

Casting for the next generation



▲ From left: Finlay Mitchell, David Murray, Callum Anderson, Jamie McPherson and Colin Bell

CONTINUOUS casting technology specialist Rautomead Limited of Dundee, Scotland has recently proved its aptitude for an entirely different kind of casting in embarking upon a rigorous casting process to identify the best young talent.

Following on from its recent intake of graduates, Colin Bell and David Murray, the company has taken on two extremely promising local apprentices, Finlay Mitchell and Jamie McPherson, straight from school.

Over the next four years the pair will be acquiring a thoroughly rounded view of

the Rautomead operation, beginning by spending six months with the company's machine fitters and a further six months with the electricians.

As with the two graduates, in taking on the two apprentices Rautomead was looking out not just for a natural talent and aptitude for the job but also for young people with a natural willingness, and enthusiasm, for engaging immediately and directly with the equipment and getting their hands thoroughly dirty in the process.

The two young apprentices will not be missing out on their academic

studies throughout the period of their apprenticeship, with tuition being provided one day a week by local Angus College.

A vital consideration for Rautomead in stepping up its drive to recruit new talent lies in the company's determination to ensure continuity and build solid foundations for the future.

Rautomead managing director Brian Frame explained: "Here at Rautomead, like anywhere else, no one is getting any younger and the injection of fresh young talent such as Finlay and Jamie, really has given the company a shot in the arm.

"We believe passionately that continuity and quality standards for the company will be maintained by plucking the best young people straight from university and school. We are proud to be regarded as part of the local community, something we've achieved through our policy of employing local people, although we are also prepared to search far and wide to find just the right person for us, Colin Bell having joined us from USA, for example. However, providing a career start in engineering for two local youngsters gives us particular satisfaction."

Rautomead Ltd – UK

Email: sales@rautomead.com

Website: www.rautomead.com

A warm welcome to Andy

Continued on page 2

Andy Lewis is the new executive manager of the International Wire and Machinery Association.

Mr Lewis, 41, started in his new role on 23rd May and is already looking forward to the challenges ahead at the world-leading wire and cable association.

The marketing professional, with more than 20 years' experience, has travelled extensively throughout his career and in his last position was

responsible for marketing in Europe and the Asia-Pacific regions.

Married to Katherine with two children, Georgina and Joey, the self-confessed sports fan said: "This new role is a really good opportunity for me personally.

"Whilst I have a lot to learn I am looking forward to getting to know people in the IWMA, the industry itself and meeting the challenges which have been set."



▲ Andy Lewis

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Extended quality control of cable insulation by colour measurement during extrusion



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WCN

WIRE & CABLE INDUSTRY
42
Years of Excellence

Algerian client for GER

GER SA recently sold – in cooperation with Dexsen – a multi-purpose extrusion line for insulating and sheathing to one of its customers in Algeria.

This state-of-the-art production line is composed of new and overhauled second hand machines.

New machines are one 75mm extruder, four pay-offs 1,250mm, one colouring unit, two crossheads, all control and measuring instruments, complete electrics of all the machines and control cabinets with touch screen.

The second hand elements are one motorised double cone-type pay-off, one SZ strander, one 80mm diameter extruder, one multipass cooling trough, one haul-off caterpillar, one chalkmaster and one 1,600mm cantilever take-up.

This package includes commissioning and training of operators in the plant of the customer.

GER SA – Belgium

Fax: +32 872 602 01

Email: ger@ger.be

Website: www.ger.be

A warm welcome to Andy

From page 1

IWMA chairman Steve Rika said: "On behalf of the executive board and myself we are delighted to welcome Andy Lewis into the role of executive manager of the IWMA. He has a wealth of experience in marketing and is familiar with global travel and I am sure that he is the right man, along with his team, to take the association to the next level. We are eager to start working with him and we wish him well and look forward to a long and enjoyable career with the IWMA."

Mr Lewis' first overseas project for the IWMA will be manning the stand at the forthcoming wire China 2012 from 25th-28th September, and a few weeks later in Mumbai, India, for the

new Messe Düsseldorf show, Wire & Cable India (30th October-1st November).

He can be contacted at andy@iwma.org or on **+44 1926 834680**.

Mr Lewis started in the new position following the retirement of executive secretary Phillip Knight.

Phillip retired on 29th February 2012 because of health concerns, after successfully serving as executive secretary for more than ten years.

IWMA Chairman Colin Dawson, on behalf of the executive committee and all the member companies, wished Phillip a long and happy retirement.

Expansion for Goodwin

Goodwin Machinery Ltd has recently acquired an 11,000ft² warehouse next to its existing 20,000ft² storage facility, providing better engineering capabilities and a fully equipped workshop.

This has enabled an enhancement to the growing gearbox and repair service and also to supplement the used machinery facilities.

As an addition to Goodwin Machinery's existing business with B & F Carter, Winget Syncro, etc, they are pleased to announce the addition of the following agencies for the UK market:

- Chalkmaster – Powder Applicator
- Tensometric – Digital Tension Meters
- KMK – Linear Bi-directional Traverse Units
- Gesadur – Underrollers

Goodwin is always interested in acting as an agent in the UK for overseas companies relevant to their core business and are one of the largest suppliers of used wire and cable machinery in the UK, supplying as – is or fully refurbished.

Goodwin Machinery Ltd – UK

Email: sales@goodwinmachinery.co.uk

Website: www.goodwinmachinery.co.uk



▲ New chief executive Lars Fagerholm

New chief executive

LARS Fagerholm was appointed CEO of the Maillefer group, as of 12th April this year.

He succeeds Peter Roos, who stayed until the end of June 2012 to ensure a smooth transition.

During his four years with Maillefer, Mr Roos successfully completed a number of significant changes to ensure the group's competitiveness in the years to come.

Mr Fagerholm has a broad international experience from several management positions, specifically from his extensive career with Albany International, the leading global supplier of technical paper machine clothing products to the pulp and paper industry.

His business background and experience in international business structures, technical, and manufacturing management will be a great asset in leading Maillefer to achieve its mission towards strengthened market leadership and in becoming a stronger value provider to the industry.

Maillefer International Oy – Finland
 Website: www.mailleferextrusion.net

DIARY OF WORLD CLASS WIRE & CABLE EVENTS FOR BUSINESS, TECHNOLOGY, EDUCATION & NETWORKING

2012

SEPTEMBER

25-28 **wire/Tube China 2012**
Shanghai, China
 Exhibition → Messe Düsseldorf GmbH
 Email: wire@messe-duesseldorf.de
 Website: www.wirechina.net

OCTOBER

29 **Mumbai Technical Conference**
Mumbai, India
 Technical Conference → IWMA
 Fax: + 44 1926 314755
 Email: info@iwma.org
 Website: www.iwma.org

30 Oct - 1 Nov **Wire & Cable India 2012**
Mumbai, India
 Exhibition → Messe Düsseldorf GmbH
 Fax: + 49 211 4560 7740
 Email: ryfischd@messe-duesseldorf.de
 Website: www.messe-duesseldorf.de

2013

FEBRUARY

6 **IWMA AGM and Members Lunch**
Mere Golf & Country Club, UK
 Lunch → IWMA
 Fax: + 44 1926 314755
 Email: info@iwma.org
 Website: www.iwma.org

APRIL

23-25 **Interwire 2013**
Atlanta, Georgia, USA
 Exhibition → WAI
 Fax: +1 203 453 8384
 Website: www.wirenet.org

JUNE

25-28 **wire/Tube Russia 2013**
Moscow, Russia
 Exhibition → Messe Düsseldorf GmbH
 Email: info@wire-russia.com
 Website: www.wire-russia.com

SEPTEMBER

17-19 **wire/Tube Southeast Asia 2013**
Bangkok, Thailand
 Exhibition → Messe Düsseldorf GmbH
 Email: wire@mda.com.sg
 Website: www.wire-southeastasia.com

OCTOBER

8-10 **wire South America/Tubotech 2013**
São Paulo, Brazil
 Exhibition → Messe Düsseldorf GmbH
 Fax: + 49 211 4560 7740
 Email: wynhoffu@messe-duesseldorf.de
 Website: www.messe-duesseldorf.de

Read all about it

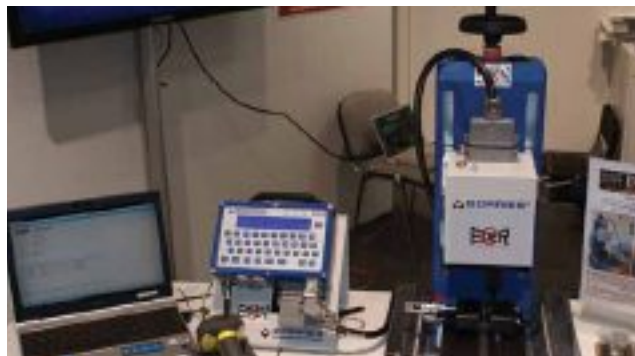
Calling all member companies! Don't forget you can get your latest news published immediately on the IWMA website at www.iwma.org

taking on new staff, www.iwma.org is the ideal starting point to let others know what your company is doing.

Whether its information about a new technological development or

Information should be sent directly to info@iwma.org

Revolutionary drawing die marking, identification and administration system



▲ The EDDS-2 system from Eder Engineering

In modern wire drawing mills and cable plants, particularly those with multiline wire drawing machines, various tens of thousands of costly diamond/PCD die-tools are in permanent use.

At present, the following specific die-tool data, such as property data: e.g. manufacturer, fabrication number, die-geometry, bore-size diameter, die-tool material, delivery date etc, and performance data: e.g. time and endurance of application, number of repairs, usages with new bore-sizes, amount of drawn wire materials, and other information is mainly collected and registered by means of time consuming procedures.

Eder Engineering, Austria, a family-owned specialist company, pioneer in PCD wire drawing die-tools and technical leader in die processing equipment, has recently developed the EDDS-2 system, and successfully demonstrated it at the recent wire 2012 in Düsseldorf to both producers and users of drawing dies.

It is a unique and practical invention for replacing the present number digit engraving and to end the necessary circumstantial and mainly manually done registration of important property and performance die-tool data.

This new EDDS-2 system allows the marking of a small specific and continuously individual numeric alpha DataMatrix code firmly onto steel casings of the relevant die-tools in a couple of seconds and with high precision. This individual DataMatrix code can easily get scanned, read-out and transferred to special software, then referring to this specific individual die-tool only.

All property and performance data of the relevant die (e.g. manufacturer/fabrication number/die-material/die-geometry/initial bore-size/delivery date/start of using the die tonnages of drawn wire achieved/refurbishments/renewed use with a new bore-size/additional remarks etc) can then easily be written into this special software to need and read-out and administrated to any extent and at any time required.

The entire EDDS-2 system comprises the specially developed software that runs on modern standard PCs, and hardware components like the DotPeening marking unit with the electrically driven marking head with a high precision long-living tungsten carbide stylus, the separate control board and the special take-up slide device for fixing the die-tools to be marked.

Eder Engineering GmbH – Austria

Email: office@eder-eng.com

Website: www.eder-eng.com

Retirement of Don Tucker from executive board

Don Tucker recently announced his retirement from the executive board of the International Wire and Machinery Association.

Mr Tucker is well known worldwide in the copper wire and electrical cables field and joined the executive board in 1972. He subsequently became chairman in 1980 until 1983 and then chairman of the technical committee in 1984, a position he kept until this year.

