

AIM hits the target!



▲ Constantine Grapsas with AIM's award

Inc. magazine has ranked Automated Industrial Machinery Inc, an Industrial equipment manufacturer in Chicago, in its annual Inc. 500|5000 for the second time, an exclusive ranking of the USA's fastest-growing private companies.

The list represents a comprehensive look at the most important segment

of the economy America's independent entrepreneurs. Automated Industrial Machinery Inc joins Yelp, yogurt maker Chobani, Giftcards.com, KIND and famed hatmaker Tilly's, among other prominent brands featured on this year's list.

"To be ranked as one of the 5,000 fastest growing companies for the

second time, amongst the nearly 7 million registered companies in the United States, is a tremendous credit to our staff, candidates and clients," said Constantine Grapsas, president of Automated Industrial Machinery Inc.

Founded in 1992, Automated Industrial Machinery has successfully installed more than 1,000 machines and automatic cells worldwide. "Our goal is to provide robust equipment with the latest in technology making our customers profitable and reliable," added Mr Grapsas.

In a stagnant economic environment, median growth rate of 2012 Inc. 500|5000 companies remains an impressive 97 per cent.

The companies on this year's list report having created over 400,000 jobs in the past three years, and aggregate revenue among the honorees reached \$299 billion.

AIM Inc – USA

Email: info@aimmachines.com

Website: www.aimmachines.com

Further expansion plans

In June 2012 Anglia Metal started its activities in copper wire manufacturing for the cable industry and other markets processing copper wire such as can welding and solar ribbon manufacturers.

Formerly trading under Tri-Wire Ltd, the company found a new industrial investor who has a long-term and sustainable strategy in the copper industry. The new owner has taken on all the management team of Anglia Metal, as well as the experienced staff, and now the company is able to focus on the optimisation and expansion of the business.

The company focus is on supply chain excellence and on the ability to provide a broad range of wire products in plain or tinned varieties.



▲ The Anglia Metal factory in West Yorkshire, UK

The product scope ranges from 0.10mm single and multi end wires, various flexible conductors up to a cross section of 10mm² to small braiding bobbins for screening applications.

The production equipment is in line with the industrial standard and the factory has gone through continuous improvement exercises over recent

years. Anglia Metal is able to provide very short lead times because of the flexibility and the commitment to customer success by the workforce.

The customer base in the UK is active in data, telecom, building, industrial and automotive cable manufacturing as well as can production. The company looks forward to further expansion into special wires and other activities in the European market.

Further expansion of the product scope is planned in order to secure local customers an expanded source for their copper wire needs.

Anglia Metal – UK

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Technical Article 24

Manufacturing highly loadable helical springs through optimisation of tempering processes in both spring steel wire and spring production



Wire & Cable News

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Spring 2013
www.iwma.org

WCN

WIRE & CABLE INDUSTRY
43
Years of Excellence

Agent's Stateside trip



▲ Pictured on the stand, from left, are John Stanaway, George Belforti, Rein Metzger, Tom Duff and Ty Krieger

Staff from IWMA member company MountJoy Wire Corporation were joined at the Spring World exhibition in Rosemont, Illinois, USA, for the first time by their international agent, John Stanaway.

Mr Stanaway, who is also an executive board member of the IWMA, said: "Participation at this show was part of a planned exhibiting strategy for MJW which also included Interbrush in Freiburg, Germany, earlier last year and Spring Tec in Stuttgart, Germany early in 2013."

MJW is a trusted leader in manufacturing speciality wire for a wide variety of applications, including the automotive, aerospace, construction, agricultural and marine industries.

Anyone requiring more information can learn more at www.mjwire.com. Alternatively, telephone Mr Stanaway on +44 7806 467907.

MountJoy Wire Corporation – USA

Email: sales@mjwire.com

Website: www.mjwire.com

Switching and testing whitepaper

Beta LaserMike has announced a new whitepaper – "10 Reasons Why You Should Use DCM Solid-State Switching for Testing LAN/Data Cables" – which is now available for download at www.betalasermike.com/dcm

The whitepaper walks readers through the key decision-making process and highlights the primary reasons why cable producers should upgrade their existing legacy cable testing systems to the new DCM 3S-XLD platform – the latest generation in automated LAN/data cable testing.

