Technology – a member of the Gauder Group – designs and manufactures high-technology bows in a technical partnership with the most renowned cable makers.

The dedicated team carries out comparative analysis and trials to customise and upgrade obsolete designs, as well as technical studies of bow parks.

The result is a wide range of over 500 customised bow designs – as well as the exclusive and patented GreenBow2 enabling energy savings. >>

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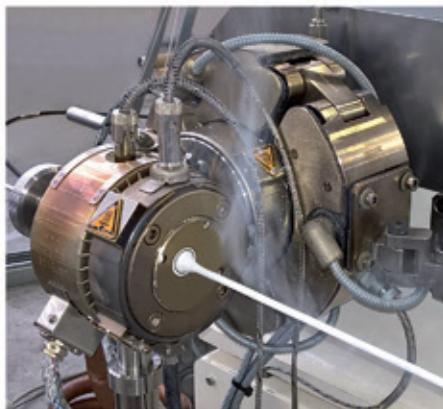


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○ **Bow Technology large bows**

All are available for more than 25 well-known brands of double twist machines (560-2,500mm) such as Cortinovis, Lesmo and Niehoff.

Bow Technology – France

Website: www.bowtechnology.com

ex-Lesmo and ex-Cortinovis engineers. 70,000 identified spare parts references are distributed worldwide through four logistic platforms, including high technology bows. A team of over 55 technicians is continuously trained to handle troubleshooting and urgent repairs. The division also offers dedicated services such as periodical visit contracts, transfer and restart operations of complete lines, training and consulting possibilities.



○ **C2S services and upgrades**

C2S is also being assigned upgrading projects for all brands, either mechanical/ electrical interventions or process improvements with transfer of know-how.

Cable Services & Systems – France

Website:

www.cable-services-systems.com



Clinton Instrument Company
Stand: 09E40

The Clinton Instrument Company, specialist in spark test technology for the wire and cable industry and inventor of the high frequency sine wave spark tester, will be exhibiting its newest offering, the model HF-15B high frequency sine wave spark tester, the flagship model of the new B-series. This new design combines the latest in control technology with the robust and reliable 3kHz spark test platform.

There are many new features of the HF-15B, including a split electrode design for easy string up and digital signal processor (DSP) based voltage regulation and fault detection. The fault detection circuit has been upgraded and test voltage is now monitored directly from the electrode, instead of a transformer winding. The fault circuitry can now differentiate between four types of fault conditions: simple pinholes, a series of closely spaced pinholes, direct metal contact from the centre conductor to the electrode, and gross lengths of bare wire.

The new "RC" controller comes fixed to the unit, but can be detached and mounted

>>

Cable Services & Systems
Stand: 10E40

The C2S division of the Gauder Group takes care of all wire and cable production lines, whatever the brand of the rotating equipment. C2S recently reinforced its engineering and commissioning team with

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remotely up to 60 metres away from the test module/electrode. It has a large alphanumeric display/user interface and can be rotated in its bracket to accommodate different viewing angles. The display makes configuration of the equipment easy; all configuration parameters can be changed directly from the front panel menu structure. Once configured, the system can be passcode protected.

In cases where a local display is not required, or centralised process control is desired, the equipment can be configured and controlled directly from PLCs or computers using Modbus RTU (RS-485 full duplex). Optional communication protocols include Ethernet/IP, Profinet, and Profibus, Modbus TCP and analogue communications, making the equipment compatible with previous Clinton equipment with analogue control.

When simple control output is all that is required, there are four sets of relay contacts that provide information without requiring advanced programming. These include "high voltage ON" signals to alert operators of the presence of high voltage, a fault relay which actuates when a fault is detected, a "Voltage Watchdog" which will change state when the test voltage has



○ The new HF-15B series from Clinton

risen above or dropped below a preset level, and a "Bare Wire Alarm" which will signal when long lengths of bare wire are detected.

Clinton will also exhibit and demonstrate the STCAL automatic spark tester calibration system. The STCAL system will calibrate high frequency AC, mains

frequency AC, and DC spark testers to all major specifications. Calibration is automatically performed and documented on all of Clinton's new B-Series spark testers and selected A-Series models. Manual or assisted calibration can be performed on older Clinton units as well as equipment manufactured by others.

When paired with Clinton's model SM sensitivity tester, a complete calibration solution to IEC and NEMA standards is provided.

Clinton Instrument Company - USA
Website: www.cicsparkers.com



Condat
Stand: 10A52

With 160 years of expertise, Condat's lubricant range is recognised as a reference in the metal forming market, especially for wire drawing processes (mechanical and electrical wire).

Its Vicafil and Steelskin range gathers together the widest choice of wire-drawing soaps, surface treatment, neat and soluble oils and degreasing products. >>



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Condat will exhibit its new developments for safer lubricants for both operators and the environment, such as:

- For high carbon steel, Steelcord, spring wire, ropes, PC strand: wire dry drawing lubricants with low or zero Borax (sodium tetraborate pentahydrate): Vicafil Sumac 5 and Vicafil Santale 6
- For low carbon steel, wire to be galvanised, CO₂ welding: minimising the use of titanium dioxide in dry drawing lubricants: Vicafil Decal 440
- For stainless steel spring wire, cold heading wire: products with new formulations in its range of drawing oils and greases so that they are not labelled under the GHS regulations and avoid the use of short and medium chain length chlorinated paraffins.

Condat proposes whenever possible low HSE impact technologies, using formulations with the least severe labelling possible.

The show will also be an opportunity to highlight Condat's specific offer for electrical wire and cable, including:

- For aluminium wire drawing, Vicafil TFA neat oils range has been designed to offer both low residues and extended operating life. A specifically formulated additives package minimises thermal oxidation, maintaining longer lubricant performance. The bath life is increased and maintenance costs reduced.
- For the drawing of bare copper wires, Vicafil TCU concentrated soluble lubricants provide consistent and reliable performance. The high lubricity of the emulsions reduces wire breakage while the additives package has been formulated to keep the machine clean, reduce foaming and increase the emulsion stability.
- A full range of complementary products that help in the management of the bath, including products to clean installations, bath maintenance additives as well as protection products for bare wires in order to avoid corrosion and extend shelf life.

Condat – France
Website: www.condat.fr

Contrôle Mesure Systèmes
Stand: 06C44

Based on its ultrasonic rotating head RotoUTScan, Contrôle Mesure Systèmes (CMS) proposes a new product – RotoUTDim for the dimensional measurement of tubes and cables (from 4 to 250mm diameter) in the production line.

- Features include:
- Wall thickness all around the product
 - OD measurement

- ID measurement
- Ovality
- Concentricity
- Eccentricity

This system is designed for the measurement for all types of materials: steel (ferrous and non-ferrous), plastic, fibre and glass, among others.

Measurements are made by two ultrasonic transducers which rotate around the product. Data is collected in real time over the entire periphery, with a step up to 0.1mm and all along the product (whatever the length) with a step of 1mm. Accuracy of the measurements is ±0.002mm.

- Features include:
- Data is collected by a supervisor, visualised and saved
 - Gates for alarms or other are available
 - Input of encoder allows the positioning of the data



○ One of the new products from CMS

RotoUTDim covers a wide range of industrial applications such as nuclear, automotive, precision tubes and cables, medical, and multilayer coating.

Contrôle Mesure Systèmes – France
Website: www.cmseddyscan.com

Daloo
Stand: 10E40

Daloo, a member of the Gauder Group, is the logical extension of the group's global offer for cable producers wanting an attractive alternative between new machines made in Europe – with higher cost – and second-hand machines – without guaranteed performances.

Its complete stranding lines and accessories for the production of power and communication cables are delivered worldwide. This includes rigid cage stranders, taping lines, rewinding lines, take-ups and pay-offs, pulling caterpillars and tubular stranders.

The designs, as well as the manufacturing (in Changzhou, China), are based on European experience (proven Gauder Group methods) following strict quality criteria.



○ *Daloo large pay-offs and take-ups*

On the stand will be a large portal type take-up (4,000mm/35 tons).

Daloo – China

Website: www.daloo-machines.com



**Davis-Standard
Stand: 09A19**

Davis-Standard will feature its latest wire and cable technology.

Davis-Standard's take-ups and pay-offs integrate simplified engineering and cost efficiency. With a smaller overall footprint and excellent operator ergonomics, these machines have been well received since their introduction in early 2015.

Machine sizes range from 1,250mm to 5,000mm (48" to 195") with the greatest concentration within the 1,800mm to 2,500mm (70" to 98") size range. For international customers, machines are equipped with a Siemens AC drive, PLC (programmable logic controller) and HMI (human machine interface) with a Mitsubishi servo drive.

For North American customers, machines feature a Yaskawa A-1000 AC drive and

○ *Cable take-up from Davis-Standard*



Allen-Bradley/Rockwell components that include a servo drive, PLC and HMI. Technology is available as "stand-alone" (running in torque control) with a dancer or with an accumulator.

Davis-Standard has also seen on-going demand for its caterpillar capstan and HPE extruder technology. The company supplies multi-pass, linear and belt wrap capstans for the full range of wire and cable applications. The HPE offers a compact design and is one of the industry's most widely used extruders. It is known for a fast delivery and rugged design that is energy efficient and easy to maintain.

Advantages for wire and cable applications include increased torque capacity for high viscosity resins and custom options.

The ability to address market demand in terms of performance and cost efficiency is just one aspect of Davis-Standard's Global Advantage™ in wire and cable. Another is the company's experience in supplying extruders and associated wire and cable equipment for more than 70 years.

Applications include aerial cable, building wire, coaxial and composite cable, video pair cable, tray cable, CATV, THHN and THWN wire among others.

Davis-Standard LLC – USA

Website: www.davis-standard.com



**Delta Tecnic
Stand: 09E49**

Delta Tecnic produces high-tech masterbatches for the wire and cable industry. All different types of polymers are available such as PVC, PE, XLPE, EVA, PA, PBT, TPE-E, TPV or PP under the brand Deltacolor Masterbatch.



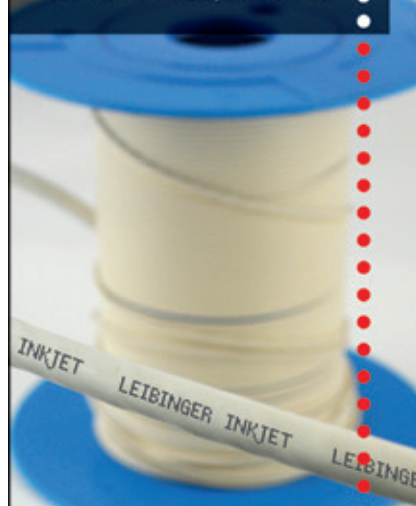
○ *Masterbatches for the wire and cable industry*

Delta Tecnic offers the capability to produce tailored Masterbatches following any specification or customer requirement. Products include masterbatch pellets, micropellets, criopellets and powdered pigment dispersions.

Delta Tecnic SA – Spain

Website: www.deltatecnic.com

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Eurolls Stand: 11D34

Eurolls SpA has consolidated its position in proposing technically advanced integrated wire production/processing solutions for both the reinforcement wire and industrial sector, including tailor-made projects and high carbon wire/strand/rope applications.