He was highly influential in this position and presided over the majority of the 49 conferences and seminars that the IWMA has held since its foundation. His technical knowledge and exhaustive list of contacts made a great contribution to the successful running of these events.

Mr Tucker was also chairman of the papers awards committee, which regularly makes awards to contributors of outstanding technical papers. He has also served on the executive advisory council, which consists only of ex-chairmen of the IWMA and exists to provide advice to the executive board.



▲ Retiring IWMA executive board member Don Tucker

Mr Tucker's extraordinary service was officially recognised in April 2008 when the executive board unanimously accorded him lifelong membership.

His infectious sense of fun made him a natural choice as captain of golf, and he presented the prizes at most of the IWMA's golf days where he was always the highlight of the post – golf dinner.

Finished power cables by merging Power SZ with sheathing



◀ Finished power cables from Rosendahl

GETTING from single insulated conductors to a finished power cable offers a lot of advantages for the manufacturer, forcing Rosendahl to take on the challenge.

The further development of technologies and the improvement of processes led to the merger of the Power SZ stranding and the sheathing process in one line. The equipment serves the solution for low voltage cable up to 1kV with a cross section up to 240mm² of each single conductor. The perfect result of the finished power cable can be observed on the take-up reel.

Thanks to the SZ technology, where no heavy mass is in rotation, the working principle is the same as of conventional helical stranding systems. The pay-offs and take-ups stands in the line are stationary reelers, which need no special foundation. The non-rotating reeler also helps to improve the line

efficiency due to a very fast and simple reel loading and unloading cycle.

As the reel does not need to be transferred between the stranding and the sheathing process, time and space saving is guaranteed. There is also no limitation for the size of take-up that helps to get a long product length on bigger take-up reels.

The advantage of non-rotating machinery allows a very safe working area for the operators and reduces the maintenance efforts. A perfect combination for optimised manufacturing conditions: low investment and reduced operating costs guarantee an efficient production of power cables.

Rosendahl Maschinen GmbH – Austria
Email: info@rosendahlaustria.com
Website: www.rosendahlaustria.com

Condat's eye on the ball!

Congratulations to David Roughton of Condat Limited who was winner of the Chairman's Cup for IWMA members at this year's annual geekie golf tournament, and to David Geekie of Tata Steel who was winner of the Guest Shield.

This year's event was held on Wednesday, 13th June, and was again well attended, with 35 players enjoying a great day of golf at the Fairhaven Club in Lytham St Anne's,

Lancashire, UK, followed by an evening meal and entertainment at the nearby Glendower Hotel.

Fortunately, the weather remained fair after recent bad conditions and the excellent course ensured that all had a great day!

The IWMA will be announcing plans for the 2013 tournament over the coming weeks, so keep an eye on the website at www.iwma.org

Next issue

Members: Please send us editorials for free publication in the next WCN (or on the IWMA website at any time between editions of WCN).

One of the strictly members-only benefits of belonging to the IWMA is the facility to publish your company's editorials in WCN, both the hard copy and electronic versions, completely free of charge, and reach thousands of readers worldwide.

In addition to worldwide distribution WCN is freely distributed at all major industry trade fairs and IWMA technical events. The next important upcoming exhibitions are wire China 2012, 25th-28th September, and Wire & Cable India 2012, 30th October-1st November and its supporting conference on 29th October.

Members should also bear in mind that the IWMA website can accept their editorials at any time during the year.

Providing editorials for WCN and the website can help members in many ways:

- Communicating important messages worldwide
- Attracting interest from the high number of national visitors to wire China and Wire & Cable India 2012
- Creating a high profile at both events
- Advising customers of personnel changes
- Announcing major new developments
- Celebrating winning of new contracts/orders
- Staying one step ahead of the competition

Please send us your editorials (not advertisements) with supporting photos to: info@iwma.org for the spring 2013 edition

If marketing and public relations is not your area of responsibility please make sure that the relevant department/person is aware of this information. Thank you!

**Please submit editorials by
 1st November 2012**

Joining forces

HUNTSTAR Trading Ltd, overseas manufacturers' agent and cable raw material supplier with over 30 years of experience in the wire and cable industry, is pleased to announce a new co-operation with Somapla Lda of Portugal, to promote and develop the UK market for Somapla's PVC compound products.

For a similar period Somapla has been engaged in transforming PVC and thermoplastic rubber polymers into high quality, yet cost effective, filled compounds as used for insulation and sheathing materials in the cable industry.



▲ Huntstar in co-operation with Portugal's Somapla

Beside cable compounds, Somapla supplies the footwear industry and the automotive industry with compounds matching market requirements.

Somapla PVC compounds with up to 125°C rating can be used in different applications within the automotive industry, namely class T1, T2 and T3. Somapla manufactures products of guaranteed quality according to the specifications of its customers and develops tailor-made compounds in accordance with international standards.

Somapla manufactures annually around 25,000 tonnes of compound and its QM-system is certified according to ISO 9001:2008. It is a reliable partner for customers within the cable industry, plastic and rubber industry, the construction business and the automotive industry.

Huntstar also represents other European companies supplying complementary products to British and Irish manufacturers including copper conductors, special wires, zero halogen compounds, masterbatches and finished cables.

Huntstar Trading Ltd – UK
Email: info@huntstar.co.uk
Website: www.huntstar.co.uk

Showtime for the IWMA

Make the most of the IWMA member facilities on offer at this year's wire China and visit the booth at W1A44.

At the show, between 25th and 28th September, the association will again be providing its normal package of facilities for member companies at the Shanghai New International Expo Centre.

Also on hand will be Andy Lewis, the IWMA's executive manager, who will be able to provide assistance answer any questions for new potential companies.

The association will also be at the premier exhibition in India, wire and Cable India, in Mumbai between 30th October and 1st November.

IWMA bookings for that show are still being taken and interested companies should contact Mr Lewis on +44 1926 834680 or via email at info@iwma.org

IWMA new members

COMPANY	COUNTRY	WEBSITE
National Safety Product ZhengZhou Wire	China	
Saveway Isolierstoffe GmbH	Germany	www.saveway-isolierstoffe.de
Juli Sling Co Ltd	China	www.julisling.com
Vinston Machinery Co Ltd	China	www.vinstoncnc.com
Qunye Electrical Co Ltd	China	www.qunye.com.cn
Gwo-Lian Machinery Industry Co	China	www.gwolian.com
Induflex NV	Belgium	www.induflex.com
Vapormatt	UK	www.vapormatt.com
Best Machinery	Italy	www.bestmachinery.it
AlumGreen GmbH	Russia	www.alumgreen.com
Siebec GmbH	Germany	www.siebec.com
Ambrell	USA	www.ambrell.com

Dance your way to dinner in London

Friday 23rd November 2012 – Royal Garden Hotel, London, UK

It's time to get out your dancing shoes for the IWMA's annual dinner and dance at the Royal Garden Hotel, London, on Friday 23rd November.

For a long weekend in a hotel of this quality and location the new prices, again heavily subsidised, by the IWMA still represent exceptionally good value and as usual a discount is offered for early bird bookings.

A combination of factors has forced us to review prices this year. Apart from inflationary costs over four years, the introduction in 2010 of the TOMS regulation regarding hotel accommodation for this type of event means the IWMA cannot recover the VAT on this element of the package.

As a result, your booking will be confirmed according to the following:

- A VAT inclusive invoice showing the charge for dinner dance only
- A statement (replacing the usual invoice) showing the charge for accommodation including VAT that needs to

be paid to the IWMA together with the invoice charge as described above

- This statement should be retained by you and may be used in order for you to reclaim the VAT element

Early Bird Discount – the IWMA offers an early bird discount for any booking received and paid for by 31st August 2012.

The closing date for bookings is Friday, 28th September 2012. No cancellations will be accepted after this date, but substitute names will be permitted; no refunds will be made for cancellations received after 28th September.

This year the main course will be loin of pork – if you do not wish to have this, please select the vegetarian option.

We look forward to receiving your early registration for this popular event.

In the meantime, should you have any further questions, please do not hesitate to contact **Debi Coleman** at the **IWMA** on **01926 834680** or **info@iwma.org**

Extending the Jacketmaster

ZUMBACH Electronic has extended its well-proven Jacketmaster system for sector insulations and sector cable jackets with the new oscillating DVW 2 measurement device.

Straight and pre-spiralled sectors, solid and stranded, aluminium and copper can be measured and controlled.

Width, height and insulation thickness as well as diameter, ovality and jacket thickness can be measured and calculated at accuracies within a few 1/100mm.

Two highly precise DVW 2 measurement devices dynamically capture the relevant dimensions at high rates, before and after the extrusion. With an optional third measuring head at the cold end of the line, the hot-cold shrinkage can automatically be compensated.

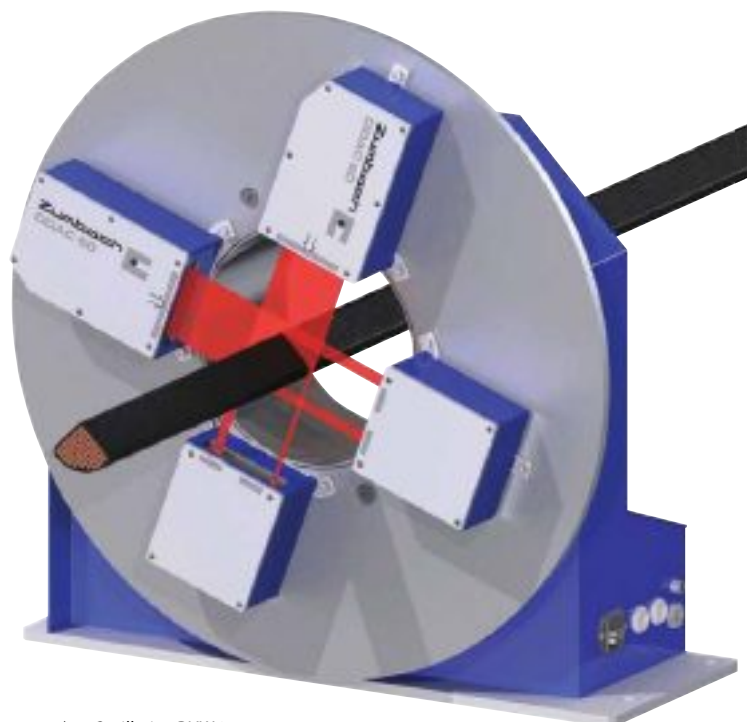
The Jacketmaster processor works with a sophisticated software. It displays the all-important data in numerical and graphical form, monitors tolerances and controls the process for optimised thickness and material consumption. It also calculates statistics and has all necessary outputs for interfacing with external networks.

Zumbach Electronic AG – Switzerland

Fax: +41 323 560 430

Email: sales@zumbach.ch

Website: www.zumbach.com



▲ Oscillating DVW 2 measurement device

Feeding, guiding and straightening you out!



▲ The new additions to the Witel-Albert range

UK agent Techna International has introduced new products from Witel-Albert GmbH, a leading European manufacturer of guiding, straightening and feeding equipment, from hand-held units to fully automated, computerised systems.

The latest addition to the range of feed/drive units is the NAK 160Z utilising feed-belts that are now being increasingly designed into feed units for the handling of cable, tube and profiled shapes.

Compared to feed rolls, belts have better friction coefficients and exert less surface pressure on the work piece such that, at given contact pressure and torque, they generate higher force whilst being gentler on the product.