LAN/data cable testing technology has come a long way since the early mechanical/electronic relay-type systems and upgrading to the latest DCM solid-state switching (3S) technology offers increased testing performance, value and profits.

To maximise the return on investment, the whitepaper describes the ten key

advantages of the DCM 3S-XLD system and touches on key points such as: faster, more accurate cable testing; increased reliability and lower maintenance; fast, easy connection to UTP cables; testing alien crosstalk in minutes; flexibility to expand system capabilities; and the many benefits of intuitive, simple-to-use software, to name a few.

The white paper also summarises the easy upgrade path from a legacy DCM CMS-2XLD system to the latest DCM 3S technology. With the continuing evolution of cable types and cable industry specs, this paper is a must-read for organisations that want to take their testing operations to the next level.

Beta LaserMike – USA

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Read all about it

Please remember that member news stories can be published on the IWMA website at any time, so submit them to info@iwma.org as part of your company's promotional campaign and they will be uploaded.

Case studies are also being included so if your company enjoys a significant business win or provides a customer with a solution to a particularly difficult problem, then the IWMA would be happy to help spread the news for you.

Camless design

Vinston Machinery's special camless design spring machine is equipped with free-arm technology and is 30 per cent more efficient. Used for the automotive, wire forming, entertainment and fitness industries, attachments such as rotary wire, spinner, and the x-y free arm can be added to the machine.

Vinston Machinery Ltd – China

Email: jian_hui_ye@163.com

Website: www.vinstoncnc.com

New tech Jiangsu

Jiangsu Gaohe Electro-mechanical Equipment Co is a high and new tech enterprise company specialised in high-end wire equipment.

Products consist of water tank wire drawing machines for production of cut wire, steel cord, steel wire rope, rubber tube wire and tyre bead wire, front-end production lines (steel wire rod pre-treatment, middle wire pre-treatment and electroplating production line) for production of wires, and stranding machines for production of steel cord and steel wire rope.

Jiangsu Gaohe Electro-mechanical Equipment Co – China

Email: ghjd@jsghjd.com

Website: www.jsghjd.com

US rebranding

Pourtier and Setic has re-branded its new machine division in Greensboro, North Carolina, USA, to "Pourtier & Setic of America".

This product line includes Pourtier's successful rigid stranders and drum twisters, as well as Setic's large and small double twist bunchers, and complete line of machines for production of LAN and special cable.

For the used machines market, USA and Canada sales are managed with the subsidiary "Gauder America".

Pourtier & Setic of America – USA

Email: ggi@gaudergroup.com

Website: www.gaudergroup.com

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

2013

APRIL

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

JUNE

5 **IWMA Golf Day**
Fairhaven Golf Club, Lytham St. Anne's, UK → **IWMA**
Tel: +44 1926 843680
Email: info@iwma.org
Website: www.iwma.org

25-28 **wire Russia 2013**
Moscow, Russia
Exhibition → **IWMA - Exhibitor Package**
Tel: +44 1926 843680
Email: info@iwma.org
Website: www.iwma.org

SEPTEMBER

17-19 **wire Southeast Asia 2013**
Bangkok, Thailand
Exhibition → **IWMA - Exhibitor Package**
Tel: +44 1926 843680
Email: info@iwma.org
Website: www.iwma.org

OCTOBER

1-3 **wire South America 2013**
São Paulo, Brazil
Exhibition → **IWMA - Exhibitor Package**
Tel: +44 1926 843680
Email: info@iwma.org
Website: www.iwma.org

NOVEMBER

4-5 **CabWire World Conference 2013 and gala Dinner**
Innovations driving worldwide wire & cable markets
Milan, Italy → **IWMA**
Tel: +44 1926 843680
Email: info@iwma.org
Website: www.iwma.org

22 **IWMA Dinner Dance**
Royal Garden Hotel, London, UK → **IWMA**
Tel: +44 1926 843680
Email: info@iwma.org
Website: www.iwma.org

Wonders of wire in Russia

wire Russia is an ideal way for your company to break into what has been a very strong market within the industry over the last few years.

The show, which takes place at the Expocentre Fairgrounds, Krasnaya Presnya, Moscow, **from 25th to 28th June 2013**, provides an excellent opportunity to present new products and innovations to the eastern European market.

The IWMA can still represent companies interested in taking stand space at the show. The stands, 4x3m, can be booked into a prime location at the centre. The booking comes with a range of services that you have come to expect from the world's largest corporate trade association.