In addition, the acquisition of Vitari widens the Eurolls offer to finished product such as high-grade chains, barbed wire, chain-link mesh, hexagonal wire mesh, gabions and nails in addition to the wire straightening and cutting machines.

Eurolls will display its collective technology. The QRC unit, in line with a straight-and-cutting machine, can produce a twisted square wire. It pulls the wire from the pay-off unit and through both the mechanical descaler and cold rolling cassettes by means of a "V" grooved pulling ring. Its sleek design enables the QRC to be applied in parallel for in-line rolling of multi-wire products such as lattice girders, mesh line, etc.

The QRC will be equipped with two cassettes: the first to roll the wire, and the

second, a rotating cassette, to produce a twisted square profile starting from a round entry wire. The square twisted wire is then in-line fed into a customised Vitari NR 300 with straightener panels in lieu of the rotary spinner. This version enables the well-known NR series to work with non-round wire sections, keeping the same performance of this machine range, including the speed up to 180m/min.

The second element is the microcassettes that complement the standard cassettes type CA and CB for the production of structural wire. Sales of 3+3 rolls and 2+2 rolls microcassettes have substantially increased because of their ability to produce wire in smaller sizes.

Eurolls will display a new microcassette that can produce wire that is nearly 0.5mm. Positive results have already been obtained to roll high resistance materials (chrome and nickel based), down to 0.8mm, with tolerances on roundness very close to those obtained by dies.



Quick rolling line from Eurolls

Cassettes have also been applied to roll special alloys, titanium, aluminium, brass and copper material. Due to the number of cassettes sold for more than 15 years, different applications and different processes, Eurolls has advanced its know-how on lamination of different types of material, assuring its customers of good results in a short time.

Eurolls SpA – Italy
Website: www.eurolls.com



Gauder Stand: 10E40

Gauder SA, on which the Gauder Group was founded, is at the head of the largest stock of machines for the wire and cable industry in Europe. "Creating solutions together", the company is an ideal partner to set up "ready to manufacture processes" from its warehouse housing over 1,000 machines (drawing, stranding/cabing, screening/taping/armouring, wire coating, extruding, coiling/rewinding) for the production of wires, conductors, cables, ropes or steel products.

The Belgium-based supplier is a key player in reconditioning second-hand machines. The company has specific know-how in revamping lead extruders.



Gauder second-hand reconditioning equipment

The company also markets new Mapré extruders ranging from 38 to 150mm, complete with accessories.

A free shuttle service is organised daily from the stand to see the stock in 20,000m² warehouses, as well as to see a reconditioned drum twister for power cable. Visitors can see the on-line stock at www.gauderonline.com to prepare for the visit.

On the stand will be a reconditioned gearbox for lead extrusion.

Gauder – Belgium
Website: www.gauderonline.com



Gimax Stand: 10B17

Gimax has redesigned its wet drawing equipment, and the traditional "submerged" drawing tank has evolved into the TRS range of non-slip wet drawing units with independently driven vertical capstans, thus combining most of the benefits of a dry drawing line with a wet one. The result is an example of advanced technology available in wire drawing.



The TRS300 from Gimax

The TRS is a "spray" type wet drawbench, where the lubricant is sprayed onto the die and die box and onto the capstan.

This range is suitable for both ferrous and non-ferrous wires, and its reduced footprint, easily accessible parts and components not only offer cost savings in terms of floorspace and labour (operation and maintenance), but are an important aid in decreasing downtime and consequently increasing productivity.

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www.wirexdiamonddies.com

High productivity and a better final wire quality coupled with features such as perfect alignment of wire between die and capstan as well as low energy consumption due to electronic control of motor and line operation go to ensure an advanced drawing solution.

The main features are:

- Reduced die and capstan wear
- Mechanical line speed reaches 33 metres/second
- Fixed or rotating dies
- Rotating die speed varies in proportion to line speed
- Each block can be bypassed
- Synchronisation by means of dancer arm
- Input wire diameter starts at 2mm (steel wire) or 3mm with aluminium wire

With 38 years of experience in welding wire machinery and with the specific experience of Gimax engineers in the production of wire, consequently with an excellent knowledge of the entire process of wire manufacturing, the redesign also led to the introduction of a range of TRD dry drawing equipment, available with vertically or horizontally mounted capstans – non-slip (with independently driven capstans), tilted horizontal capstans, rotating dies, water-cooled capstans, etc.

The capstan diameter can vary from 300mm up to 1,200mm depending on the application and diameter of wire, and can reach a line speed of 35 metres/second.

Gimax Srl – Italy

Website: www.gimaxgroup.com

GMP Slovakia **Stand: 10E68**

GMP Slovakia produces steel reels, take-apart reels and handling equipment for the wire and cable industry.

The company has had the certification ISO 9001:2008 for the quality management system since year 2009 and is now also certified ISO 14001:2004 for the environmental management system and BS OHSAS 18001:2007 for the occupational health and safety management system.

The take-apart reels and special equipment (tilters, lifters, rolling systems) are CE marked. All the products are high quality and manufactured for long-term durability.

GMP Slovakia's range of products includes not only reels and drums for wire and cable, but different models of tilters and lifters. The tilting unit type TU/M can carry reels or coils up to five tons. It works by transmitting the movement from the motor to the tilting unit by a chain.

It is provided with safety barriers (hardware and optical) and with all the documentation



○ A selection of the reels on offer from GMP Slovakia

requested by law. The equipment must be placed in the ground according to GMP Slovakia's technical team instruction.

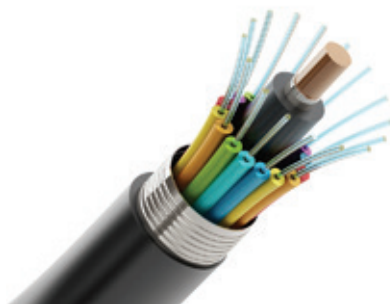
It is possible to supply a rolling system, where the operator can place the reel in horizontal axis position for the strapping operation. For smaller reels, the TL model is available: the operator expands the jaws of the tilter by the handles and tilts the reel 90°. This device is suitable for reels up to 800mm flange weighing one ton.

GMP Slovakia – Slovakia

Website: www.gmp-slovakia.com

The H&R Group **Stand: 12A62**

The H&R Group is known in the cable industry for its expertise in both water blocking and dielectric compounds for the telecommunication, fibre optic and energy transmission sectors.



○ Wire blocking and dielectric compounds from H&R Group

H&R plans to showcase a cross section of its product portfolio, including:

- Conductor-sealing compounds for AC, DC and XLPE cables capable of withstanding high water pressures experienced in subsea cable applications
- Tracer technology solutions offering rapid leak detection in low-pressure oil filled networks
- Hydrogen absorbing gels for optical ground wire, optical phase conductor and submarine fibre optic cables
- Dielectric fluids for high voltage AC paper insulated cables
- Napelec and ND impregnating compounds for MV AC cables >>

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Email: info@candorsweden.com

- Bitumen-based flooding compounds blended with synthetic polymers for bonding and corrosion protection of the cable armouring wires. The compounds offer excellent adhesive properties and flexibility at low temperatures.

Cables product manager Gavin Morland said: "wire is a major exhibition for the cables sector of our business and offers us the opportunity to do business with a broad cross section of the international cables community, as well as highlighting products application areas to the market."

H&R Group – UK
Website: www.hur.com



Heinze & Strengh
Stand: 11A37

Heinze & Strengh is an international operating trading company with a wealth of experience in the wire and cable industry.

Its wide range of products includes various spare and worn parts, equipment, complete solutions and new machines for bunching.

The products include:

- Big bows: "I Beam" construction – reduce weight by 40 per cent
- Wide SR bow: Reducing damage from wire brake, extended bow life – slip in wear plate
- Hybrid bow: Eliminate wear plates, lower CW factor, wire guides can be checked and changed on the installed bow
- New Aero bow: Aerodynamic, no re-balancing – slip in wear plates

The company also sells pure nickel at 99 per cent; contact tubes (coated, brass, copper); high-tech ceramics; and carbon brushes to suit customer requests.

Heinze & Strengh GmbH – Germany
Website: www.heinze-strengh-gmbh.de



Inhol and Melos
Stand: 12E03

For Melos and Inhol, fire protection from the inside is an important topic. Melos will lead the way to superior fire behaviour and CPR results. On the Melos/Inhol stand a team of specialists will be available to introduce ideas about the new approach of 'Fire Fighting from the Inside' of the cable.

Cone calorimeter tests show the excellent fire behaviour of some specific Melos bedding compounds. Char forming sheathing compounds will even lead to better fire behaviour results.

The impact of bedding compounds might change the cable world within the forthcoming years.



○ Fire protection "from the inside"

Bedding compounds will be used as a good value for money tool to improve the total fire performance of a cable system in conjunction with LSFH jackets and (XL)PE insulations.

More details will also be unveiled on Mecoline HM 4 and HM 2 compounds and information will be available about the exclusive range of RDX (radiation cross-linkable) high performance compounds. Finally, the unique Cable Compound Finder tool available for tablet and PC sorts quickly and easily through the range of compound solutions for specific cable requirements.

Invol BV – The Netherlands
Website: www.inhol.com

Melos GmbH – Germany
Website: www.melos.com

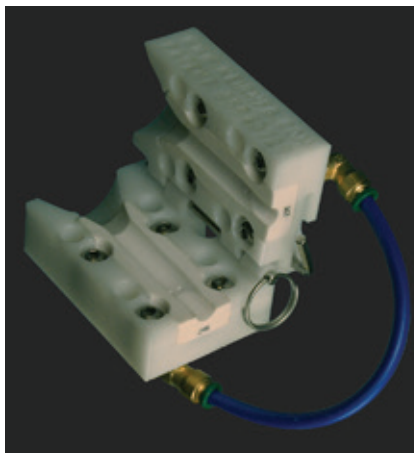


Keir Manufacturing
Stand: 09C69

Keir Manufacturing is USA-based manufacturer of high-purity 99.8 per cent alumina ceramic guides, the Frontiersman™ line of air wipes, and composite flyer bows, serving the global wire and cable industry.

The company is dedicated to making products that enable manufacturing processes to run more efficiently and productively through the application of leading-edge materials. Its solutions are focused on continuous process improvement, energy savings and longer operating life.

○ Keir's clamshell-style SplitShot air wipe



Keir's patented SureShot and SplitShot air wipes provide a more effective drying method that does not depend on high-volume air consumption. The efficient design yields effective drying using a very low volume of compressed air and lasts longer than other brands due to the rugged ceramic insert lining the wire path.

This equates to over 25 per cent reduction in compressed air usage and an operating life of years versus months.

The company's triaxially braided composite standard and BackBone™ flyer bow constructions are claimed to have greater durability than layered/laminated designs, allowing them to take more hits and endure higher stress, yielding increased operating life and less machine downtime. The more aerodynamic BackBone™ design functions at lower power consumption and higher TPM with improved wire quality and a further reduction in bow breakage. Up to 40 per cent less energy is used along with a decrease in wire scrapped.

Keir Manufacturing Inc – USA
Website: www.keirmfg.com



Kieselstein International
Stand: 10D22

Kieselstein, a German producer of wire drawing machines, will present its range of products and services, with the presentation focusing on wire shaving, and will also address issues such as automation, modernisation and IT-based maintenance.