Though they have a shorter service life than rolls, the belts used on the NAK 160Z have a newly developed coating, on the back of the belt, which significantly extends the service life.

Units can be used to clamp and feed process materials which have varying diameters or cross-sections, in thickness between 0.6mm and 40mm, whilst maintaining a defined, identical zero-line.

The NADH 160 is designed for round steel wire with diameters from 15mm to 40mm.

Depending on the up- and down-stream roll straightening process, feed forces may need to be

as high as 10kN, so requiring exceptionally rugged straightening equipment.

For horizontal or vertical mounting, the robust, durable construction of the NADH 160 includes hydraulic clamping of the process material and factory-installed direct-drive hydraulic actuators for the shafts of the feed rolls, so providing a very high performance density.

Process materials of a minimum curvature radius of 300mm can be inserted into the open feed throat.

The newly developed straightening modules of the AS PO system meet the increasing trend for producing and processing high-strength process materials with large diameters from 10mm to 40mm.

Straightening of such materials requires straighteners which have more than five rollers per plane and combine features such as quick closing and opening with full adjustability of all rollers to achieve the best material handling and to ensure an identical zero-line for different diameters.

The modular AS PO system provides all this whilst making it very cost effective to process wire or tube in large or small batch sizes.

Techna International Ltd – UK

Email: sales@techna.co.uk

Website: www.techna.eu

Building a presence

Assomac Machines is a New Delhi-based company that manufactures wire drawing, galvanising plants, cable machinery and other allied machinery.

The company started production of quality wire drawing machinery in 1989 and now offers its customers state-of-the-art technology.

Recently the company has won a prestigious \$1m plus order from a leading UAE company.

Assomac also took part in wire 2012 in Düsseldorf, Germany, where it exhibited the latest technological

innovations made in its plants, and the number of visitors confirmed a general upward trend of interest from across the world.

European countries are also eager to make their presence felt in the Indian market in sectors like infrastructure, automobile and to source their machinery from India itself.

Assomac Machines – India

Email: info@assomacmachines.com

Website: www.assomacmachines.com

Never deal with spent acid solution again



▲ Extend the acid life with Siebec

Galvanising, anodising, electroplating wire and rod plants, steel mills, gravures and all industries requiring acids, PRO pHx acid life extender restores spent acid and extends the acid life indefinitely.

PRO-pHx reagent chemistry drops metals, organics and impurities out of the solution which build up during the pickling, stripping, activation, passivation and cleaning processes. This frees up the remaining available acid in the solution, extending the acid life indefinitely, and decreasing the quantity of new acid necessary to maintain the desired dilution of acid to water ratio.

The only replacement acid necessary is the small amount lost during drag out, evaporation and production. Filtration is necessary, as are acid spikes.

Using PRO-pHx in your system :

- Eliminates acid dumps
- Reduces acid make up requirements
- Reduces filter cake in waste treatment
- Reduces acid requirements 70-90%
- Reduces filtered solid 50-98%.

The benefits of using PRO-pHx in acids :

- Extends acid life indefinitely
- Eliminates costly disposal methods
- Reduces make up acid
- Maintains acids at optimum effectiveness
- Requires minor capital investment (simple filtration)
- Convenient, cost effective in-house application
- No unpleasant odour when introduced into acid
- Eliminates environmental issues associated with disposal
- May result in 'small generator' classification for RCRA wastes
- Captures operating costs as profit

Siebec GmbH – Germany
Email: info@siebecgmbh.de
Website: www.siebecgmbh.de

Electrostatic powder coating machine

THE electrostatic powder coating machine model RSC of Hamburg, Germany-based Rolf Schlicht GmbH was designed for an even, finely dosable and absolutely dust free powdering of cables, wires, hoses and profiles with powders like talc, stearate, lac powder, swellable powder, etc.

By the electrostatic charging of the powder a strong adhesive and even layer on the surface is reached. The electrostatic also makes sure that no powder falls from the product outside of the dusting chamber. Depending on extrusion speed and product diameter, one to four powder guns of 100kV each are used.

In the machine there is a fluidised powder hopper out of which the powder is sucked by pneumatic venturi pumps and blown to the guns.

For an optimal adjustment of the powder quantity you can adjust the power of the electrostatic charging from 0-100kV, the powder quantity

and the speed of the dust cloud. Depending on the product the powder gun can be equipped with different powder nozzles.

In the machine there is a fully automatic and maintenance-free filter system that is cleaned off by a special process. Thanks to this filter system a strong and constant vacuum is generated in the machine, guaranteeing no escape of the powder.

If there is not enough space in the line to place the machine Schlicht can deliver a free-standing dusting chamber which is connected to the machine by hoses.

For an extremely fine powdering of slowly running products Schlicht offers a fine dosing device to make sure that only a minimal amount of powder is transported to the guns.

Rolf Schlicht GmbH – Germany
Email: info@schlicht-gmbh.com
Website: www.schlicht-gmbh.com



▲ The RSC model

“Orchid” enhanced exhibitor package for wire Southeast Asia 2013

The IWMA has released details of its “Orchid” exhibitor package for the wire Southeast Asia 2013 exhibition which will take place in Bangkok, Thailand, 17th–19th September 2013.

This 12m² enhanced shell scheme package will cost just US\$7,000.00 and provides an excellent opportunity for companies to achieve a great stand location within the IWMA block of member companies.

Returning to Thailand for the 10th edition, wire Southeast Asia is the region’s most significant trade exhibition for the wire and cable industries.

IWMA “Orchid” exhibitor package features:

- Fully carpeted booth
- Fascia board with name in black
- Square table with 3 leather chairs
- 1 power socket 5 Amp/220V plus 3 spotlights
- 1 information desk and wastepaper basket

Plus.....

- Thai/English interpreter
- Daily booth cleaning

- Overnight security for items left on IWMA stand
- Free hospitality and beverages on IWMA stand
- Free internet service on IWMA stand
- IWMA stand with additional interpreter service
- Help/local advice/practical experience from IWMA office
- No management charge for IWMA members

OPTIONAL EXTRAS

- Preferential hotel rates at conveniently situated Sheraton Grand Sukhumvit Hotel, Bangkok (subject to availability)
- Meet & greet service at airport
- Additional fittings/furniture

Alternative booth sizes are available as follows:

9m² = US\$5,320, 15m² = US\$8650,
16m² = US\$9,200, 18m² = US\$10,310
20m² = US\$11,420, 24m² = US\$13,640

A management fee of **£175** (plus UK VAT) will be made for non-members which includes one year’s free IWMA membership.

If you wish to book this exclusive package or require more information then please visit www.iwma.org or contact the office on Tel: +44 (0)1926 834680 or Email: info@iwma.org

Leading from the front

TROESTER, a leading manufacturer of complete extrusion lines for the cable industry, was delighted with the success of wire 2012 – especially from specialists at X-Compound, the new company of the group.

“The Troester GS/k 90-16D extruder with a Qu 20 head and infrared channel for manufacturing of silicone cables proved conclusively that Troester is not just a leader for CV lines and technology, but also for lines and complete systems for all ranges of cables including special applications,” said Dirk Schmidt, sales director of the cable machinery division.

The company also presented a DQu 240 F, a double cross-head for sheathing of large cables up to 220mm diameter positioned on a cross-head maintenance trolley, as well as the prototype of a variable end seal for CV lines.

Lively technical discussion was generated also by X-Compound’s exhibit, a kneader (CK) for continuous compounding of flame-retardant materials, PVC- and XLPE-compounds comprising

all processing steps such as conveying, melting, dispersing, blending and degassing.

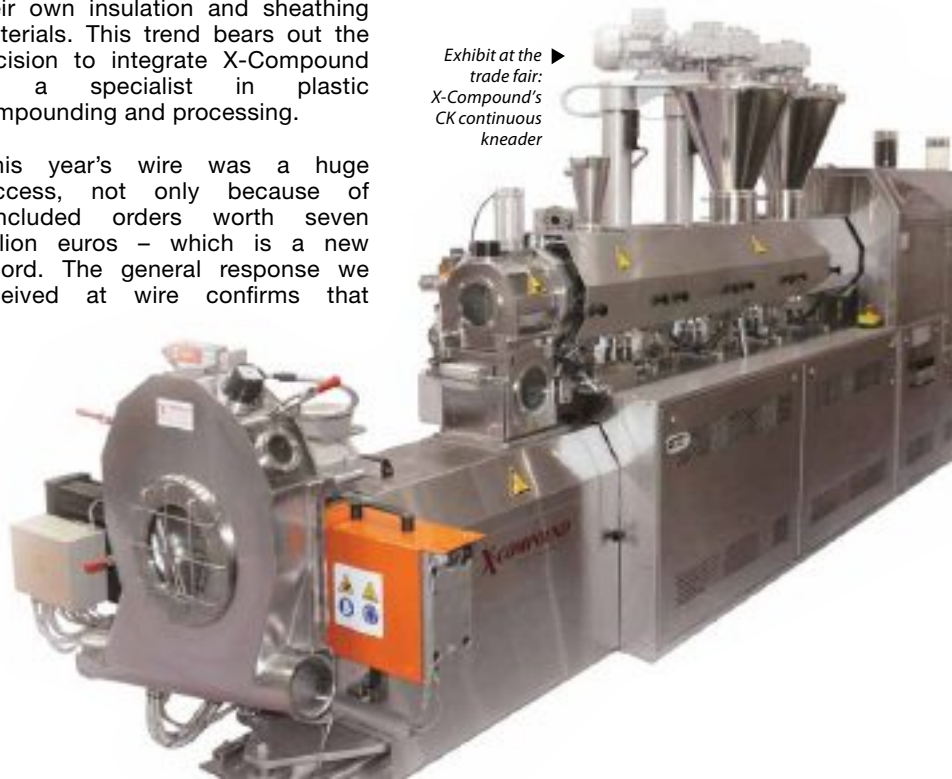
The tendency on CV lines is towards high productivity lines with high output and/or speeds, as well as long continuous production times, and cable manufacturers are increasingly starting to compound their own insulation and sheathing materials. This trend bears out the decision to integrate X-Compound as a specialist in plastic compounding and processing.

“This year’s wire was a huge success, not only because of concluded orders worth seven million euros – which is a new record. The general response we received at wire confirms that

Troester, with its products and strategic approach, as one of the market leaders,” said Raul Friedrich, general manager of the cable machinery division.

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

Exhibit at the
trade fair:
X-Compound’s
CK continuous
kneader



Latest rigid stranders from the specialists



▲ An AEI rigid strander

Associated Engineers & Industrials Ltds. (AEI), the rigid strander specialist, has 40 years of expertise in manufacturing high technology stranding machines for the production of medium, high and extra-high voltage power cables.

The company prides itself to make all machined parts in-house to control quality at all stages in true machinery manufacturing tradition.

The latest range of high-speed ASRB/E stranders is a result of the integration of top quality mechanical craftsmanship with the latest generation control systems.

The intelligent stranders incorporate features such as electronic shaft synchronisation (including during power failure), individual wire break detectors, auto regulated pneumatic bobbin brakes, motorised pintles, remote

diagnostics and fully automatic floor/trolley loading devices.

Other recent innovations include trapezoidal wire (TW) heads for the manufacture of a new generation of pre-shaped wire conductors and completely redesigned presprial sector heads for higher precision Milliken conductor for 2,500mm² x 400 kV EHV cables.