For further information and booking details, contact the IWMA on **+44 1926 834680**

Diameter gauge heads in comparison

Diameter gauge devices are an essential part of the Sikora product portfolio. These measuring devices deliver a brilliant performance with precise diameter measurement and with reliable lump detection. The Sikora App shows measuring results, trends, statistics or video signals of the Laser on the iPhone* or other smartphones.

The Laser Series 6000 performs at an extremely high measuring rate of 2,500 measurements per second, each one with a high single value precision by default. With a dedicated accuracy of 0.2 micrometre and a repeat accuracy of 0.1 micrometre the diameter of tubes and hoses is continuously measured online.



▼ Laser 6040 XY with integrated display and control panel

A wide size range of gauge heads covers a diameter range from 50µm to 500mm. Three gauge head models of Laser 6000 Series are available for product diameters from 0.2mm to 78mm and combine a large number of features which help to simplify your daily production routine.

Sikora's R&D manager, Siegmur Lampe said: "Our development priority is to maximise the benefits to our users. Thus, we have developed many features for Laser Series 6000 that significantly support the user on the line."

The high measuring rate of the diameter measuring devices progressively and effectively enables the detection of lumps and neck-downs on the product surface. This reduces the cost of investment and increases space on the line, since only one gauge head need be installed.

The LCD display and operator panel are directly integrated into the gauge head providing easier operation and process control. The operator can see the diameter results on the display at a glance. Simultaneously, the panel shows the diameter rated value and the control module can be activated. The control module automatically adjusts the diameter to nominal value via control of the line speed or extruder rpm.

The physical aperture of the gauge head is twice as big as the product range, permitting easy and safe feed-through of the product. A special feature is the pivoting head design. The gauge head can be temporarily swung out of the production line path if required. The bottom of the unit is open, so water or dirt fall through rather than contaminating the measuring field. The feeding of the connection cables is protected, directly in the gauge head stand.

In keeping with the multimedia generation, the Laser Series 6000 offers an optional WiFi interface, which allows direct connection to a smartphone or laptop. The WiFi interface enables diagnostics and quality control with video signal in addition to transmitting measuring results, trends and statistic data.

Sikora provides its own special app for displaying measuring results, trends, statistics or video signals directly on compatible smart-phones. Simply log-in via the WiFi interface and immediately you have measuring results on your smartphone.

The app also offers the possibility to calibrate the gauge head according to ISO 9000. Correct operation can be proved by comparing test probe measurements against its calibration values which are scanned in via QR code, then the measured results are saved in a log-file which may be transferred via WiFi to the quality management department.

* iPhone is a trademark of Apple Inc, registered in the US and other countries. App Store is a service mark of Apple Inc

Sikora AG – Germany
Email: sales@sikora.net
Website: www.sikora.net

Follow us...

The IWMA has created new pages on LinkedIn and Facebook, so take a look and remember to follow us to ensure you are kept up to date with all our activities, whether it be announcements about exhibitor packages, conferences and events or the educational trust, as well as member news.



International Wire Machinery Association



International Wire Machinery Association

New IWMA website coming soon

The IWMA will be launching its new website soon, just part of the association's on-going efforts to enhance the quality and availability of information to members and the international wire, cable and wire product industries.



The new website will boast a modern, colourful design and the user-friendly nature will efficiently provide detailed information on all aspects of the association's functions.

The website will also offer multilingual options, as well as a new member database, latest wire industry news and other new functions including a video and photo gallery.

Keep an eye out for the new design at **www.iwma.org**

IWMA chairman's report 2012-13

by Steven Rika

My first year as chairman began in March 2012 at the annual general meeting, and it was evident from the outset that 2012 would be an eventful year, especially with wire Düsseldorf just around the corner.

The meeting was immediately followed by the customary 'Meet the Industry Lunch', which was again a very popular event and the feedback we received was incredibly positive.

We also had to contend with the loss of executive secretary Mr Phillip Knight, who resigned due to ill health. For helping to find his successor I must thank Caroline Sullens, of Intras, who presented the EAC Board with a shortlist of applicants from which the talents and suitability of Andrew Lewis were recognised, and he was duly appointed.