In the area of wire shaving the company has gathered further experience during numerous projects, as well as with its extensive research and development activities at its in-house testing centre. Especially new materials such as titanium, magnesium or memory alloys that become more important in the wire industry have also been examined. This strengthens the position of Kieselstein as a competent partner for wire producers that intend to go into the shaving of such materials.

Besides the technologies of wire production the company addresses issues such as increasing efficiency of wire production. Automation is an important topic, especially for large diameter or high-tensile wire. The automation of the drawing-in process eases the work of the operator considerably.

In addition, for higher efficiency Kieselstein developed, in cooperation with an international operating company in the wire industry, a new soap supply system which will be presented at the stand in Düsseldorf. For increasing the availability of the plant, IT-based maintenance becomes more important.



○ A shaving plant from Kieselstein

Demands for spare parts can be identified correctly, maintenance measures can be planned and down-time can be avoided. A team of specialists in IT, programmable control and machine engineering works on this in order to provide tailor-made solutions to customers.

Kieselstein International GmbH – Germany

Website: www.kieselstein.com



Paul Leibinger Stand: 09F55

German marking specialist Paul Leibinger will present its latest inkjet printer, which is over 30 per cent faster than previous Leibinger printers. The JET3up Rapid allows cables to be marked immediately after extrusion at a speed of up to 1,000m/min.



○ The new Leibinger JET3up Rapid is optimally suited to the high-speed printing of cables

With the JET3up Rapid, Leibinger has demonstrated its capacity for innovation and German-engineered quality. The JET3up Rapid is also fitted with an automatic nozzle seal. "Sealtronic" prevents ink from drying even during long pauses in production. The new high-speed printer also features over 800 integrated functions as standard. Visitors to wire 2016 will get an advance preview of an exclusive world first, as the JET3up Rapid will not be officially launched until the middle of the year.

Paul Leibinger GmbH & Co KG – Germany

Website: www.leibinger-group.com



Lukas Anlagenbau Stand: 12B22

Lukas Anlagenbau GmbH is a family owned company, established in 1959, that produces customer-specific equipment for the wire and cable industry.

The focus of its products is on complete taping lines for producing taped or wrapped conductors with tape materials like PTFE, Kapton, Mica, Paper, etc.



○ Providing customer-specific equipment for the wire and cable industry

For producing special cables for medical and aircraft applications its taping lines can be found at many well-known suppliers worldwide. The product range covers single components like pay-offs, capstans, caterpillars and take-ups, up to complete rewinding lines and fine wire drawing lines for non-ferrous materials.

Development has been advanced by the intention of energy and size reduction. On display will be taping machines for magnet wire applications which will help extend Lukas's business in the cable industry with cost-optimised and easy-to-integrate taping and heating solutions.

This should give incentives, especially to the Asian market.

Lukas Anlagenbau GmbH – Germany
Website: www.lukas-anlagenbau.de



Magnetic Analysis Corp Stand: 11J14

Magnetic Analysis Corp will be introducing a new high-speed Rotomac® rotary eddy current tester, and will display the new affordable Minimac® 55 high performance eddy current instrument.

The Rotomac® rotary is designed for ease of use and superior performance in detecting seam type defects in small diameter wire and bar, including lines with continuous wire operations such as drawing, spring-making, parts forming, or in straight and cut.

Setting up distance compensation, a critical feature for testing ovate wire, is straightforward, and quick twist-on bushings and dial in diameter adjustments

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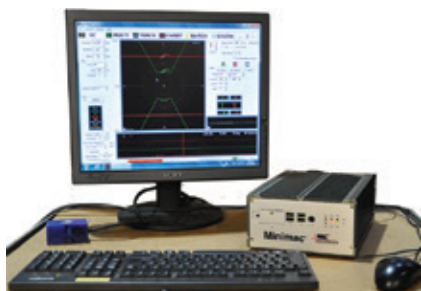
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- **MG800**

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wire Düsseldorf
4 to 8 April 2016
Hall 16, Booth A04**

www.schlattergroup.com

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○ *The Minimac from Magnetic Analysis*

add to the convenient operation of this rotary. MAC's Multimac[®] eddy current instrumentation, with two test channels, completes the system.

Also featured will be the single channel, compact, full feature Minimac[®] 55. This versatile eddy current instrument includes software controls for all functions including phasing, filtering and sensitivity, all while operating at speeds over 4,000 fpm. The test results are displayed in full-colour polar and linear mode showing real time, true waveform signals for easy review on a separate on-site monitor or at remote locations. The track screen depicts the test product's length, with data on line speed, end suppression, flaw tracking, piece count and alarm routing.

Linear strip charts and complete test data, as well as an unlimited number of settings, can be stored, annotated and recalled from a library on the internal storage device or network. When networked, multiple instruments can share the same library to ensure correct settings in multiple test lines.

Setup and monitoring can be handled through a computer network, and reports with customer, product information, defect location, time, amplitude and phase can be stored locally or on a network server for quick follow up and quality assurance.

Used to find flaws such as laps, slivers and cracks, and some subsurface defects, Minimac 55 is well suited for dedicated, continuous production line testing where simple setup, without constant operator adjustment, is desirable. Once optimum settings are set, a lockout mode can prevent unauthorised changes. Minimac[®] 55 can also check continuity and locate welds in single and multi-conductor insulated wire and cable.

MAC's new ceramic long-life encircling coils and bushings will also be featured. The coils are especially effective for testing critical wire applications without damaging the material's surface. These coils and MAC's broad range of encircling and sector test coils are available for use with the Minimac[®] 55. Coil platforms, including those with DC saturation for testing magnetic material, are offered.

Magnetic Analysis Corp – USA
Website: www.mac-ndt.com

Mathiasen Machinery Stand: 12A55

Mathiasen Machinery Inc (MMI) buys and sells used wire and cable machinery internationally. Machinery is purchased for inventory or it can be sold on an exclusive basis. MMI has interest in locating individual machines, complete lines or entire plants.

Consignments, warehousing, appraisals and liquidation services are also offered. MMI has buyers seeking all types of good quality used wire and cable machinery, and serves the domestic and international ferrous and non-ferrous wire machinery markets.

The stand will display photographs of a wide variety of second hand machinery. Customers are encouraged to bring their surplus machinery list and photos for evaluation.

Mathiasen Machinery Inc – USA
Website: www.mathiasen-machinery.com

Medek & Schörner Stand: 10C52-01

Medek & Schörner will be presenting and demonstrating the following high-performance cable marking machines at wire 2016:

- Cable marking machines:
- High quality gravure printers (LAN cables, control cables, etc) for speeds up to 1,200m/min
 - Water misting unit for the application of fine water dust for pre-cooling of the hot wire immediately after the extruder
 - Embossing metre markers/hot foil sequential metre markers for highest accuracy of length measurement (power cables, telecommunication cables, optical fibre cables, etc)
 - High performance ring line markers for marking telephone wires, switchboard wires, automotive cables and LAN cables
 - Video system for monitoring the print quality of fast-running cable printing machines, eg allowing real-time inspection for bad quality and/or missing prints

Laser marking system for cables
Optical fibre coating systems

- Optical fibre processing systems:
- Optical fibre colour coding up to 3,000m/min
 - Ring marking of optical fibres for speeds up to 1,150m/min
 - Tight buffering up to 1,300m/min
 - Fibre ribbon production with excellent ribbon planarity for speeds up to 1,000m/min
 - CFU production of compact fibre units



○ *Medek & Schörner's Fibre Laser FL20 laser marking system*

Medek & Schörner has been able to implement other applications, including some outside the field of optical fibres:

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

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

Metalube Stand: 11G21

Established in 1989, Metalube is a UK-based manufacturer of specialist industrial lubricants, exporting to over 80 countries worldwide. From its Manchester headquarters the company has a fully integrated lubricant manufacturing facility including brand new laboratories.

The business was built around the production of lubricants for drawing non-ferrous wire and tube products and these still remain a key part of the portfolio. However, today Metalube also offers a range of lubricants for metal process and protection.

These include protective greases for overhead line conductors, metal forming fluids, rust preventatives, wire rope lubricants and chain oils, as well as a range of maintenance lubricants.

○ *Metalube exports to over 80 countries worldwide*



Although based in the UK, the company exports 95 per cent of its production worldwide, with sales offices located in Mumbai in India, Shanghai and Dong Guang in China, São Paulo in Brazil, and Dubai in the UAE.

Research and development is at the core of the business with over 20 per cent of its workforce dedicated to science. The Metalube team of chemists is committed to solving the toughest technical challenges – always striving to achieve the optimum results for customers.

The company takes pride in formulating all of its own lubricants and greases from its new purpose-built laboratory, which opened in 2015. This facility is fully equipped for both quality control and research and development.

Metalube is a winner of two Queen's Awards for Enterprise: the first for International Trade in 2013, and the second for Innovation in 2014, when the company invented a new synthetic grease, 'OCG 6000', which protects overhead electrical conductors. Its Manchester factory was also recognised in 2015 for its commitment to sustainable business practices and awarded the ISO 14001 certification.

Looking ahead, commercial director Douglas Hunt said: "We have seen excellent growth in 2015 but there are global challenges predicted for 2016, particularly in China. However, the company still expects to increase sales and market share during the forthcoming financial year. Our priority is for our products to out-strip our competitors ensuring that customers who require quality will always be assured of excellence if they buy from Metalube."

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

NDC Technologies Stand: 11D68

NDC Technologies will exhibit the latest Beta LaserMike products for in-process dimensional monitoring and automated quality cable testing. The new line-up delivers higher accuracies, production efficiencies and savings for profit-minded wire and cable manufacturers.

NDC will be introducing the latest addition to the AccuScan 6000 Series 4-axis diameter gauge family: the new AccuScan 6050. Like the AccuScan 6012 gauge which was released last year, the AccuScan 6050 provides a comprehensive measurement coverage around the product's circumference to instantly detect changes in product diameter.

The AccuScan 6050 measures products up to 50mm, while the AccuScan 6012 measures products up to 12mm.



The new AccuScan 6050 and 6012

Both gauges perform ultra-fast diameter and ovality measurements at 9,600 scans per second and are claimed to offer the highest single-scan accuracy in the industry, with single-scan repeatability down to 2 micron with the AccuScan 6050 and down to 1 micron with the AccuScan 6012.

In addition, both gauges improve ovality accuracy up to 100 per cent and provide the highest flaw detection accuracy with 25 per cent improvement over three-axis measurement methods.

The new DCM SCS-700 efficiently tests Cat 5e/6/6a cables to 700MHz and offers a low-frequency option to test cables down to 100Hz. Dual-frequency testing is performed with a single connection to significantly reduce set-up and testing time.

Automated four-pair switching platform enables operators to perform cable testing in less than three minutes. Easy-to-use testing software offers complete test management and reporting capabilities.

In addition, the next generation of process controllers will be previewed at the show. The new InControl™ system brings an advanced level of graphical user interface, functionality and ease of use to operators for increased productivity.