AEI's strength lies in the complete understanding of customer requirements and its ability to offer stranders with various options to suit the exact production needs.

"Seventy five per cent of our production is based on repeat orders, a testimony of our customers' satisfaction and confidence in our machines," said Mr L S Jain, managing director.

Associated Engineers & Industrials Ltd – India
Email: info@aeimachines.com
Website: www.aeimachines.com

Condat's extensive range on show

AT wire China 2012, the Condat sales team will present its extensive range of lubricants for wire drawing and cold rolling, including:

Vicafil® : the industry's most comprehensive range of wire drawing powders, wet lubricants, pastes, neat oils and greases and Stellskin®: speciality high performance drawing powders.

The increasing demands for higher productivity (including machine efficiencies, power costs and die tooling optimisation, etc) has led Condat to focus on this market, to offer a higher level of product performance and technical services and support.

By offering lubricants and products with high quality and consistency (recognised by the major producers), Condat is able to present a complete offer, including latest surface pre-coatings, designed to meet the customer's needs for both performance and meeting the environmental standards.

The Condat technical team works on how to improve the performance (reduction of die wear, reduction of soap consumption, increase of speed, optimisation of soap residual, etc), as well as minimising the environmental impact of customers' processes.

The constant evolution of worldwide environmental regulations combined with Condat's extensive experience in wet lubricants has resulted in a range being one of the most extensive in the industry. With special focus high tensile galvanised, phosphate coated or brass coated wires (for rope, staples, steelcord, saw wire, piano wires, etc).

Condat has optimised its wet draw products in terms of lubricity, biostability and ease of management. The technical team can advise on the most suitable lubricants for its customers' process, including Vicafil SL 3400, SL 3500 and SL 3600.

Condat is constantly developing and improving its formulations in order to reduce the environmental impact of

its range of wire drawing products. With over 150 years' experience in the lubrication industry, Condat is moving forward in partnership with the industry and is developing the technologies for the future.

Condat Lubricants – France
Email: info@condat.fr
Website: www.condat.fr



▲ Condat – keeping an environmental eye on the future

Profilemaster® PMM 30, PMM 50 and PMM 80



▲ Measuring unit Profilemaster® PMM 30/50/80

THE new Profilemaster® PMM 30, 50 and 80 profile and shape measurement systems are the latest models available in Zumbach's Profilemaster® family, enabling measurement systems using light section principle and machine vision.

The design was focused to achieve the best price and performance ratio for all profiles, tubes and cables made of plastic, rubber, metal, steel and other materials. Additionally, the Profilemaster® PMM 30/50/80, fulfils the demands of the market

for a compact, industrial-proof and cost-effective systems.

As a pioneer of on-line measurement committed to extensive research and development activities, Zumbach Electronic has continuously grown as one of the worldwide manufacturers of on-line measuring and control systems. Top priority at Zumbach Electronic remains customer relationships through local presence combined with proven high quality products, services, personal consultations and support.

Customer benefits:

- Increased accuracy of your end product
- Improved process control
- Scrap reduction
- Savings on raw material and post processing costs
- Increased product quality = higher customer satisfaction
- Quick and easy installation on existing production lines
- Seamless integration of the PC-based system with your network, rings, lampshades and displays.

Zumbach Electronic AG – Switzerland
Email: info@zumbach.com
Website: www.zumbach.com

Queen's award for Kiveton Park Steel

Kiveton Park Steel has been awarded the prestigious Queen's award for International Trade.

This award has been granted to the company for demonstrating "outstanding achievement in international trade over three years".

The award winners are chosen each year on advice of the Prime Minister who is advised by a committee including representatives of Government, industry and commerce, and trade unions.

In the last few years, export activities have increased rapidly with current levels representing over 60 per cent of total sales, initially to European markets but now extending into many deep sea destinations including Latin

and South America, India and the Far East.

The company is closely associated with the global automotive sector supplying quality products in supply chains leading to diesel injection, steering, engine and suspension parts and providing a full service package for a wide range of material specifications.

Kiveton Park Steel managing director, Bill Collington said: "The Queen's Awards for Enterprise are the most prestigious corporate awards that any UK business can win and we are extremely proud to be honoured with the award for international trade. We share this award with all employees, agents and distributors working together to promote our

export trade. The company is committed to continued export growth both within and beyond Europe where our key messages of: quality – the first priority and excellence in customer service, provide the foundations for sustainable supply chain business relationships."



▲ Bill Collington, one of the recipients of the Queen's Award

Kiveton Park Steel – UK
Email: webenquiries@kpsteel.co.uk
Website: www.kpsteel.co.uk

Subsea cables – a concept for long runs

THE need for renewable power generation has increased the demand for submarine power cables and the growing demand seems to continue in the foreseeable future due to several new offshore wind projects and additional grid interconnections.

Interconnections from offshore wind farms to the mainland grid often require long cable lengths. Joining shorter lengths is expensive, time consuming and represents the most critical element in the cable installation. Ideally, utilities seek to employ a continuous uninterrupted section of cable that covers the full distance. However, production or deployment constraints make this requirement difficult if not impossible to realise.

The cable manufacturer's goal is to produce the longest quality cable length without interruption, and as a result, limit the number of cable joints required over a given cable length. Specific techniques are required to ensure the highest insulation quality and cleanliness in the XLPE insulation process. Mallefer has placed much effort in this area.

Insulation cleanliness has to be guaranteed when conveying raw material from the material box into the extruder. For that purpose,

Mallefer has developed the XLPE insulation material-handling concept. It includes the Polymer Discharge Isolator PDI 50, which easily helps maintain a clean room atmosphere for the most critical connection between the material box and the material conveying line.

With the adaption of the pellet scanning system the use of screens can be avoided and thus increase a continuous insulation run remarkably without stops. The system can detect and sort out contaminants down to 50 µm before reaching the extruder.

After the material is conveyed safely into the extruder, the melt quality in the extrusion process must be secured. Mallefer has developed a new screw design, which enables runs for at least two weeks without pre-scorch. The new screw design is available for 150 to 200mm XLPE insulation extruders.

With an extrusion process modelling software, the extruder process parameters can be optimised for long runs. Melt temperature, which is the most critical parameter in XLPE insulation, is controlled online with an ultrasonic non-contact measurement device. Measurements are continuously taken from within

the extruder's crosshead adaptor and melt temperature is adjusted according to the required production length.

Extrusion melt cleanliness can be controlled on-line with the Cleanliness Scanning System CSS2. Melt is scanned after extrusion just before the crosshead. Cleanliness is controllable by bleeding the melt at production start-up as well as continuously during the production run.

For controlling the melt temperature in the crosshead Mallefer has developed its own reliable and accurate Integrated Water Tempering. IWT is a fully integrated part of the line control system. Water-cooling of the extrusion screws and the crosshead flow channels are controlled as accurately as the independent zones of the insulation extruder.

With such measures taken on an optimised Mallefer line, one can expect runs reaching up to two weeks or more, depending on the specific manufacturing conditions.

Mallefer International Oy – Finland
Email: info.finland@mallefer.net
Website: www.malleferextrusion.net

NOTA celebrates 25 years

Poland's NOTA Precision Engineering specialises in the production and regeneration of diamond dies.

Using its many years' experience in the wire and cable industry, Nota is able to expand the range of other tools from CBN (cubic boron nitride) and sable, as follows:

- Diamond and CBN wheels
- Diamond (PCD and PDC) and CBN inserts, plates, discs
- Diamond drills

The company is constantly working to improve the quality of its products through the purchase of modern machinery for the manufacture and measuring tools. By participating in trade fairs, it can also meet with customers and obtain valuable information about their needs and quality requirements.

This year the NOTA has taken part in exhibitions in Cologne, Germany (IMM); Seattle, USA (Aerospace and Defence Supplier Summit); wire Düsseldorf, Germany; Hannover Messe, Germany; and the ILSA Berlin Air Show, Germany.



▲ Some of the NOTA range available



▲ Some of the NOTA range available

NOTA Precision Engineering Company – Poland
Email: nota@nota.pl
Website: www.nota.pl

New double take up



▲ The motorised double take up from PS Costruzioni

PS Costruzioni Meccaniche has recently designed and manufactured a new machine – the Motorised Double Take Up – which is suitable for the following cables:

- Insulated flexible cables and multi wire cables from 5mm up to 35mm
- Insulated flexible cables and multi wire cables having a cross section from 4mm up to 150mm²
- Flat cables from 5mm x 2.5mm up to 35mm x 6.5mm with a cross section up to 150mm²

This machine can wind up several cable lengths, according to the cable diameter as well as the spool dimensions (for a length up to 500m or more). Maximum linear speed is up to 250m/min.

Spools range to be used with the double take up include:

- Spool flange max diameter: 1,000mm
- Spool flange min diameter: 284mm
- Spool max width: 535mm
- Spool min width: 260mm
- Spool max weight: 1,500kg

Technical features

Pintles: Two pintles are closed hydraulically whereas the other pintles are all motorised.

Reel loading/unloading system: With the pintles at a fixed height, the loading/unloading of the spool takes place by means of a steel plate (motorised platform), driven by a screw nut connected with an AC motor and an inverter.

Wire guide: A single automatic wire-guide is placed in the upper part of this unit. It is driven by a brushless motor in a digital electrical axis with the take up motor. Thanks to this system, the quality of the cable layer upon layer is excellent.

Hydraulic cutter and caterpillar: Both these units are placed on a holder wire-cable plate. As the pre-set length has been reached, the cable gets automatically cut and carried on, up to the wire-guide rolls. By doing so, the operator finds the cable ready for being hooked to a new spool.

Console and control cabinet: Containing all instruments to operate either manually or automatically; a PC colour Touch screen to easily read set parameters and a keyboard to key in. The command electrical system is made by PLC S7 controls.

PS Costruzioni Meccaniche – Italy

Email: ps@pscostruzioni.com

Website: www.pescostruzioni.com

Steel wire products

As a manufacturer and exporter of steel wire products, Anbao supplies various sizes of galvanised steel wire and strands, Galfan wire and strands, including ACSR wire and strands, overhead ground wire and message strands, message/guy/stay/span wire and strands, aluminium-clad steel wire and strands, armouring cable wire, braiding wire, etc.



The company also supplies Zinc coated flat steel armouring tape according to ASTM A459, and is also engaged in various metal wire mesh products. Anbao is ISO 9001 & 14001 certified.

Anbao will be exhibiting at wire China in hall 4, stand F21.

◀ Some of the products Anbao supplies

ANBAO produces all the wires to standards ASTM B498, ASTM B500, ASTM A475, BS EN50189, BS 4565, BS 183, IEC888, DIN48200 (Pt. III), ASTM A363, ASTM A640, ASTM A641, ASTM A111, ASTM B502, EN10270-1 and BS443.

Anbao (Qinhuangdao) Wire & Mesh Co Ltd – China

Email: anbao@anbao.com

Website: www.anbao.com

Asia sales director

BETA LaserMike has appointed Stuart Manser as sales director for the Asia region.

Mr Manser has been with Beta LaserMike since 1990, holding a number of key positions including UK and Ireland sales manager, general manager of Beta LaserMike Ltd (UK) and, most recently, as western USA district sales manager. Prior to Beta LaserMike, Mr Manser developed extensive experience in the field of metrology. He spent his early career as an engineering metrologist for Rolls-Royce Aero Engines. Mr Manser holds professional qualifications in both mechanical and production engineering.

In this new role, Stuart Manser replaces Ken Wright, president of Beta LaserMike, who has been assuming the role of sales director in Asia. Mr Manser will be responsible for overseeing the Asia-Pacific sales strategy and implementation, as well as working closely with Beta LaserMike's channel partner network to increase the company's presence and delivery of measurement and control solutions in China, Japan, Korea, and South East Asia.



▲ Ethem Erdas



▲ Stuart Manser

Western USA district sales manager

Beta LaserMike has appointed Ethem Erdas as western USA district sales manager.

In his new position, Mr Erdas will be responsible for the market penetration of Beta LaserMike's products and services with key customer accounts and target market segments. A key role will be working with channel partners to drive continued sales growth in the western USA region. This involves the delivery of the company's non-contact measurement and control solutions and services across a range of industries including wire and cable and metrology-related applications. Mr Erdas will be based in California.

Beta LaserMike – USA

Email: info@betalasermike.com

Website: www.betalasermike.com

D3 is a real first

Euroalpha is the leading manufacturer of drawing machines for non-ferrous wires with limited-slip technology, a design greatly appreciated by wire and cable manufacturers worldwide.

Encouraged by customers, and based on deep technical expertise, the company has extended its range of limited-slip drawing machines to multiwire: exclusive equipment that goes much beyond the technology of similar ones currently available on the market.

D3 is the first multiwire drawing machine ever designed with drawing capstans individually motor-driven, and available with up to 32 wires.

Additional drawing modules with capstans driven by high-precision gear transmission are incorporated in the frame for producing thinner wires.

Such design represents an unmatched solution for cutting the negative effects of the slip, more consistent on the slower capstans, and guaranteeing a rigid mechanical transmission to the faster capstans, drawing thinner sizes.

Consistent energy consumption savings, almost negligible maintenance, extreme operational flexibility (thanks to the variable elongations the same drawing machine can produce a very wide range of finished wires), reduced wire breakings, low noise level, and other important benefits of the limited-slip technology are therefore available on multiwire drawing machines as well.

Euroalpha Srl – Italy

Email: info@euroalpha.it

Website: www.euroalpha.it

▼ Technical expertise from Euroalpha



Free-arm technology

Vinston CNC's 12-axis camless CNC spring machine is equipped with free-arm technology that enables the series of spring machines to easily produce all kinds of difficult spring.

The machine is 30 per cent or more efficient than traditionally produced cam type springs.

Advance attachments such as rotary wire, spinners and the x-y free arm can be optionally attached to the machine.

Vinston Machinery Ltd – China

Email: info@vinstoncnc.com

Website: www.vinstoncnc.com

Sign of success at wire 2012

There were many reasons for the International Wire and Machinery Association to celebrate at the wire 2012 exhibition held during March in Düsseldorf, Germany.

Visitors flocked to the association's new-look booth where a large number of new memberships were signed and over 70 enquiries taken by the UK-based association.

Existing members, both exhibiting and visiting, were able to take advantage of the hospitality services on offer on the stand, as well as the interpreter and business facilities, such as a meeting room and a complete work station with internet access.

The IWMA, with the benefit of our new improved booth presentation, enjoyed the best ever exhibition for both the number of enquiries and the signing-up of new members. Now for 2014!

More than 260 guests enjoyed the dinner, preceded by the formalities of a number of presentations, made by association chairman Steve Rika and president Colin Dawson. Dr. Ing. Horst Scheid, from Siebe Engineering, Germany, collected the association's non-ferrous award; while the ferrous award was

shared between Mr Ruediger Lux, from Ilmenau University, Germany, and Dr Veroniker Geinitz, also of Ilmenau University.

The IWMA also made a presentation to Hannelore Zander, from Messe Düsseldorf, for her tireless work assisting the association and its members over many years.

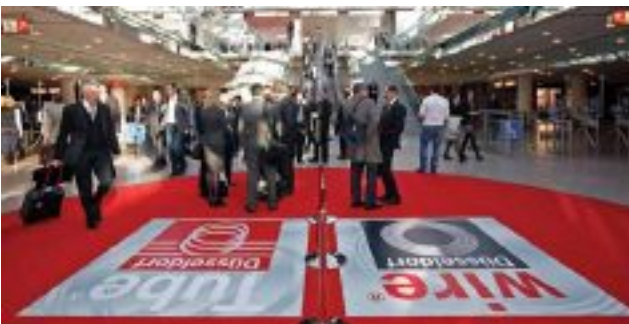
The biennial travel awards, funded by the IWMA's Educational Trust Fund and named after the Association's founder and secretary general John Hogg, were presented to the recipients at a ceremony held on the IWMA Booth during wire Düsseldorf 2012.

Joachim Schaefer and Friedrich Kehrer, both of Messe Düsseldorf GmbH, wire 2012 organisers, joined Mr Rika and Mr Dawson in making the Travel Award presentations on Wednesday at the IWMA booth to Stephen Longville, of Cimteq Ltd; Ms Xing Xiao Zhang, of No.23 Research Institute, CETC; Benjamin Turner, of Wintwire; MS Abu Bakar, of Metalube; Don Teng, of Ugear Automatic Machinery; Erica Gateley, of Bridon International; Kamalakannan Elangovan, of Innovites BV; Lijuan Ma, of Anbao (Qinhuangdao) Wire & Mesh Co Ltd; William Thomas Binnie, of Kiveton Park Steel; Chuan Chuan Zheng; of Sinosteel, and

Booming Düsseldorf

By Colin Dawson, president of the IWMA

I HAVE witnessed the incredible expansion of the European International Wire Exhibition with great pleasure. I participated in the very first Wire Exhibition in the Olympia Halls in London and have exhibited in every one since.



▲ Visitors heading to this year's wire 2012

My company was a founder member of the IWMA, so I have been keenly interested in the association, which has become the largest wire association in the world for over 40 years.

wire 2012 took the industry to new heights, with the greatest number of exhibitors and floor space ever.



▲ The new look IWMA booth

The organisation of the Messe Düsseldorf team continues to enhance the facilities of the fair ground to meet every exhibitor's wishes.

The close co-operation between the IWMA and the Messe directorate has led to an excellent understanding of the needs of exhibitors and visitors.



▲ Dr.-Ing. Horst Scheid of Siebe Engineering GmbH receiving the non-ferrous award from Colin Dawson, right

It gave me great pleasure to present the prizes for the best technical papers given at the CabWire World Conference in Düsseldorf last November. From the wide range of papers, the prize for the ferrous subjects was awarded to Dr Veroniker Geinitz and Mr Ruediger Lux from the Ilmenau Technical University for their paper on “The Manufacture of Highly Loaded Springs Through the Optimisation of Tempering”.

Dr.Ing. Horst Scheid of Siebe Engineering GmbH was awarded the non-ferrous prize for his paper on a device for the interpretation of colours in multi-core cables which are not always recognised by the human eye.



▲ Colin Dawson, IWMA president; Steve Rika, chairman; Joachim Schaefer and Friedrich Kehrer, both of Messe Düsseldorf, are pictured with winners of the IWMA Educational Trust John C Hogg Travel award, on the association's stand at wire 2012

The IWMA has an Educational Trust Fund for the training and further education of up to \$24,000 for those employed in the wire industry. I was pleased to announce that Professor Emmanuel De Moor of the Colorado School of Mines was nearing the end of the two-year award and had presented a paper on his

research of Boron Alloying of High Carbon Wire at the CabWire Conference.

This year a new award has been granted to Ben Turner of Wintwire Ltd to fund his study for an MBA.

From my conversations with many exhibitors, in spite of the current global economic climate, the quality of visitors attending the exhibition was high.

Whitelegg Machines Ltd, UK, added: “The visitors came in batches – sometimes it was very quiet and other times there were too many at once but in general we received a good number of enquiries for all branches of our production programme.”



▲ Dr Veroniker Geinitz and Mr Ruediger Lux from the Ilmenau Technical University with their award for their paper on “The Manufacture of Highly Loaded Springs Through the Optimisation of Tempering”

Spring Tooling Ltd, also from the UK commented: “A satisfactory exhibition. This year at the exhibition, the manufacturers of spring machines advised us of their increasing demand for tooling due to their greatly growing order books. We also opened several new accounts for tooling.”

Steve Mepsted, managing director of PWM, said: “This year’s show proved extremely successful for us. Visitor traffic was excellent and visitor quality impressive. We received numerous solid sales leads, particularly from Middle East manufacturers. Our large rod welders generated a lot of interest: The sale of the P1000 rod welder exhibited on the stand is under negotiation with a manufacturer in the automotive sector, and the EP500 rod welder was sold to a Czech company.

“We also sold the portable HP100 air/hydraulic cold welder direct from the stand. The mood amongst existing and potential customers appeared positive and buoyant throughout, and the turnout certainly exceeded our expectations.”

UK-based Locton Ltd said: “We had an excellent exhibition with a number of very important large companies placing their first orders for wire pull-in dogs. Many existing clients also visited our stand.”

RTM X32 – a range of wire tension measuring solutions



▲ The RTM X32 system from FMS

THE importance of tension control becomes significant in any wire, cable, or rope making process. Because production efficiency and quality significantly influences your commercial success, a comprehensive solution for your stranding machinery must be considered if available.

FMS Force Measuring Systems expands its tension monitoring programme to include three new multi-channel systems.

The Radio Based RTM X32 System: You have everything under control – the safe way. Designed as a flexible multi-channel system, RTM X32 is primarily suitable for cage or tubular stranding machines with up to 42 pay-off stations.

The RTM X32 series utilises force sensors to measure the tension of individual wires or strands, and transmits this data wirelessly from the rotating to the static part of the machine.

On the receiver side, the tension values can be output as a standard signal to an existing PLC for monitoring or controlling the relevant production parameters.

When connected to a PC the RTM X32 system also offers a number of evaluation options:

- Graphical or numeric display of tension data
- Storage or printing of production protocols
- Trigger of alarms if tension limits are exceeded
- Detection of cable/wire breakage
- System configuration and parameter setting over a web interface

The RTM X32 offers a sophisticated range of interface options to integrate it quickly into the existing communication and control infrastructure of the machine. The system is fully accessible via your controller from a central location.

RTM X32 offers both the machine builder and the machine user a basis for efficient cost and quality management.

FMS Force Measuring Systems AG – Switzerland

Email: info@fms-technology.com

Website: www.fms-technology.com

New European sales manager

High-performance lubricant specialist Metalube has expanded its sales team with the appointment of David Cole as sales manager. He brings to the company over 20 years of experience within the tube and wire drawing lubricants industry and is responsible for Metalube's European sales.

Commenting on the appointment, Douglas Hunt, commercial director, said: "David will be a valuable addition to our team. Metalube is growing fast and high calibre specialists like David will help us to achieve our ambitious goals. David brings with him a wealth of knowledge and expertise and I am delighted to welcome him on-board."

Metalube continues to buck worldwide economic trends by enjoying significant growth. The company specialises in tube and wire drawing lubricants, protective greases for overhead conductors and metal cutting fluids.

Lubricool™, Alumo™, Tubol™, OCG™ and Metacut™ are the high-performance industrial oils and greases for which it is renowned. Over 20 per cent of Metalube's workforce is dedicated to science, ensuring technical excellence and innovation across its products and services.