Other products on display include:

- Latest high-speed AccuScan 5000 Series two-axis diameter and ovality gauges
- New LN Series three-axis lump and neckdown detectors
- Innovative LayScan lay length measurement system
- CenterScan eccentricity measurement system
- Preheaters and spark testers
- CapScan capacitance measurement system
- SRL Pro structural return loss prediction software
- LaserSpeed® length and speed measurement system

NDC Technologies – USA
Website: www.ndc.com/betalasermike

Maschinenfabrik Niehoff Stand: 10C06

Maschinenfabrik Niehoff, a manufacturer of machinery engineered for the wire and cable industry, will be exhibiting its latest generation of equipment. The company's future-orientated production equipment is designed to support wire and cable manufacturers in improving their energy and materials efficiency and reducing manufacturing costs. In a separate booth area, Niehoff's after-sales service will be introducing its comprehensive offer and wear parts with the "Niehoff Original+" label.

Also present at the stand will be HFSAB, specialised in horizontal lead extruders and cable repair and recovering systems.

Maschinenfabrik Niehoff develops and builds with an experience of more than 60 years all machinery needed for the production of non-ferrous metals wires and the further processing into automotive, data and special cables, with the exception of extruders.

In addition, the portfolio contains technical assistance by professional specialists who speak the customers' languages. The reliable supply with original Niehoff wear parts and spare parts, machinery inspection, refurbishment and maintenance measures as well as machine operator and maintenance training courses complete the range of services. Niehoff Group offers custom-tailored solutions from development and planning to turnkey projects of complete cable factories.

The group, with nearly 800 employees worldwide, is composed of its headquarters, five manufacturing subsidiaries (in Brazil, the USA, the Czech Republic, India and China) and sales and service centres in Japan, Singapore and Russia.

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

Pourtier Stand: 10E40

Pourtier, France, develops and produces high quality stranders, cablers and armouring lines for ferrous and non-ferrous cables. These machines are made in Europe with the highest standards in design and manufacturing for the production of all types of power cables, from low and medium voltage up to high and extra-high voltage, overhead cable (including new development with various shaped wires) and insulated cable, AC type (using high quality Milliken conductor) or DC type (using large round compacted cross sections). >>



◉ **Pourtier tubular stranders, 250-800mm**
 Pourtier has recently made achievements in the field of submarine and umbilical cables with the supply of large armouring lines and laying-up lines. The company is continuously extending its range of machinery to meet customers' needs. Leaders in rotating machines, Pourtier and Setic (also a member of the Gauder Group), are offering a wide range of twisting/stranding solutions to cable makers and steel rope producers. On display on the stand will be a tubular strander module for power cable and steel rope.

Pourtier – France
Website: www.pourtier-setic.com

RichardsApex
Stand: 09F06-05

RichardsApex, a global manufacturer of wet lubricants for wire drawing and hot-rolling applications, provides semi-synthetic and synthetic compounds for wet drawing of non-ferrous and ferrous wire as well as protective coatings, cleaners, corrosion inhibitors and oil-form lubricants for all non-ferrous and ferrous alloys for both wire and tube applications.

Its core products can be made at all of the company's manufacturing locations in the USA, Europe, Australia and Mexico. With over 114 years of history, RichardsApex has an established global sales network to service customers throughout the world, including on-site support and technical sales assistance.

The company has subsidiaries located in both the UK (RichardsApex Europe) and Australia (RichardsApex AustralAsia), and representatives in Canada, China, Greece, India, Italy, Japan, Korea, Malaysia, Mexico, Peru, Poland, Russia, Taiwan, Thailand, Turkey, Venezuela and Vietnam, with many other countries serviced by the subsidiaries and representatives.

RichardsApex Inc – USA
Website: www.richardsapex.com

Roblon
Stand: 09E42

The Roblon precision take-up offers quality winding at high speed (up to 300m/min)

and can be used directly in production lines or as part of a rewinding line. Fitted with the precision coiling unit for winding of round, rectangular and symmetric figure-8 products, the take-up ensures perfectly wound reels.

The take-up is suitable for the winding of wires, cables, plastic and steel tubes or profiles, and the perfect positioning of the product ensures better utilisation of the reel, a highly presentable finished product as well as higher pay-off speed of the product during installation/use. During operation, the sensitive precision coiling unit automatically controls the traversing in order to obtain a correct position of the product. A sensor detects the flanges of the reel and ensures that the product is wound all the way along the edges of the reel before changing traversing direction.

This eliminates setting off mechanical end stops, even when changing to a different reel size. The take-up operates with a constant tensile force and during operation the reel is adjusted horizontally in order to maintain a fixed winding point, thereby ensuring that no unnecessary strain is applied to the product.



◉ **Precision take-up from Roblon**

The Roblon precision take-up excels in winding materials ranging from Ø3mm to Ø20mm, and it is supplied with easily exchangeable pulleys or dies for handling different product dimensions. The take-up enables high-end quality winding on decent quality wood, steel or plastic reels ranging from Ø380mm to Ø1,400mm and with a maximum payload up to 1,800kg.

The Roblon precision take-up can easily be integrated into new or existing production lines, and it can be controlled by the line control. As the winding is automated and manual handling is only required when changing reels, the need for constant monitoring is eliminated and so are the health and safety issues associated with manual hand guiding.

Furthermore, the take-up can be supplied with different safety features such as light or pressure sensitive panels and fencing according to machine directive 2006/42/EC.

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

Rosendahl and Nextrom
Stand: 09A60

Rosendahl and Nextrom have been busy utilising time since the last exhibition in Düsseldorf producing new technological developments.

Over recent months, Rosendahl has been working intensively on extrusion technology. In particular when it came to the extrusion of high-temperature materials and silicone, a great deal of finesse was called for. Those who are familiar with Rosendahl know that the team loves a good challenge, and that was precisely the reason for the excellent results.

The extrusion crosshead plays a decisive role, which was also the reason that many hours of development were invested. The full range of standard and special extrusion crossheads will be on show at the fair. They are suitable for product diameters of 2 to 180mm. The production lines for low-, medium- and high-voltage energy cables as well as automotive and communications cables have also been improved and enhanced.

Nextrom places its trust in high speeds and a manufacturing process for preforms and fibres that conserves resources. The preform technology requires know-how and precision. Preforms are tending to become larger and larger, which makes constant quality and production lengths possible. Nextrom has developed a special helium recovery system for draw towers, which will be presented in Düsseldorf. The latest developments regarding dual take-up and the proof tester will round off the company's presentation at the fair.



◉ **New technological developments from Rosendahl and Nextrom**

Over the last two years, Nextrom has focused on further developing its preforms and fibre manufacturing solutions to attain excellence, allowing customers to further improve productivity while reducing production costs: High-yield VAD core process, OVD cladding technology with SiCl₄ or D₄, draw towers for extreme speeds, very large preforms and spools, and the recovery of helium, to name just a

few. In the field of fibre optic cables, Rosendahl and Nextrom have not only worked regularly on achieving further developments, but also hit the "high performance" button. The new "turbo" loose tube line not only saves space thanks to its new design and technology, but is also efficient with regard to material and energy consumption.

With its product speed of up to 1,000m/min, it is claimed to represent the fastest secondary coating line on the market. Live streams show the lines in production. In addition, the new ROBI high-speed, low-tension binder will be presented as part of the SZ stranding programme for fibre optic cables.

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



Rolf Schlicht
Stand: 12A48

Rolf Schlicht GmbH, Hamburg, Germany, will exhibit different versions of its electrostatic powder coating machines. The machine model RSC was designed to powder cables, wires, hoses and profiles evenly, finely dosed and absolutely dust-free with powders like talc, stearate, varnish powder, swellable powder, graphite, etc.

In the machine there is a fully automatic and maintenance-free filter system which is not cleaned off by blowing in compressed air. Thanks to this filter system a strong and constant vacuum is generated in the machine, so that no powder will escape into the ambient – guaranteed.

- The RSC powder coating machine from Rolf Schlicht



The machine will be manufactured correspondingly to the extrusion speed and product diameter. Several options are available so that it perfectly fits into the line.

Further exhibits on the stand will be:

Huestis Air Misers: These have been used for many years in the cable, wire and profile industry. The air wipes are low noise, dry and highly efficient, and pay for themselves in a short period of time, as the compressed air consumption is very low because of a special construction.

Schlicht supplies the Huestis air wipes in sizes from 1.6 to 178mm diameter. Special sizes in rectangular shapes are available on request. They open automatically to allow knots, splices and other oversizes to pass without stopping production or causing damage. Due to their small size they can be mounted in any cooling line without problems.

Rapid Purge cleaning compound: This ready-to-use cleaning compound removes all thermoplastic resin and shortens the cleaning time necessary at colour or material changes. Moreover, it is a cleaning compound which is able to remove burnt material. Rapid Purge works chemically, without admixture of abrasive components. It breaks down the residual plastic polymers into lower-viscous molecules which can easily be flushed out of the machine. This method, which is as smooth as it is effective, is gentle on the sensitive machine parts.

DCA dry ice blasting plants:

- clean and effective method to clean tools, moulds, dies, parts and surfaces – dry ice does not leave residues behind
- robust systems, long lasting – production and techniques from northern Germany
- cleaning plants for every business.

Rolf Schlicht GmbH – Germany
Website: www.schlicht-gmbh.de



Setic
Stand: 10E40

Setic designs and manufactures high quality double twist bunchers/stranders for power cable and automotive industries, as well as complete solutions to produce special/LAN cables with enhanced performances (in one step or two steps according to product mix).

The company is continuously developing new lines and concepts for non-ferrous cables in order to meet customers' needs, such as tandem "mica taping/bunching", special high-speed lines for battery cable, and new high speed lines for special and instrumentation cables.



- *Setic backtwist pairing/quadding, 800mm*

Setic combined with Pourtier (also a member of the Gauder Group) offer a wide range of twisting/stranding solutions to cable makers.

On the stand will be a backtwist pairing/quadding line for special and data cables.

Setic – France
Website: www.pourtier-setic.com



Sikora
Stand: 09A41

Sikora is presenting a full programme of innovative non-contact measuring, control, inspection and sorting devices for quality assurance and cost reduction in the wire, cable, optical fibre and plastics industries.

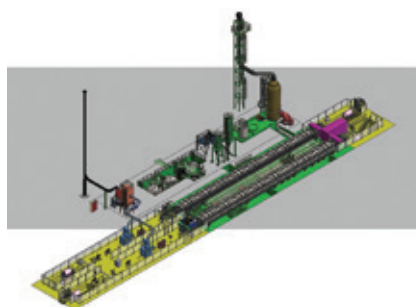


- *The Wire-Temp 6050 is designed for conductor diameters up to 50mm*

Technological highlights from the Bremen, Germany-based company include:

- *Purity Scanner:* Inspection and sorting system for XLPE pellets; dual inspection: X-ray and optical technologies for detection of metallic and organic contamination from 50µm on the pellet surface and inside the pellet
- *Purity concept systems:* Modular designed systems for on- or off-line inspection and analysis of pellets, flakes and films/tapes; detection of contamination from 50µm; based on X-ray, infrared or optical technologies

- ◀ • **Wire-Temp 6000:** Non-contact temperature measurement of the conductor, new for conductor diameters up to 50mm
- **Preheater 6000 TC:** Non-contact inductive heating and control of the conductor temperature
- **Fiber Series 6000:** Diameter measurement before and after coating; determination of the fibre position, vibration frequency, tension and spinning; airline detection; 100 per cent lump detection; temperature measurement of the fibre and concentricity evaluation of the coating; and processor systems for visualisation and control of the drawing process



○ *The roll pickling line*

reduced operating costs – a waste water-free turnkey solution that pays for itself and protects the environment at the same time.

The first units will go into operation soon: Steuler-Bobby Shanghai Equipment Engineering Ltd, a joint venture of Bobby (Shanghai) Ltd and Steuler Anlagenbau, has already received an order from Wuxi Xingcheng of Wuxi, China, for two such parallel roll pickling units. The scope of the order includes the complete engineering, fabrication, delivery and installation supervision up to the commissioning, which will be completed in 2016.

Steuler Anlagenbau GmbH – Germany
Website: www.steuler-ab.de



Supermac Industries Stand: 11G05

Supermac Industries (India) Limited has been manufacturing extrusion lines since 1974. The company manufactures different kinds of insulating and sheathing lines for various cable sectors (eg power cables industry, optical fibre cables industry, house wiring, and control cable industry).

The company specialises in providing customised solutions for customers worldwide. The company has been at the forefront of technology by meeting customer demand for processing new materials.

Supermac has in-house automation, software development, panel making, CNC machining, fabrication and testing facilities for extrusion of cable sheathing. The in-house team of qualified engineers is fully equipped in installation and commissioning of plants.

The facilities are equipped with international and domestic machinery to carry out the process of manufacturing as per the customer's requirements. It has implemented a customised ERP system to achieve increased productivity, lower costs, and satisfy customers.

The company has recently obtained its products' approval for the CE mark, enabling it to export to the European market.

The product range includes:

- Insulation line for house wiring and control cables
- Insulation line and sheathing line for power cables
- Triple extrusion line for SIOPLAS (XLPE) cable
- CCV line for LV/MV power cables up to 132 kVA
- HCV line for rubber/EPDM/silicon cables
- Extruders from 30mm to 175mm
- Crossheads
- Haul-off caterpillar
- Capstans
- Take-ups and pay-offs from 630mm to 4,500mm

Supermac Industries (India) Ltd – India
Website: www.supermacindia.com



Traxit International Stand: 09F38

Customers in more than 150 countries worldwide have relied on Traxit products and know-how, for more than 135 years.

With its new 'G' range of calcium-based dry powder lubricants, the company supplies products with the lowest possible dust levels during handling from the packaging to the die box while maintaining a positive adhesion during the drawing process. As a result the final drawn wire is clean, with minimal residuals.



○ *Traxit supplies a wide range of lubricants for wire drawing*

Cortrax 12 is the newest emulsion development for drawing high-carbon galvanised or phosphate coated wire.

Traxit turned its attention to minimising the concentration during use. This ensures the benefits of low susceptibility against bacteria, foam and consumption. The wire surface reaches a very uniform clean finish with the lowest conceivable amount of residue.

Cortrax 2 is the newest emulsion development for drawing LC and HC bright wire. This emulsion has special use on welding wire.

ZEL 512 is a boron-free, non-reactive salt coating with an amount of polymer and special additives. The benefits are a short drying time, a homogeneous crystalline

Sikora AG – Germany
Website: www.sikora.net



Steuler Anlagenbau Stand: 09E26

Until recently, bundles (coils) were usually treated in salt, pickling, passivation and rinse immersion baths in discontinuous batches.

Now Steuler Anlagenbau, Höhr-Grenzhausen, Germany, is bringing a high-efficiency processing method to the market. The special feature of this new system is that it can be used to treat individual wires of up to 5,000m long in a continuous spraying process. An upstream blasting unit removes up to 95 per cent of metal oxides (rolling and mill scale), which reduces the acid and water consumption of the pickling line by up to 80 per cent.

That lowers operating costs for surface blasting considerably while improving surface quality at the same time – without producing any waste water whatsoever. Along with iron, the metal oxides removed from the stainless steel wire surfaces by the blasting unit contain large amounts of chromium and nickel. They are reused as raw material in the stainless steel production process and recycled accordingly.

Instead of the usual mixed acid (HNO₃/HF), this continuous pickling process can use hydrochloric acid (HCl) mixed with only a small quantity of hydrofluoric acid (HF) and nitric acid (HNO₃). As a result, the process forms none of the nitrogen oxides which would necessarily be generated when using mixed acid. That, in turn, eliminates the high cost of having to install and operate a sophisticated waste gas purification unit.

This continuous surface treatment with upstream blasting and the use of hydrochloric acid as the process solution works without producing any waste water. In so doing, the zero liquids discharge (ZLD) process reduces environmental pollution considerably. Higher surface quality with lower investment costs, minimal acid and water consumption, and

layer, and a new and verified Process Protection System (PPS). ZEL 503 is a boron free and phosphate free salt coating for patented CHQ wire. After bright annealing, the wire can be coated inline with ZEL503 (new PPS) and skin pass drawn.

The total Traxit programme contains more than 300 articles including universal products and custom-made solutions for special processes. Its supply network of experienced sales agents and international warehouses provide a full service package for its clients.

Traxit's research and development centre and global laboratory facilities ensure the highest possible working standards and quality systems.

Traxit International GmbH – Germany
Website: www.traxit.com

The positive stop is mounted on a carriage that rides along the run-off guide, so there is no need to dismantle any parts during set-up. A fine adjustment length mechanism assures an accurate cut length.

The machines are optionally offered with an integral chamfer cutting station that accepts the cut-to-length parts and chamfers them from a magazine with no operator intervention.

The chamfer-cutting rate is determined by the time required to cut the chamfer. Cutting is done using carbide insert tools and expected production is up to 90 parts per minute when not using a positive stop in the chamfer station and up to 50 PPM when using a positive stop (used only when the chamfer size is critical).

Videx Machine Engineering Ltd – Israel
Website: www.videx.co.il



○ The AR24 – one of Windak's top-selling products

Also displayed will be the new robot solution for the pick-up of wound spools.

Windak Group OU – Sweden
Website: www.windakgroup.com

 **Videx**
Stand: 15A53

The Videx VC-MS models work from wire coil and are a solution for small production batches and frequent changeover of wire diameters and lengths.

The machines are equipped with a patented servo cut-off, using mechanical drive and using neither clutches nor hydraulics. The machines are therefore quieter and more reliable, requiring less maintenance.

The straightener reciprocates during cut-off (same principle as flying shear) and never twists on the wire in one place. This feature is especially critical for a better durability when running high-tensile wire.

For very short parts, the cut-off cam cuts the wire continuously, at steady intervals, according to the wire feed rate. For longer parts, the cut is performed by the servo drive through a flag. The wire feed rate is determined by a speed controller.

The run-off guide is made out of stainless steel. It requires no adjustment when changing wire diameters within machine range. The gate of the run-off guide is pneumatically operated. It is quiet and smooth, and supports the wire during cut-off, to assure a square cut face.

○ The VC-35-MS 601 from Videx



 **Windak Group**
Stand: 09B42

Windak Group has been participating at the Düsseldorf wire show since 1996. The show in 2014 proved fruitful for the company with several orders and one development project. Since then Windak has grown, shown good results and proved its ability in a competitive market.

The company will exhibit the AR24 automatic spoolers – one of Windak's top-selling products. Also on display will be other machines, such as coilers, spoolers, accumulators, rewind systems, take-ups and pay-offs.

The AR24 auto reeler is a fully automatic reeler developed for automatic packaging of cable and wire products on spools or reels between 300mm and 600mm (11.75" to 24") in overall diameter. It can be run both in line (direct connection with extruder) or off line (with pay-off).

Loading and unloading the empty reels is automatic. The AR24 includes stretch wrapping of the spool to contain the cut end. The output of the machine is two reels per minute.

Windak will show the latest upgraded version with servo package: dancer, laying unit and stretch wrap system. The servo-controlled dancer, laying unit and feeding tube increase reliability by keeping the tension constant and avoiding any loops in the cable or damage of the cable. The servo-controlled stretch wrap system helps to avoid any excessive tension in the film.

The AR24 requires minimal floor space, and when combined with the integrated palletiser makes a complete automatic spooling line with a short investment payback.

 **WTM**
Stand: 11D78

WTM will display a new horizontal line suitable for the production of coaxial cables wrapped with copper silver-plated tapes/wire.

The line is composed of pay-off and take-up, caterpillar/capstan combined pulling unit and a wrapping unit, which is equipped with the latest generation taping head for CuAg-coated tape.

Thanks to its high sensitivity dynamic dancer, this triple motorised head is particularly suitable for this kind of cable because of the precise wrapping it grants.

The dynamic dancer is an active control system that adjusts the tension in real time, directly on the materials being wrapped, applying the pre-set pulling tension on the tape and keeping it constant in any situation, including when the tape is traversing from edge to edge on the spool.

A further advantage of this line is to be equipped with newly designed single-shaft pay-off and take-up units: they are traversing, self-aligning and self-levelling in two axes and with a technologically advanced torque control.

In combination with diameter laser control and torque sensors, they allow cable tension to be directly monitored and adjusted in real time.

With this advanced adjustment system, no dancers are used, even for very low cable tensions, to avoid any extra detrimental bending on the cable.

WTM's Visio system will be installed in the displayed line. This electro-optical control system, available in several configurations and with a variety of options, magnifies the cable surface image during the production

◀ process: measurements, direct feedback and real time checking on the cable surface are now possible.

Data obtained can be stored or sent by LAN connection to any department for analysis and for generating statistics, trends and production diagrams.

The second module on display will be equipped with the triple motorised taping head suitable for PTFE. This taping head is a variant of the previous one, and is suitable to control the tape tension directly, immediately before wrapping point, with the tight deviation of ± 50 grams.

In this case, the high sensitivity of the dynamic dancer gives the possibility to process the softest and most critical materials.

Each part of the lines is designed for processing every kind of cable, including those used for the most sophisticated applications: aeronautical, aerospace, IT communication and military.

A third machine will be presented at the WTM stand. This is a new single twisting unit designed for very sophisticated LAN cables, Cat 5/6/7/7a/8.

Thanks to the newly developed technical solutions, this efficient unit can also produce other kinds of precise cables, like high flexibility cables, signal cables (encoder), cables for robotics and cables suitable for overhead laying.

The quality of the cables produced is granted from an accurate control of the tension on the cable itself because the machine can work with dancer or torque control, enabling the best regulator according to the cables' specific characteristics and assuring a wide range of product processing capability. The pulling capstan, that is rotating, to grant a constant lay length, can be excluded widening again the flexibility of the machine.

This machine is suitable to be placed in line with existing pay-offs or can be coupled with concentric back twist feeders. Then the line can be completed with other equipment and accessories including various types of tape wrapping machines for different tapes.

WTM understands completely its machines: the design, the construction, the assembly and even the software. In this way, every

○ *New machinery on offer from WTM*



WTM machine can be integrated or completed with any other existing machine or equipment without problems, even from other suppliers. These also include laser gauges, spark testers and any other instrument useful for the production process, which can be connected and set directly from the machine operator panel.