Metalube Ltd – UK

Email: info@metalube.co.uk

Website: www.metalube.co.uk



▲ David Cole

Dallas Wire Expo proves excellent showcase for PWM

Wire Expo in Dallas proved a successful showcase for PWM's range of high-performance manual cold pressure welders which were exhibited by Joe Snee Associates, recently appointed as PWM's exclusive distributor for US and Canada.

The range included hand-held, bench and trolley-mounted cold welders. PWM's M10, M25 and M30 hand-held models, for wire sizes 0.10mm to 1.8mm (0.0039" to 0.071"), are ideal for welding wire breaks in confined spaces. The larger BM10 and BM30 welders, for use on a workbench, are durable, low maintenance machines with capacities ranging from 0.10mm to 1.8mm (0.0039" to 0.071") copper/aluminium.

The versatile M101, for wire sizes 1.00mm to 3.6mm (.040" to .141") copper and 1mm to 5mm (0.040" to

0.197") aluminium, can be used on a workbench or supplied with a trolley.

Commenting on the show, Joe Snee, president of Joe Snee Associates, said: "Traffic at the Dallas Wire Expo was up compared with other recent Expo shows as was customer interest.

"The show provided an excellent opportunity to meet with existing customers and introduce new prospects to PWM's cold welders. Several visitors came specifically to see the PWM line, including a customer looking to upgrade his existing welders.

"The M101 manual welder on display proved popular with customers and prospects who appreciated its ease of operation. A number of customers and prospects also expressed interest in PWM'S EP500 rod welder

and are intending to send samples for weld trials."



▲ The M101 manual cold welder

PWM Ltd – UK

Email: pwm@btinternet.com

Website: www.coldpressurewelding.com

**Still No. 1...
...For 10 Years!**



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and cable industry

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www.wirefirst.com






Heading to China...

THE busy preparations for the upcoming wire China 2012 in Shanghai, China, are underway.

From 25th-28th September, Maillefer will deploy its familiar stand at location W1F62. The multinational company is eager to share its new developments and improvements with partners and friends at this key industry event.

Maillefer will present its portfolio of extrusion systems for energy cable, fibre optic cable, and telecom cable manufacturing systems.

In XLPE insulated cables up to 500kV, new technology and innovations for higher productivity, longer production runs and improved quality in the manufacturing process, and super clean insulation material handling will be presented at the show.

For rubber-insulated cables up to 110kV, there are new innovations in Supersteam technology with higher productivity, improved flexibility and top quality in the manufacturing process. A multi-function line with capability for up to five different processes will be featured.

Today's cable manufacturer has high expectations in terms of environmental safety and high productivity from an LV insulation line. The newly developed talcum-free technology has been introduced into the high-speed building wire line, automotive wire line and fibre optic coating line.

Improved cooling is a key feature of the latest MXC extruders. The processing window is ever larger, thanks to third generation axial air-cooling. The cooling capacity has grown by over 50 per cent in order to process materials like EDPM and EPR, areas otherwise covered by liquid cooled machines. Improved cooling also helps to process other melt temperature sensitive materials like HFFR, as well as new screw designs for higher outputs. The MXC developments are available on the company's principal machines.

Coax and LAN cable manufacturing responds to higher performance demands. Processing capabilities for RF and leakage cable have been improved for foaming degrees of up to 85 per cent. The programme for

fluoropolymer LAN cable production has expanded to include large diameter wires used, for example, in the oil industry. The equipment supports the latest fluoropolymer compounds for both solid and foamed products.

Maillefer provides high-end manufacturing solutions for every stage of the fibre optic cable process. Tight buffering, secondary coating, SZ stranding and jacketing lines are available for producing different cables including the FTTx cable with low fibre counts and short lengths. Technology like the compression caterpillar with tension feedback serves to keep accurate control of excess fibre length.

The company maintains a long tradition of offering complete extrusion systems for energy cable, fibre optic cable, telecom cable and tube manufacturing systems within China.

Maillefer SA – Switzerland
Email: info@maillefer.net
Website: www.mailleferextrusion.com

Green and very, very strong

Percon®28 is the world's first and only copper alloy conductor to exceed ASTM B624 strength requirements without compromising performance, and it's green.



▲ Percon®28 – exceeding the requirements

An ideal high strength alloy provides increased tensile strength without any reduction in conductivity. Hence, the aim for Percon® 28 was to develop an alloy which maintains the required minimum 85 per cent IACS electrical conductivity but raises the tensile strength as far as possible.

A further goal was for the alloy to be cast and processed via standard

technology to assure an economical product that is also environmentally friendly.

Percon 28 is based on the copper-chromium system. As such, it is also a precipitation hardenable alloy. The alloy chemistry is engineered to provide the optimum combination of tensile strength and electrical conductivity while providing high softening resistance.

Percon 28, the latest conductor alloy developed by Fisk, is characterised by the following attributes:

- Engineered for strength, having a minimum tensile strength 33 per cent greater than ASTM B 624 requirement
- Has low electrical resistance, very high break strength and exceptional flex life
- Saves weight through reduction in conductor gauge size
- 'Green' and RoHS compliant being free of cadmium or other hazardous elements

- Excellent resistance to thermal softening enabling the conductor to be insulated with fluoropolymers and used at high temperatures
- Excellent resistance to corrosive environments exhibiting the nobility inherent to all high copper alloys
- Available bare, silver or nickel plated and in lightweight constructions.

Percon 28 is suitable for applications in aerospace, automotive, medical, electronics, and other applications where high electrical conductivity, high strength and flex life are key requirements. The high strength and high flex life of the alloy may be used to either improve performance where the existing alloys are found wanting or save weight by reducing the conductor gauge size while maintaining a high breaking load.

Fisk Alloy Inc – USA
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SKET Central Stranders – three generations



▲ The MK2 from SKET

SKET Central Stranders have significantly changed modern stranding technology. Maximum cage rotational speeds of 500rpm and linear stranding speeds of up to 180m/min are reached in practical application.

In the manufacture of overhead lines of all types and copper and aluminium wire conductors (round, sector shaped, compacted and non-compacted, straight and pre-spiralled) with cross-sections up to 1,200mm² or more, the central strander has proven successful over a period of more than ten years. More than 150 stranding units are in operation worldwide.

The market responsibility resulting from this success has led to the engineers and fitters at SKET being involved in a continuous process of optimisation of machine detail and in a programme of further development, which has been in clearly defined stages.

SKET can differentiate between three distinct machine generations.

The basic version of the machine uses entirely mechanical solutions for the functioning of the stranding rotor. Customers have judged this basic design to be of significant advantage and it is also a factor in the reliability and low maintenance characteristics of the machine.

This version remains the one most favoured by the marketplace and is a perfectly good solution for the majority of applications. As is the case with the following two generations, it is designed to provide optimum feed of the stranding stock direct from wire containers making use of a further advantage relating to stranding with

a central strander: bobbin winding, bobbin transport and loading and unloading of bobbins are all done away with.

A second generation made possible the use of the machine together with smaller diameters of copper wire, whilst maintaining the same bobbin pay-off capacity (700kg of copper wire), for example as a screening machine. An adjustable pneumatically operating system operates in conjunction with the well tried and tested mechanically operating friction clutches which control the centrally mounted bobbins.

This system makes possible the starting up of fully loaded bobbins and the maintenance of stretch free tension in the wire with small diameters of soft copper wire (approx. 1.4mm).

Using the same principle, machines (type MKZ 250, with bobbins designed for 550kg aluminium wire) have also been used successfully in conjunction with larger bobbin volumes of thicker aluminium wires.

The development of the third generation was brought about by the extreme requirements related to the tolerances imposed on the conductive values related to finished conductors. With copper prices rising, the exact maintenance of a minimum cross-sectional area became an important cost factor.

For the stranding process, this means that the requirement is for constant tension in each wire irrespective of how much wire is on the bobbin and in all stranding conditions (starting up, stationary running, slowing down).

All tension control solutions using mechanical friction are subject to fluctuating friction values. An electro motor generated coupling torque is much more exact and energy efficient and enables the wire tension to be similarly exactly set and maintained at a constant level.

The centrally located bobbins in machines of the third generation are mounted on coaxially arranged special motors. The motors work on the modern 'torque motor' principle and their torque or speed can be set via an intelligent power converter to guarantee constant tension during the stranding process (using a process patented by SKET). Furthermore, the energy used in the coupling process can be fed back into the mains supply using a suitable control circuit.

This solution has one further significant advantage: the motors used in conjunction with the centrally located bobbins work in four-quadrant mode. They are able to provide the direct drive function to the central bobbins as they are filled with wire. A fill factor controlled motor speed maintains the linear speed at a constant level. The friction wheel system previously required for the winding operation is completely eliminated; only the system for the cylindrical traversing of the wires during the winding operation remains.

Machines of the third generation also differ from their predecessors in their external appearance.

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A complete package of copper tapes

Induflex NV, located in Gent, Belgium, offers an extensive range of EMI shielding tapes and multilayer tapes for the cable manufacturing industry. Since becoming a privately owned company in 2008, Induflex has continued to concentrate on its core range of laminated foils and slitted tapes.

All manufacturing, from laminating of foils to slitting and spooling of tapes, is done in-house at the facility in Gent, assuring the highest levels of quality and traceability to customers. A renewal of the ISO9001 accreditation was recently achieved.

A key product offered for fire barrier applications and medium power

cable designs is the LG5000 series of copper/copolymer products. LG5000 products provide an excellent barrier against moisture and vapour. The copolymer coating bonds to copper, to itself and to most types of polyethylene jacket resins. These tapes can be supplied with 100µm, 150µm and 200µm copper foil with the copolymer applied directly to the copper surface for maximum performance in use. Tape width varies by customer application, with maximum capability at 260mm net.

A number of new projects have been built into the LG5000 range this year and further extensions to

this product range are actively being worked on at Induflex.

The Induflex sales team was strengthened this year by the appointment of Fadmyr Kulejmani as area sales manager. Fadmyr's mission is to ensure Induflex provides a superior customer experience. In addition to its recognised product quality, Induflex continues to enhance its product portfolio and service levels, particularly reducing the lead-times on key copper tapes such as Cu20/PET23.

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Uhing® Magnetic Clip supplements product range of tensioning and clamping elements

JOACHIM UHING KG GmbH & Co, internationally known for the rolling ring drive invented by the company founder, has expanded its product range. The Magnet Clip, a magnetic core moulded in plastic, was launched in May 2012. It adds to the series of tensioning and clamping elements Uhing developed for application on plain shafts.

"In our company, we often refer to our new clamping system as the 'quick sibling' of our tried and tested U-Clip," explained Wolfgang Weber, Uhing's managing director.

The new product offered by the company, based in Schleswig-Holstein, is used to fasten spools, rollers, cover parts, etc on steel shafts or steel pins. It is a synonym for highly convenient working with plain shafts because it ensures a secure seat and prevents slipping off the shaft.

As can be expected from Uhing products, the Magnet Clip is also very user friendly. Even the Uhing® U-Clip that fastens with only a few twists impresses by particularly easy handling: pushed against the part to secure like a sleeve, it engages on the shaft with a clamping disc and develops high retaining forces. To remove it from the shaft, simply pull it off at the clamping disc.

Mounting the Magnet Clip is even more convenient: push it over the face of a shaft on which to fasten an element. As soon as it is close to the shaft, it snaps into the right position almost automatically and secures the spool or reel. When no longer needed, you can quickly remove it from the shaft with a short, powerful movement of your hand.