WTM Srl – Italy
Website: www.wtmachinery.com



Zumbach Electronic Stand: 11D41

Zumbach will showcase its extensive portfolio of dimensional measurement and inspection systems for wire drawing, wire insulating and cable jacketing processes as well as for rod and bar mills.

In order to achieve high precision and best price-performance ratio, different technologies such as laser scanning, X-ray, ultrasound, light-section technique and linear sensor technology are used.

The production of offshore flexibles involves complex processes requiring varying individual performances for quality control. Any deviations from the required standards can risk serious consequences if failure occurs, depending on the application scenarios.

In order that the risks for future product failure are eliminated during the manufacturing processes, such as wire drawing, profile rolling/extruding, stranding and sheathing, Zumbach provides reliable solutions for the measurement of all critical parameters.

The versatile high-tech ultrasonic system Wallmaster offers application-specific solutions for measuring and monitoring wall thickness. The measuring data processor with touch-screen display gathers data and QC fully automatically.

In combination with ultrasonic UMAC® scanners and various ODAC® diameter measuring gauges as well as with error detectors, the measuring and monitoring scale can be expanded to outside and inside diameter, statistics, SPC and processor communication.

Using Zumbach's Wallmaster measurement and control systems, manufacturers can economise their expenditure of raw materials. The ROI is achieved within a few months. The use of these systems also allows reduction of the start-up time.

One of the highlights on the stand will be the new ultrasonic scanners for flexible diameter adjustment. In this novel construction (patent pending) the transducers can be either individually or simultaneously adjusted to the best possible measuring



○ *3-axis ODAC 550 system, measuring an offshore cable of 500mm OD*

position within seconds. The scanners represent a smart and simple solution for full non-contact, in-line eccentricity and wall thickness measurement of cable jackets, tubes and hoses.

A complete line of measurement and control equipment for any on-line and manufacturing process will also be on display:

- New 1, 2 and 3 axis diameter gauges of the high precision ODAC® series for any wire and cable. New models with special beam geometry, fault detection function and high scan rate
- The advanced ODEX® concentricity and diameter gauge for wire extrusion. Fully non-contact, based on magnetic and laser technology
- New LSV length and speed gauges for down-to-zero speed measurement
- New spark tester AC and DST systems
- Advanced KW fault detectors with new local BAE control and display unit
- New economic, modular high performance USYS IPC data acquisition, processing and display units
- Rayex® D series: Zumbach's X-ray measuring and control system for CV lines, for wall thickness (three layers), eccentricity and diameter/ovality for CV lines
- Profilemaster® series: High-end, non-contact profile and shape measurement, combining laser and CCD technology for shaped wire and any other profile

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

Technique for precise concentricity measurement of a conductor in the insulation and relevant parameters of cables and wires

By Harald Sikora and Katja Giersch, Sikora, Germany

Introduction

Wire and cable manufacturers of automotive and control wires as well as coax and communication cables are using measuring and control technologies in their extrusion lines to maintain specified cable parameters.

This is important for process optimisation and quality assurance but is also demanded when products are assembled automatically. In these cases, assembly failure rates are recorded statistically, registered and assigned to the manufacturer. For this reason, cable plants are aiming to supply cables with reliable high quality standards.

Challenges in cable extrusion

A challenge in the cable extrusion process is maintaining measurement values with tight tolerances of the conductor concentricity in the insulation, the conductor diameter, the outer diameter of the cable and the ovality of the outer diameter. During the extrusion process deviations of the measuring values can occur, which would remain undetected without special equipment for visualisation.

Lumps, neckdowns, faults or bare spots in the cable can lead to malfunctions during assembly. Early in the assembly process, the cable or wire is cut to lengths and stripped at the ends in order to be subsequently fitted with plugs. The pull-off forces used for the stripping are exactly defined. Deviations of the pull-off forces within the conductor insulation can cause interferences during the stripping. The use of innovative measuring and control technology allow the cables to meet the high demand

requirements and also identify potentials for process optimisation of the extrusion line.

Rotating/oscillating conductor

The requirements for measuring and control technologies in cable extrusion lines are very precise where tolerances within a few micrometres have to be maintained. While the mean value of the diameter or the wall thickness of the insulation is sufficient for controlling the extrusion line, the reliable recording and visualisation of short-term variations, especially of the eccentricity values, is additionally necessary under the aspect of the minimum wall thickness.

Slight oscillations of the conductor directly before the crosshead can lead to significant deviations of the concentricity, especially if the conductor is oscillating in one plane or rotating. Such eccentricities cannot be shown with a conventional graphical visualisation. A fast rotating vector of a constant eccentricity value can only be displayed to the operator by a visualisation beyond the standard display.

Angle position of a conductor

During the extrusion process it is possible that a cable, with or without guide rollers, has a slightly angled position when running through the measuring plane. Eccentricity measuring systems have to be able to generate accurate measuring values even when such a position occurs (see *Picture 6*).

A sag or bend of the conductor

Even on the assumption that the conductor is stretched when running through an extrusion line, it may still show some bends, which have to be detected when entering the gauge head of an eccentricity system. Without any special measures, even invisible curve radii in the range of 5 to 20 metres can lead to eccentricity errors of up to 40 micrometres. Only in an ideal case, guide rollers can compensate this imperfect stretching of the conductor, or vice versa, even increase the error. Therefore, the aim should be to eliminate guide rollers completely.

Measuring the concentricity of a conductor in the insulation ensures a high quality cable will be produced. During manufacturing of the cable, the measuring system should compensate completely the influence of production related variables that can affect the measuring result, such as angled cable positions and curve radii of the conductor.

Concentricity systems, in combination with an integrated or external processor system, visualise short-term variations of the eccentricity in the form of a scatter plot.

The system lays the foundation for the production of high quality cables, and ensures a reliable, flawless cable during the assembly process. Subsequently, it contributes to process reliability and additionally to cost effectiveness.

○ **Picture 1:** Devices for the concentricity measuring of a conductor in the insulation



Measuring system for concentricity measurement

The measuring system (Picture 1) is based on an optical and inductive measuring technique. With the inductive measuring system, which is positioned between two optical measuring planes, the exact position of the conductor is determined.

With the optical system, the position of the cable is measured. An eccentricity value occurs when both positions differ from each other. Simultaneously, the optical system captures precisely the diameter and the ovality of the cable.

All necessary calculations and analysis are carried out in the measuring system. The measuring values are available from different interfaces for transferring data to a display and control unit or to a line computer.

Inductive measuring circuit

The cable passes through a toroidal transformer, which generates an alternating current of a few milliamps into the conductor. The alternating current creates a magnetic field, which ideally surrounds the conductor in a circular manner and the intensity decreases, exponentially, with the square of the distance. In the measuring system inductive sensors are placed at a determined distance, radially around the conductor. With the help of these sensors, the exact position of the conductor is calculated with high precision from the distribution of the intensity of the magnetic field strength.

Due to the combination of multiple optical sensors and the special design of the inductive sensors, an angled position or a bend in the cable is detected and automatically compensated for. This ensures a precise eccentricity measurement. Due to the automatic centring of the gauge head to the cable position, the measuring system is able to provide precise measuring values at all times, even when the pulling forces in the cable vary. Guide rollers are unnecessary with automatic adjusting heads.

The arrangement of the inductive measuring system for the determination of the conductor position in the centre of the gauge head, in combination with ferro-magnetic shielding, prevents environmental variables from having an influence on the eccentricity measuring value. For that reason, even a passing forklift, a moved cooling trough or changing grounding conditions have no influence on the measuring result.

Optical measuring circuit

The optical measurement is based on the principle of the diffraction analysis combined with pulse-driven laser diodes, the light beam from the diodes projects a shadow of the cable onto the CCD-line sensor in each measuring axis with an exposure time of 0.25 microseconds.

The systems measure at four axes (at eight points) the position and the width of the shadow. From the position of the shadow in relation to the determined position of the conductor, signal processors calculate the exact value of the eccentricity and from the widths of the four



○ **Picture 2:** Standard presentation of eccentricity



○ **Picture 3:** Random type distribution of the single values of the eccentricity



○ **Picture 4:** Ring type distribution of the single values of the eccentricity



○ **Picture 5:** Ellipse type distribution of the single values of the eccentricity

shadows the outer diameter and the ovality are calculated. The measuring values of the outer diameter, if required in combination with the conductor diameter (the wall thickness), are suitable to amend the output capacity of the extruder or the haul-off speed of the cable in such a way that the measuring values are set to the respective nominal value.

eccentricity using a cross-section of the cable (Picture 2) is additionally helpful for the operator when centring the crosshead.

Picture 3 shows a random type distribution of the single values of the eccentricity, while Picture 4 shows a ring type distribution of the eccentricity values, which is often

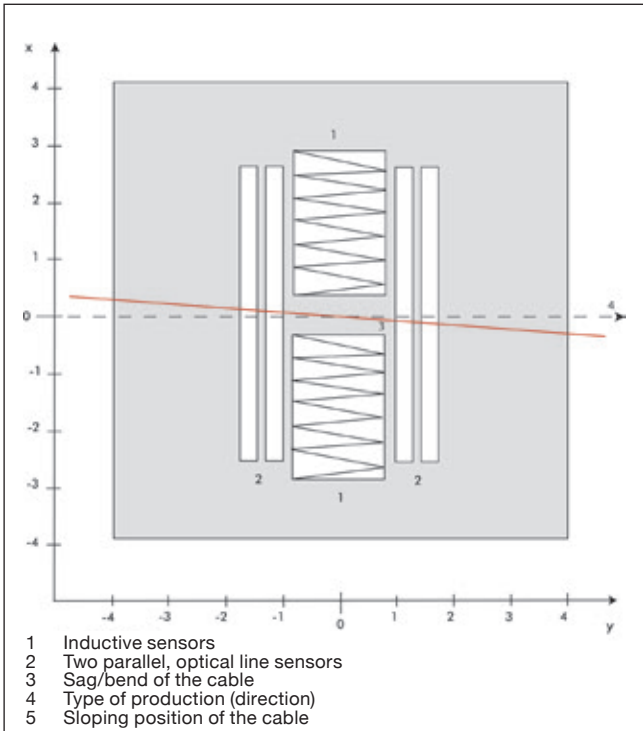
Moreover, measuring values with tight tolerances are of significant importance for the assembly. Each of these values influence the wave impedance (eg twisted LAN-cables) and consequently the value for the Structural Return Loss (SRL) of a data transfer cable, especially when deviations of these values occur periodically.

With the help of the Fast Fourier-Transformation (FFT), the high scan rate of 2,500 measurements/second is suitable for creating a forecast for the SRL in dependence of the transmission frequency even at line speeds of 3,000 metres/minute for both current and future CAT-specifications. If a specification is given concerning the minimum wall thickness for the cable insulation, then any eccentricity leads inevitably to an increased consumption of insulation material. Therefore, eccentricities should be reduced for economic reasons.

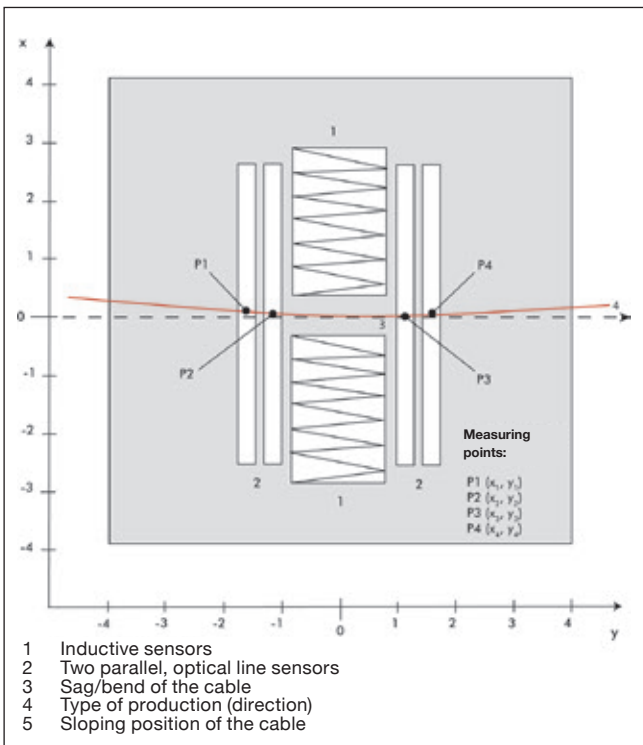
Recording of oscillating eccentricity values

With a scan rate of 2,500 measurements per second, the measuring system records oscillating eccentricity values with high single value precision. These are visualised in form of a scatter plot (Pictures 3, 4 and 5). The scatter plot provides an additional way to visualise the ongoing measurement at processor-based display and control devices, and with its help, the distribution of short-term variations of the eccentricity can be shown graphically. Each dot represents a single value of the eccentricity concerning value and direction.

The overall distribution of the scatter plot highlights the standard deviation of the eccentricity. It is often sufficient to amend the guiding of the conductor close to the cross head in order to avoid these oscillations, which usually occur within a certain speed range and/or certain filling degrees of the coiler or decoiler, respectively. The standard way of representing



○ **Picture 6:** Technique to determine a sloping position of the cable



○ **Picture 7:** Technique to determine a sag or a bend in the cable

the result of a rotating (oscillating) conductor prior to the extruder crosshead. *Picture 5* shows an ellipse type distribution of the scatter plot, which can happen, for example, when the conductor is oscillating or vibrating in one direction directly before entering the crosshead and which therefore additionally causes eccentricity variations.

This permanent rotation eccentricity would also not be visible with a standard presentation of eccentricity (as shown in *Picture 2*).

Measurement of a sloping position of the cable

Picture 6 shows a cable running in reference to a straight line. The cable, however, is running in an inclined position to the actual intended production line. In the illustration, the inclined position of the cable is exaggerated for a better understanding. A straight or inclined line, in this case a straight conductor, is defined by two points. By means of the first and second optical measuring device, the sloping positions of the cable will be identified and its influence on the measuring results will be determined and fully compensated.

Determination and compensation of a sag or bend of the cable

Picture 7 illustrates a cable that shows a sag or bend. For a better understanding, the illustration of the bend of the cable is extremely exaggerated and, in practice, not likely. The bend of a conductor can be described by a circle, whose position and curve radius is defined by three points.

With this information, the processor system is able to calculate the exact position of the cable in the inductive measuring plane and to fully compensate for the influence of angled position and/or bends. As shown in the picture, the measuring system is built in a way that the position of the cable is measured at four points, shown in the illustration as P1, P2, P3 and P4. Due to this, the measuring system is able to detect even irregular deformations of the conductor.

Conclusion

With the introduced technology it is possible to precisely measure the concentricity of a conductor in the insulation as well as the product parameters, outer diameter, ovality and wall thickness. The measuring technique records rotating or in one plane oscillating eccentricity values of the conductor in the form of a scatter plot. This scatter plot allows visualisation of the distribution of short-term variations of the eccentricity. Per the four-axes measurement as well as eight-point eccentricity measurement, a sloping position of the cable in the measuring plane can be recognised.

The measuring system compensates automatically for a sloping position of the conductor in both horizontal as well as vertical direction, thus the measuring results are not influenced. The measuring system also records accurate measuring values, even when the cable is running through the gauge head with a sag or curved radius. Using the described measuring technology in extrusion lines ensures the production of high quality cables for a flawless assembly. At the same time, it contributes to process reliability and, consequently, cost effectiveness.

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用于电线电缆绝缘体内导体和相关参数的精准同心度测量技术

作者：德国西科拉公司哈拉德·西科拉和卡特亚·吉尔斯

简介

汽车和控制线路以及同轴和通信电缆的电线电缆制造商正将测量和控制技术运用到他们的缆线挤出生产线上，用以保持特定的电缆参数。这对于流程优化和质量保证来说非常重要，并且也是自动化组装产品所需要的。在这些案例中，组装的失败率将被统计并记录下来，同时进行登记并被指派给生产商。因此，电缆工厂希望能供应符合高质量标准的可靠电缆产品。

电缆挤出的难题

电缆挤出流程的难题之一是在绝缘体内导体同心度、导体直径、电缆外直径以及外直径椭圆度允许偏差值紧缩的情况下，维持测量数值的稳定。在挤出过程中可能会发生测量数值的偏差，如果缺乏特定的观测设备，这一偏差很难被观测到。

电缆上的结块、颈状收缩、瑕疵或裸露点都可能在组装流程中导致故障。在组装流程的初始阶段，电缆或电线会被切割成特定长度，两端表皮会被剥离用以连接插头。剥离流程中施加的压力经过精确设置。

导体绝缘体中的拉力如果发生偏差，将会对剥离过程产生干扰。创新型测量和控制技术的采用促使电缆产品可符合更高标准要求，并且明确电缆挤出流程可能需要的因素。

旋转/振荡导体

电缆挤出流程需要非常精准的测量和控制技术，用以将偏差控制在几微米之内。尽管测量绝缘体直径或外壁厚度的平均值已足以控制挤出流程，但是可靠的数据记录以及短期变化的可视化，特别是控制偏心度数值，对于追求外壁厚度最小值是必不可少的附加条件。

在绝缘体进入联杆器之前，一些细微的振荡都会导致同心度的巨大偏差，特别是当绝缘体在同一平面或旋转情况下受到振荡的时候。传统的图形可视化仪器并不能显示此类偏心度。恒定偏心度数值条件下的快速旋转矢量仅可通过高于标准显示的可视化仪器呈献给操作人员。

导体的角度位置

在挤出流程中，无论是否采用导轮，电缆都有可能以轻微的角度位置通过测量平面。在出现这样的角度问题时，偏心度测量系统必须生成精确的测量数值(见图六)。

导体的下垂和弯曲

尽管假设在通过挤出生产线时，导体会被拉伸，但是依然会出现弯曲的情况，此类情况必须在导体通过偏心度系统的测头时被检测出来。在缺少特定方法的情况下，5到20米线长范围内的可见弯曲半径会导致最高40微米的偏心度误差。仅在理想条件下，导轮可以弥补导体拉伸的缺陷，或者相反增加误差。因此，研究的目的在于完全淘汰导轮的使用。

测量绝缘体内的导体同心度可确保电缆产品的高质量。在电缆的生产过程中，对于可能影响测量结果的变量，诸如电缆角度位置问题或导体的弯曲半径问题，测量系统需要完全修正其对产品的影响。结合集成或外部处理系统，同心度系统以散点图的形式使偏心度的短期变量可视化。

图1: 绝缘体内导体同心度的测量装置



这项系统为生产高质量电缆奠定了基础，并能在组装流程中保证生产出可靠且完美的电缆产品。同时该系统还可促进流程可靠性和增加成本效率。

测量平面上受到振荡、电缆角度位置或电缆弯曲影响的条件下，绝缘体内导体的同心度测量系统

测量系统(图一)基于光学和感应测量技术的基础之上。通过安置在两个光学测量平面间的感应测量系统，可精确定位导体的位置。通过光学系统可测量电缆的位置。在两个位置之间存在偏差的情况下，会显现偏心度数值。同时，光学系统可准确获取电缆直径和椭圆度数值。测量系统可进行一切必需的计算和分析。测量数值可通过不同数据传输接口传输到显示器和控制器或联体计算机上获取。

感应测量电路

电缆通过电压器时，导体内会产生数毫安的交流电。这些交流电生成一个磁场，会以循环方式包围导体，其强度会根据距离的平方数以指数方式减弱。在测量系统中，感应传感器以特定距离和半径安置在导体四周。在这些传感器的辅助下，可结合磁场强度分布的高精确度精准测量导体的位置。

通过结合数个光学传感器和感应传感器的特殊设计，可检测并自动修复电缆的角度位置和弯曲问题。这确保了偏心度测量的精确度。

由于测头对电缆位置的自动定心，即使是在对不同的电缆施加拉力时，测量系统也可在任何时间提供精准的测量数值。在配备了可自动调节测头的条件下，流程内不需要采用导轮。

为了精准定位测头中心上的导体位置而配备的感应测量系统，结合铁磁体防护，能预防环境变量对偏心度测量值的影响。在这样的配置下，即使有铲车从旁经过，移动冷却槽或是改变接地条件都不会对测量结果产生影响。

光学测量电路

光学测量是基于衍射分析结合脉冲驱动激光二极管的架构之上，二极管发出的光束将电缆的影子投射到每条测量轴上的电荷耦合器(CCD)线阵传感器上，曝光时间为0.25微秒。该系统可测量四条轴线上(8个定位点)的位置和阴影的宽度。通过测量与导体定位相关的阴影位置，信号处理器可精确计算偏心度的数值，同时根据四个阴影的宽度，可计算出外直径和椭圆度。

外直径的测量数值(如需要)结合导体直径(外壁厚度)适用于校准挤出机的产出能力或电缆的牵引速度，通过这一方式，测量数值可分别设定成额定值。除此之外，缩小测量值的允许偏差值对于组装流程非常重要。每个数值都会影响到波阻抗(例如，绞合局域网(LAN)电缆)，并从而影响到数据传输电缆的结构回路损耗(SRL)数值，特别是在这些数值偏差呈现周期性出现的情况下。

在快速傅里叶转换的辅助下，每秒2,500次测量的高速扫描甚至可在每秒3,000米的条件下对结构回路损耗进行预测，包括当前和未来的计算机辅助测试(CAT)技术参数。如果已知电缆绝缘体最小壁厚的参数，那么任何偏心度的发生必定会增加绝缘体材料的损耗。因此，出于经济因素的考虑，必须降低偏心度。