How does fastening occur? Choose the length of the free shaft journal so that contact with the spool or roller as well as a certain retaining force is ensured. When elements of different width need to be fastened, the length of the shaft journal must match the widest of the elements to fasten. The distance between Magnet Clip and shaft face can be adapted to less wide reels with tubular spacers.

The retaining force is relative to the distance between Magnet Clip and the shaft face. For a shaft of 20mm diameter, the retaining force ranges between 70N at a distance of 0mm and 20N at a distance of 5mm. For a shaft of 10mm diameter, the retaining force ranges between 40N at a distance of 0mm and 5N at a distance of 3.5mm.

Uhing offers the Magnet Clip in several models for different shaft diameters. At the time of market entry, the standard Clip is available for shaft

diameters of 10, 12, 15, 16 and 20mm. Other dimensions are to follow and bespoke measurements can also be manufactured.

Uhing® Magnet Clip is used with untempered or tempered shafts of fit tolerance h11. The Clip also allows for larger shaft tolerances and is fully rotationally symmetrical.

"Uhing Magnet Clip fastens many things – from label reels, rollers and spools up to food industry products.



▲ The Magnetic Clip from Uhing

"The closed design of the Magnetic Clip makes it easy to clean, a major benefit for foodstuff applications," added Wolfgang Weber.

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Springing into online help



▲ *IST spring material selector*

THE Institute of Spring Technology (IST) has been working on updating its Material Selector software, which was originally developed in co-operation with the European Spring Federation (ESF), to provide an online database of spring materials.

The website – springmaterials.com – was launched in May this year following demonstrations earlier in the year at Mach 2012 and wire 2012 exhibitions. The site incorporates a material selector feature, automatically providing a list

of candidate materials from a specific set of application parameters, allowing the user to search for materials matching any of the following criteria:

- Spring type
- Material type
- Operating temperature
- Operating environment
- Design life
- Chemical composition

Full details of a chosen material are displayed, including mechanical and physical properties, tensile strengths, chemical composition, supplier details (for both the material and suitable coatings) and equivalent specifications from other national standards and commercial material grades.

In addition, guidance is offered on heat treatment and corrosion resistance, and typical relaxation and fatigue prediction diagrams are available for most materials. PDF ‘information sheets’ can be printed from the system.

Materials currently contained in the database include international specifications – AFNOR, AS, ASTM, BS, DIN, EN, IS, ISO and JIS – as well as proprietary materials. The database is regularly updated, and data from other standards will be included in these updates.

The IST is offering a two-week free trial of the database to IWMA members; go to the website and register, and enter IWMAAUG as the Voucher Code when prompted.

IST is the UK-based International Independent Centre of Excellence for Spring Technology which offers all companies involved in the spring industry supply chain a wide range of specialist technical services, research and development, training, consultancy and testing from its UKAS/NQA accredited technical centre, with ISO 17025 and ISO 9001 approvals.

Institute of Spring Technology – UK
Email: ist@ist.org.uk
Website: www.ist.org.uk

World’s largest fluidbed furnace

QED Wire Lines has commissioned the world’s largest fluidbed furnace built for continuous annealing of steel wire.

The FastHeat fluidbed was supplied to OneSteel’s Geelong plant in Australia to demanding technical, environmental and safety standards.

The furnace is designed for very high wire speeds and incorporates the latest combustion and control system technology.



▲ *The world’s largest fluidbed furnace installed at the plant in Geelong, Australia*

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Cimteq hires new technical support manager

Cimteq, the provider of the cable design and quotation software, has hired Garry Miller to lead the expansion of its technical support team.

Garry had previously worked for the Lloyds Banking Group. He has over ten years’ experience supporting various platforms and the knowledge and experience he brings will be invaluable in helping Cimteq provide world class service to its ever expanding customer base.

Ali Shehab, the CEO of Cimteq, said: “We are proud of the support we give to our customers because our team takes care of truly understanding the customer and their needs. Growing our support team helps us ensure that we continue to do this as our business grows.”

Cimteq’s support is unique in the industry. Unlike other software, support from Cimteq is very personal.

It is designed to take the hassle out of running a sophisticated system and the aim is to allow users to concentrate on what they do best, that is, allow design engineers to design innovative products and salesmen to give the best service to their customers.

Ali Shehab added: “We are looking for Garry to help us streamline our support process, which translates to better response time, better software quality and more feature developments that truly make a difference to our customers’ business.”

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Extended quality control of cable insulation by colour measurement during extrusion

By Dr.Ing. Horst Scheid, Siebe Engineering, Germany

Abstract

In order to get better quality information during extrusion of colour coded cable insulation, Siebe developed a new system that can detect colour faults even with small product geometry and fast running lines. The accuracy has been tested to be same or even better than the human eye and reproducible results have been measured with single colours as well as with stripe coded cable types for automotive applications.

Introduction

In today's cable production, it is common standard and state-of-the-art in automotive wire production to use automatic colour changing systems and automatic colour batch dosing systems on extrusion lines. On such production lines for automotive wires a huge number of combinations of main and stripe colour is used and can be preset within the line control menu.

For quality control, concentricity, diameter, capacitance and spark faults are constantly measured and protocolled. Readings can automatically influence and correct the extrusion parameters. But the correctness of cable colours is still left to the imagination and skill of the line operator, to recognise the correct colours in accordance with relevant standards and auditing procedures.

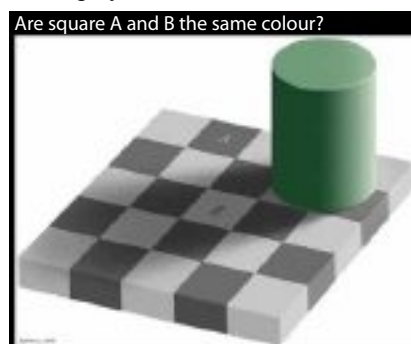
The proper colour is checked either visually inline or after the completion of a drum by inspection of the top

layer. Start and end of the colour changing process is normally not monitored during running production. The scrap length is set by means of empirical values under consideration of a safety value which is longer than actually necessary.

It is therefore obvious that wrong colours cost valuable production time and material scrap. The logical consequence of these considerations is the need of some automatic inline colour measurement.

Colour metrics

For a better understanding of colour measurements, it is useful to define first some basics of colour perception and colour metrics. Just to demonstrate the difficulties in interpretation 'colour' by human eyes. Picture 1 shows two squares, A and B. Everyone classifies A to be darker than B, but indeed they have both the same grey value.



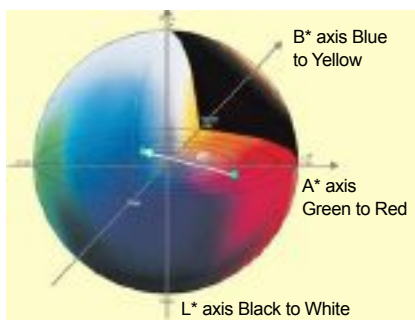
▲ Picture 1: Optical Illusion. Square A and B have the same grey value, but they are interpreted by human eye as different because of differences in their nearest neighbourhood^[1]

This (like many other optical illusions) explains why objective colour specification by human eyes is nearly impossible.

To describe colour in physical terms, the base is a part of the electromagnetic spectrum that has wavelengths from 350 to 800nm and will be recognised by human eyes as 'colour' (in ascending order violet-indigo-blue-green-yellow-orange-red). A better physiological representation is the so-called colour wheel (or colour circle), where different circular sectors are filled with different colours. Colours in opposite sectors are designated as complimentary, that leads to the well-known RGB model: With the three basic colours Red, Green and Blue, all other colours can be created by suitable mixing. Mixing complimentary colours 1:1 results in a neutral grey or white (additive RGB-mixing). This model is very common for camera or monitor applications, but it is a pure mathematical description without any feeling for human colour perception. In 1927, the German 'Reich-Ausschuß für Lieferbedingungen' (an organisation for quality assurance) arranged a colour chart, which should serve as reference for coloured parts. That table is nowadays still very common in industry as 'RAL Palette classic/design/effect'^[2]. This does not include the complete continuum of colour variations and so it is not suitable for an automated system.

In 1931 the 'Commission Internationale de l'Eclairage' (CIE, an international organisation concerned with light and colour) proposed a method for a numerical expression of colours including weight factors in order to fit a certain visual colour differentiation in human perception to the same geometrical distance in the colour space. This attempt was revised in 1976 and is known as the L*a*b* model (also named CIE-Lab model)^[3].

The colour space is based on a colour wheel with the main axis Red-Green (a* axis) and Blue-Yellow (b* axis) with different scalings. The outer rim defines the hue, while saturation decreases to neutral grey at the centre. Perpendicular to the centre is the lightness (or luminance) from absolute black to pure white (L* axis). The result is a sphere, where every visible colour is represented by three coordinates (L,a,b, picture 2). (Exactly defined is CIE-Lab only for reflected colours. In case of lamps, monitors or other light sources there exists a modified description named CIE-Luv.)



▲ Picture 2: L*a*b* space with two colour positions (red and blue) with the resulting difference vector dE

Having two different colours in the Lab sphere, the geometrical length dE (or Delta-E, ΔE) of the vector between both coordinates corresponds to the visual colour deviation:

$$\Delta E_{L^*a^*b^*} = \sqrt{(\Delta L^*)^2 + (\Delta a^*)^2 + (\Delta b^*)^2}$$

▲ eq. (1)

The smaller ΔE, the less is the visible difference between these colours. According to the special scaling of the model, the perceived and calculated deviation is same and

independent of position within the sphere. Or in other words: the Lab model is a mathematical description of colour differences interpreted by human eye that is all the same whatever colour is compared.

Type	Male %	Female %
Protanopia	1	0.02
Deutanopia	1.1	0.01
Tritanopia	0.002	0.001
Cone monochromastism	~0	~0
Rod monochromastism	0.003	0.002
Protanomaly	1	0.02
Deuteranomaly	4.9	0.38
Tritanomaly	~0	~0
Totals	8	0.4

▲ Table 1: Statistical colour blindness among industrial nations population, separated between male and female

Statistical tests based on CIE-Lab showed, that ΔE values greater than 10 are noticed by humans as a significant colour deviation, many people can differentiate colours down to ΔE≈4. Only very few people with well trained eyes can see differences between 2 ≤ ΔE ≤ 4. Below ΔE≈2, the eyes' receptors resolve only one single colour. An additional problem is (partial) colour blindness. Table 1 is taken from studies among industrial nations' population groups (e.g.^[4]) and shows that around five per cent of men have green-weakness (Deuteranomaly), so they are poor at discriminating small differences in hues. Only objective automatic colour control can avoid faults caused by that.

Technical requirements and problems caused by wire geometry and processing

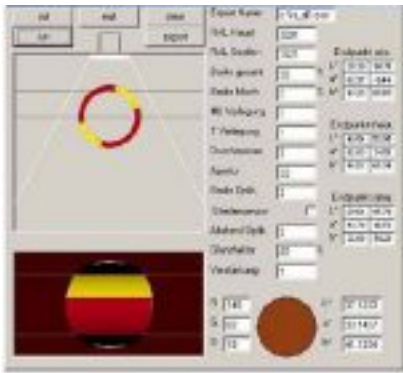
Colour measurement on the base of CIE-Lab is today state-of-the-art in the paint industry or graphic art applications, with tolerance values of sometimes ΔE < 1. Conditions for such exact measurements are plane objects, a scan spot with a diameter of some 5-10 mm and a sampling time in the order of 100ms on a motionless object – but all these conditions are definitely not given at an extrusion line. That's why an inline measurement

has to consider the following points:

- With a very short sampling time an averaging over a certain number of single shots eliminates local deviations. This is justifiable, as colour changes in extrusion have a relatively long transition time caused by mixing effects in the barrel
- Object movement (jitter) has to be minimised at the sensor position. This is important for the object-sensor distance d_s (illumination reduces with d_s²) as well as for transversal movement, where the object is leaving the scan spot partially or completely.
- The wire geometry is detected as a side view on a cylinder surface. This results in a colour variation from the cylinder centre view towards the cylinder border. This effect is additionally influenced by the surface roughness. As both conditions cannot be changed, the final colour value cannot be interpreted as an absolute measurement but as relative measurement with high reproducibility.