图2: 偏心度的标准显示



图3: 偏心度单值的随机型分布



图4: 偏心度单值的环型分布

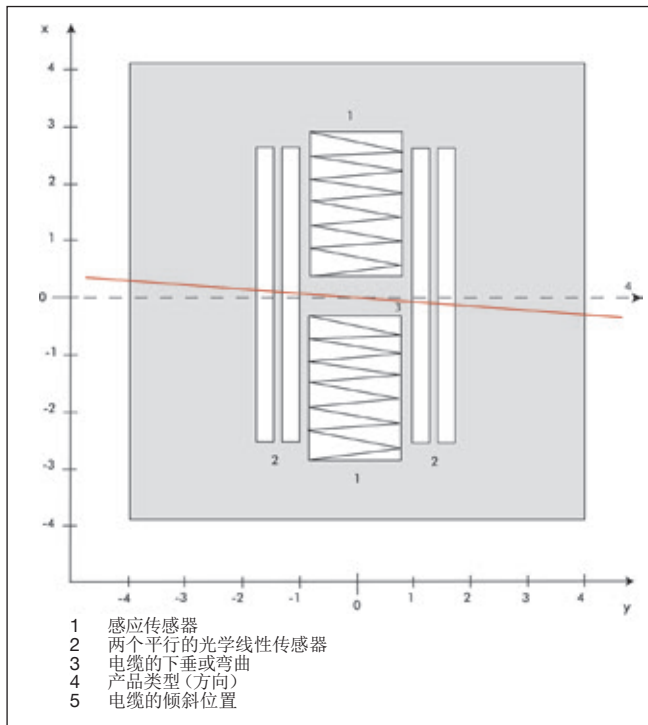


图5: 偏心度单值的椭圆型分布

振荡偏心度数值记录

测量系统记录的振荡偏心度数值具有很高的单值精确度，并且扫描速率可达每秒2,500次测量。数据通过散点图呈现(图三、图四和图五)。对于基于处理器的显示装备和控制装置，散点图提供了新的路径用以监测上述装置中正在运行的测量进程，在散点图的辅助下，偏心度短期变化的分布规律可以图表形式呈现。每个点表示偏心度数值和趋势的单值。

散点图的整体分布规律能突显偏心度的标准偏差。散点图的应用足以在导体靠近十字机头时矫正导向，用以防止在卷取机或开卷机的特定速度范围和(或)特定填充程度中发生此类偏心度。采用电缆横截面(图二)显示偏心度的标准方法可协助操作者确定十字机头的中心位置。图三为偏心度单值的随机分布图，图四则是偏心度数值的环形分布图，这是在进入挤出机十字机头前旋转(振荡)导体通常发生的情况。图五展示了散点图的椭圆型分布图，该情况可能发生在进入十字机



○ 图6: 电缆倾斜位置的确认技术

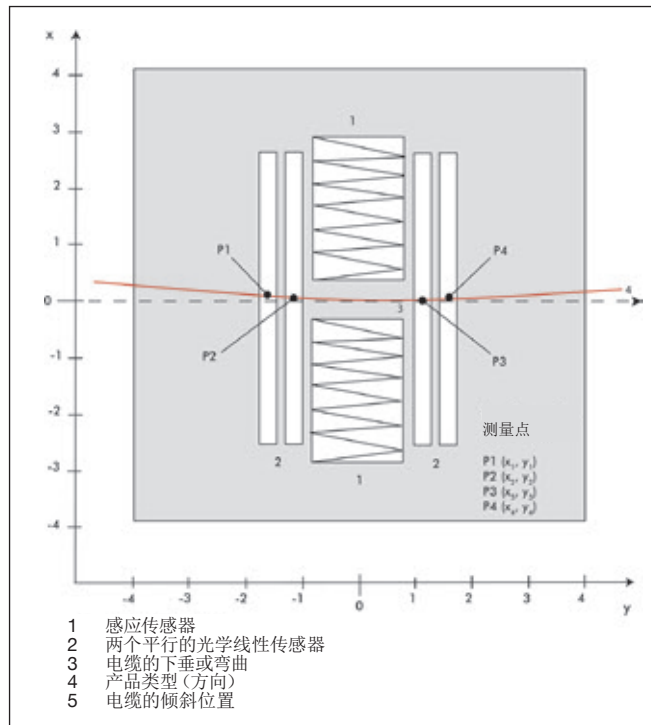
头前向一个方向直接振荡或振动导体，从而导致另外的偏心率变化。这类永久性的旋转偏心率不可通过偏心度的标准显示进行观测(如图二所示)。

该系统的扫描速率可达每秒2,500次测量，可精准记录振荡偏心率数值。可通过散点图进行观测(图三，图四和图五)。对于基于处理器的显示装备和控制装置，散点图提供了新的路径用以监测上述装置中正在运行的测量进程，在散点图的辅助下，偏心率短期变化的分布规律可以图表形式呈现。每个点表示偏心率数值和趋势的单值。散点图的整体分布规律能突显偏心度的标准偏差。散点图的应用足以在导体靠近十字机头时矫正导向，用以防止在卷取机或开卷机的特定速度范围和(或)特定填充程度中发生此类偏心率。采用电缆横截面(图二)显示偏心度的标准方法可协助操作者确定十字机头的中心位置。图三为偏心率数值的随机分布图，图四则是偏心率数值的环形分布图，这是在进入挤出机十字机头前旋转(振荡)导体通常发生的情况。图五展示了散点图的椭圆型分布图，该情况可能发生在进入十字机头前向一个方向直接振荡或振动导体，从而导致另外的偏心率变化。这类永久性的旋转偏心率不可通过偏心度的标准显示进行观测(如图二所示)。

为了保证对绝缘体内的导体进行高度精确测量，光学测量轴需要被安置在与感应传感器相同的水平位置上。在这一位置上，感应传感器会遮挡光学路径，从而分割光学测量平面。在感应传感器的前后各自安置了一个光学测量平面。因此，只有完全直线和水平的导体可生成精准的测量结果。然而在实际操作中，不得不考虑到导体的轻微成角和弯曲情况。这意味着即使在这样的条件下，测量装置也必须精准记录测量数值。

电缆倾斜位置的测量

图六展现了电缆的直线运动。而这条电缆正沿倾斜位置运行至实际预期的生产线。在图示中，为了更易于理解，夸大了电缆的倾斜位置。现已知一条直线或斜线。在这个事例中，直线导体被定义为两个点。通过第一和第二个光学测量装置，可确定电缆的倾斜位置，也可确定并完全修正其对测量结果的影响。



○ 图7: 电缆下垂或弯曲的确认技术

电缆下垂或弯曲的确认和修正

图七展现了发生下垂和弯曲的电缆。为了更易于理解，对电缆的弯曲进行了极度的夸大，在实际操作中不太可能会产生这样的弯曲。导体的弯曲可被描述成一个圆，其位置和弯曲半径可被定义为三个点。通过这一信息，处理系统可精确计算感应测量平面上的电缆位置，同时充分修正角度位置和(或)弯曲的影响。如图所示，通过四个点位测量电缆位置用以设立测量系统，如图中的P1, P2, P3和P4。由此，测量系统甚至可以监测到导体的不规则变形。

总结

通过以上介绍的技术，可精准测量绝缘体中导体的同心度、产品参数、外直径、椭圆度以及壁厚。该测量方法以散点图的形式记录导体旋转数值或导体在同一平面上的振荡偏心率。“散点图”可显示偏心率短期变化的分布规律。按照四轴测量以及八点偏心率测量方式，可分辨测量平面上电缆的倾斜位置。测量系统可从水平和垂直位置自动校准导体的倾斜位置，由此测量结果不会受到任何影响。即使在电缆通过测头时有下垂或弯曲半径的情况，该测量系统也可精准记录测量数值。通过在挤出生产线上采用上述测量技术，可保证组装流程中生产的电缆具有很高的质量。同时，它也提升产品可靠度从而实现成本有效性。

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US copies only: Wire & Cable ASIA (ISSN No: 0218-3277, USPS No: 022-979) is published bi-monthly by Intras Ltd and distributed in the USA by Asendia USA, 17B S Middlesex Ave, Monroe NJ 08831. Periodicals postage paid at New Brunswick, NJ and additional mailing offices.
Postmaster: send address changes to Wire & Cable ASIA, 17B S Middlesex Ave, Monroe NJ 08831.



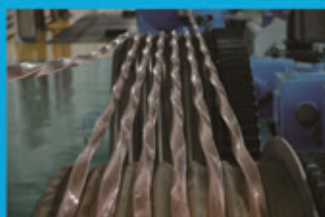
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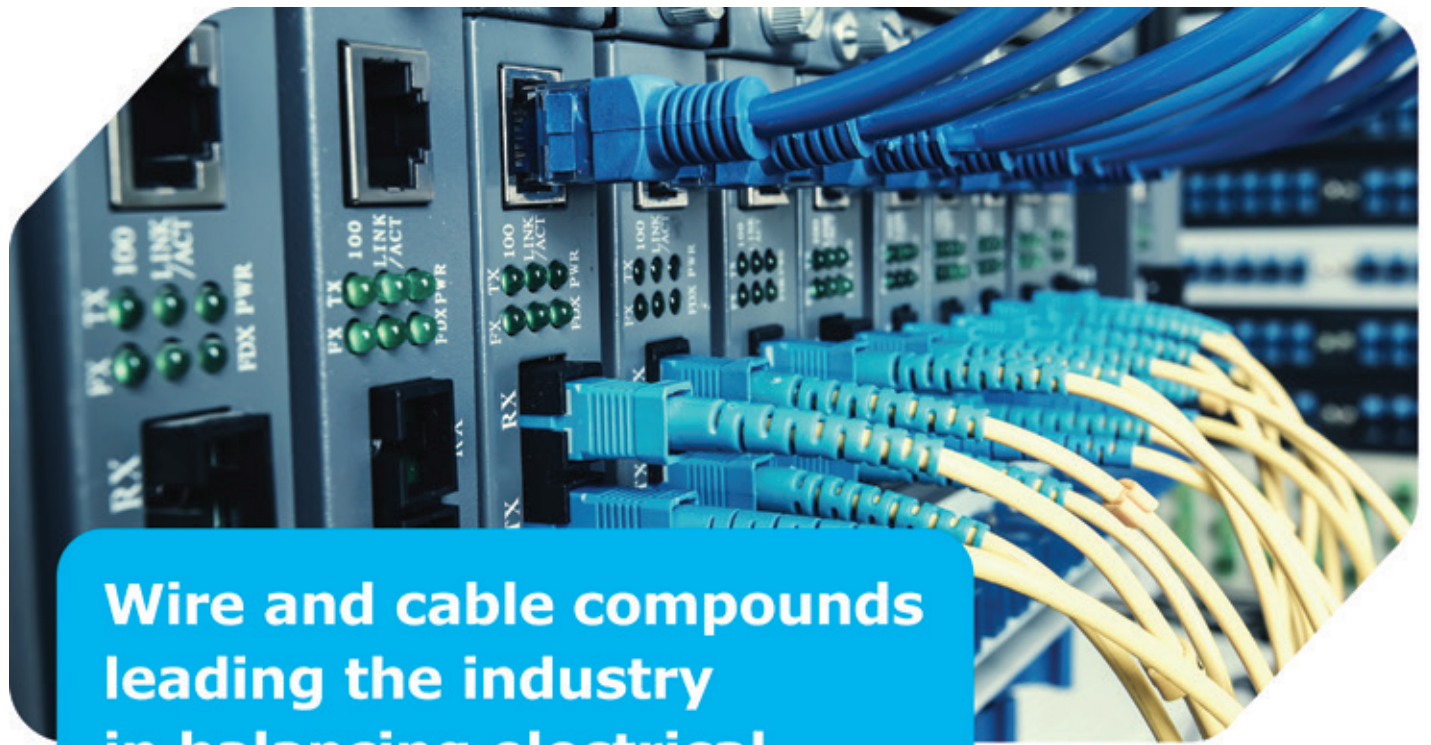
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