Normally one line runs different conductor/insulation diameters. The device should be able to work with various geometries (over a certain range) without mechanical preparation or sensor recalibration.

One more challenge is the measurement in a production of colour-coded wires (one or two stripes). As the final colour establishes after the cooling down of the polymer, sampling has to be done behind the cooling trough. Caused by redirecting wheels and the product itself (particularly stranded conductor), the wire can turn around the longitudinal axis in an irregular way. Therefore the sensor detects sometimes the main colour, sometimes the stripe colour, or both at the same time in the scan field. Picture 3 gives an impression of the sensor's view on a two-coloured wire. With sophisticated mechanics the wire turning can be changed to be more regular and used for main and stripe colour detection with only one sensor.



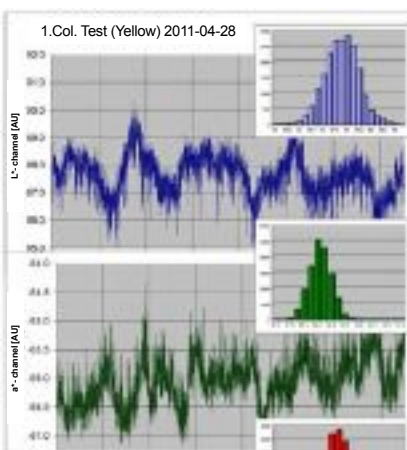
▲ Picture 3: Simulated 2-coloured wire in the scan field. The upper part is a view into the longitudinal direction with the sensor at the top and its aperture indicated as a cone. The lower part shows the sensor's camera view' at a coincidental time (with the average colour values at the right side).

Typical applications and inline measurement test results

Different production setups have been tested to cover most typical applications:

Diameter	Line speed	Single / dual colour	Test parameter focus
2-6mm	<500 m/min	single colour	Colour deviation $dE \leq 3-4$
2-2.5mm	<500 m/min	dual colour	Separation main/stripe colour
1.5-2mm	>500 m/min	dual colour	Colour change and stripe missing
1.5-2mm	>500 m/min	dual colour	Stripe to main ratio

▲ Table 2: Testing with different wire types under various quality criteria



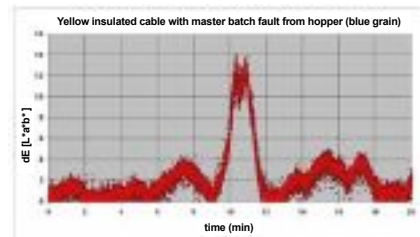
▲ Picture 4: L*-/ a*-/ b*-channel of a yellow cable during 15 minutes. Small plots are the corresponding histograms for each channel. FWHM of the histogram plots is $L^* \approx 2$, $a^* \approx 1.25$, $b^* \approx 1.5$

The first test with single colour wires was to verify the aim of a resolution of at least $\Delta E \approx 3$, so the

result would be same or better than checking by human eye. Picture 4 shows a detailed yt-plot from a measurement period of 15 minutes for all 3 L*a*b* coordinates of a yellow wire. The histogram maxima (88 / -66 / 39.25) correspond very well to the average values (87.62 / -66.04 / 39.10) that have been used to calculate ΔE according equation (1). Due to the above-mentioned jitter and surface variations, FWHM value of the luminance channel L* is higher than that of the pure colour channels a* and b*. The histogram of all ΔE values in picture 5 depicts a maximum of around 0.75 (average value 0.89) and is a proof that the system has a resolution of minimum $\Delta E=1$. No values higher than 3 are recorded, so a threshold could be set to values of 5-7 for colour fault alarm.

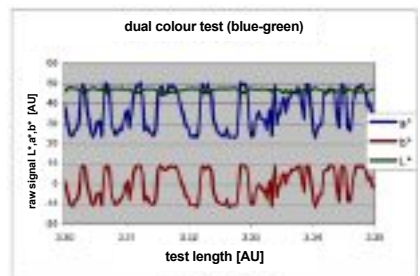
By putting one grain of blue masterbatch into the feeding of the screw, ΔE was increasing significant to values ≥ 10 (middle of picture 6) for 1-2 minutes. The smaller increase

the scan field is variable. Picture 7 shows the raw L*a*b* plot of a wire with main blue and green stripe. As the longitudinal wire rotation speed changes, the residence time of one colour under the sensor position cannot be predicted. A 'turn mechanism' was used to make the rotation more regular and to ensure that both colours come into the scan field within a time period shorter than the alarm time.



▲ Picture 6: Forced colour fault by putting blue masterbatch into the barrel feeding

With very small wire geometry (<1.5 mm diameter) and/or with small stripe width, even when the stripe position is in the scan field middle, the sensor detects a bit of main colour at the stripe borders. This is limiting the colour separation, as there is more 'mixing' between main and stripe colour at smaller geometries.



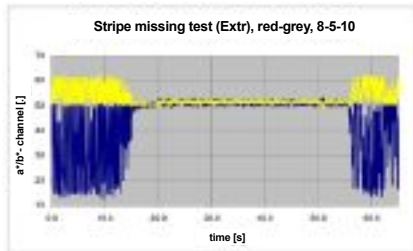
▲ Picture 7: Raw data with stripe - well recognisable changes in a* and b*-channel when the stripe is moving through the scan field

of ΔE some 3 minutes later can be interpreted by blue residues that were still somewhere on the screw for a certain time. Only the main deviation was found later by visual inspection.

The second step was to measure on a stripe coded wire. For a separation of both colours from the raw signal, statistical methods are used as the portion of main and stripe colour in

According table 2, the third setup was to get a clear indication of a stripe missing. To force this fault during production, the co-extruder for stripe was switched off for about 40 seconds. Picture 8 illustrates the result in the raw data (only showing the colour channels a* and b*); during normal production, values toggle between main and stripe colour. After the co-extruder was off (at 10 seconds on x-scale), the stripe signal slowly disappears towards the main colour simultaneously to the

decreasing stripe width. After around 5 seconds, the raw signal moves only within the main colour tolerances. The co-extruder was switched on again at around 50 seconds on x-scale and stripe signal ramped up in 5 seconds to normal condition.



▲ Picture 8: Stripe missing test – only shown on the a*- and b*- channel. Co-extruder was switched off at x-scale position 10s and switched on again at position 50s

The last setup in table 2 is to test the stripe to main ratio. As the sensor only detects the average colour in the scan field, it isn't possible to measure the stripe width directly. In case of a constant longitudinal product rotation, the time interval of main t_m and stripe t_s colour found in their tolerance interval can be integrated for certain time T and the

resulting time ratio $\frac{\sum_T t_m}{\sum_T t_s}$ should

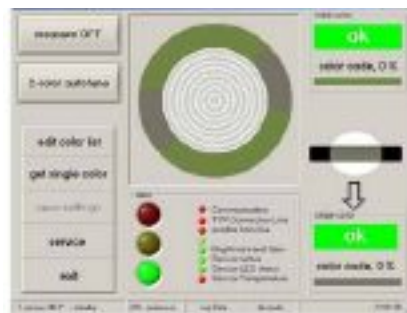
be almost same as the geometrical ratio. First trials under optimum conditions gave almost satisfying results with $T > 10s$, but scan field size, jitter and rotation irregularities are still a challenge for an evaluation with high evidence.

Actual device specifications and forthcoming development

The user interface of the device should be quite easy to control for the line operator without losing setup flexibility or detail information, comparable with inline wire centricity measurement. Based on an IPC, control of the sensor is completely transparent for the user. A non-contact measurement reduces the risk of sensor damage. Very often the wire isn't completely dry while passing the device. This caused

contamination of the sensor surface but could be solved by installation of a permanent compressed air blowing over the sensor. To protect the optics during production start/stop and bare wire running, the sensor is moved into a safe position until normal production. Temperature compensation is done automatically.

As already mentioned, colours are detected as relative measurement, so the system needs a teach-in for each geometry/colour combination. This is done once after the wire runs in good production and the detected reference can be stored for further production of this wire type. Any number of recipes can be stored. Until now the recipe database is very simple and should include search functions in future software.

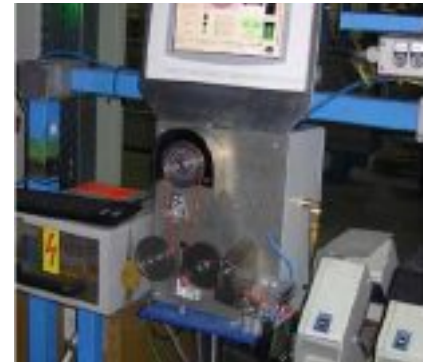


▲ Picture 9: User interface of the colour measurement. In the upper middle a schematical cross section of the wire shows detected main and stripe colour. Lower middle shows the status transferred to the PLC (green=both colours in tolerance, yellow=one is missing or out of tolerance, red=double fault or wrong recipe). At the right, actual colour info is displayed

Connection to the line PLC should be possible via simple digital 24V signals (signal status and device enable) where fault messages are implemented to the coil protocol like spark or diameter faults or with a more complex network communication via TCP/IP to have access to the recipe database or to support host computer link.

Picture 9 shows the main screen that includes the most important information for the line operator. Additional windows can display more details, like separated $L^*/a^*/b^*$ -channel measurement, various signal history or trend information. For later evaluation, a subsample of raw data is stored on the IPC hard disk. To be independent of all production

lighting conditions, the scan field is covered and illumination is done by an internal LED light source (see picture 10, white arrow).



▲ Picture 10: Prototype of Siebe colour measurement system during test at a customer's line. Installation between spark test and lump camera. IPC at the top, below, turn mechanics' and sensor (under light cover)

According the higher luminance variation compared to a^* and b^* , a modification of equation (1) should be tested:

$$\Delta E_{L^*a^*b^*} = \sqrt{\frac{(\Delta L^*)^2}{f} + (\Delta a^*)^2 + (\Delta b^*)^2}$$

▲ eq. (2)

While equation (1) represents a circular error distribution, the modification is an elliptical distribution with enhanced tolerance in the L^* channel (for $f > 1$).

Technical aspects are almost solved; the main focus is now the improvement of device interface and handling. This needs feedback from the wire and cable production companies. Another point of discussion should be the combination of stripe and main colour. For example main colour red with a brown stripe is difficult to separate – for an automatic device as well as for a line operator. So this is not a problem in colour measurement itself but a possible improvement of quality control by a simply redefinition of colour pairs with high ΔE .

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[1] Edward H. Adelson, MIT, 1995
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 [3] Joint ISO/CIE Standard: CIE Colorimetry – Part 1-5, ISO 11664-1••5 / CIE S014-1••5/E:2006-2007
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