Our involvement at wire Düsseldorf 2012, the world's premier wire exhibition, went ahead due to the organisational skills of Debi Coleman who we must thank for her extraordinary efforts. The new style booth was a triumph and the exhibition a runaway success, something for which everyone involved should take credit. The floor space and attendance at the show had again increased on the previous event in 2010.

The IWMA hit the road in September attending wire China 2012 in Shanghai. By this time our newly appointed executive manager, Andy Lewis, had his feet well and truly under the table and was able to make his own contribution to enhance the work that Debi had already done. Again we saw good attendance and some very positive enquiries for membership.

In October, the venue moved to Mumbai, India, where the facilities at the exhibition centre had greatly improved on previous shows due again to the organisational skills of Messe Düsseldorf.

The IWMA dinner dance followed in November at the Royal Garden Hotel in London. The event was again a success and I would encourage our membership to take advantage of this heavily subsidised event and join us in 2013 at the same venue.

Looking forward to the 2013 itinerary, in April we will attend Interwire in Atlanta, USA. In early June, we again host our annual Golf Day at the Fairhaven Golf Club.

We will be taking to the skies again in late June with a journey to wire Russia in Moscow. In September we travel to 'wire Southeast Asia' in Bangkok, Thailand, followed by

wire South America in São Paulo, Brazil, in October. The IWMA will be in attendance at all of these events to support our membership.

Our next biennial world technical conference will take place in Milan, Italy, in November 2013 and will be a joint effort in collaboration with our partner associations WAI, ACIMAF, IWCEA and CET.

During 2013 you will see a re-design of the IWMA website that will be more user-friendly and have some additional features. Further details will be communicated to members in due course.



▲ Chairman Steven Rika

I would like to thank all the executive board members for their hard work and support and of course I express thanks and gratitude to Andy, Debi and Jacqui Dickinson for their continued hard work and we look forward to working together during 2013.

Increase in demand

Renewable power generation has increased the demand for subsea power cables. The growth is stimulated by several new offshore wind projects and additional grid interconnections.

Ideally, utilities seek to install a continuous uninterrupted section of cable that covers the full distance from the offshore equipment to the mainland. However, cable production or deployment constraints make this requirement difficult if not impossible to realise. Maximising production lengths for subsea cables becomes key to minimising costly undersea joints.

Maillefer's research and development puts to work its

strong process knowledge and a long tradition of extrusion innovations for producing quality subsea cables according to the length requirements. It calls upon its solid partnerships with research centres, raw material suppliers and universities. Scientific methods like mathematical modelling are employed.

It exploits the latest technology from nanotechnology on the molecular level to precision handling of large heavy product on the factory floor.

Below is a short list of leading solutions where Maillefer's research and development team places its focus for high performance subsea power cable production.

They include:

- Clean room handling and conveying of polymer to the extruder
- Pellet scanning to detect and sort out contaminants down to 50 µm
- New extruder screw designs for limited pre-scorch
- Extrusion process modelling and parameter optimisation
- Extrusion melt cleanliness scan control

By employing some of the innovations on a Maillefer line, you can expect longer runs for the production of subsea power cables that require minimum undersea joints.

Maillefer Extrusion Oy – Finland

Email: info.finland@mailefer.net

Website: www.maileferextrusion.net

IWMA announces exhibitor package for wire Southeast Asia 2013

Returning to Thailand for the tenth edition, wire Southeast Asia is the industry's most significant regional trade exhibition for Southeast Asia.

This event is a platform that links a targeted audience of key decision makers from Thailand and around the region with international industry leaders showcasing the latest wire

and cable processing machinery and equipment, new technology and manufacturing solutions.

IWMA is offering its members the opportunity to take part in this exhibition by taking our exclusive exhibitor package ensuring an excellent stand location and all the benefits to make exhibiting easy and effective.

Stand size 12 m² (4 x 3m)

- Shell scheme stand in prime location
- Fully carpeted
- Fascia with company name in black letters
- Square table with 3 leather chairs
- 1 power socket 5 Amp/220V plus 3 spotlights
- 1 information desk
- 1 waste paper basket

Plus

- Thai/English interpreter
- Daily booth cleaning
- Overnight security for items left on IWMA stand
- Free hospitality services on IWMA stand
- Free internet service on IWMA stand
- Additional interpreter service available on IWMA stand
- Help/local advice/practical experience from IWMA office
- No management charge for IWMA members



.... only US \$6,390.00

Management fee for non-members = £150.00 plus VAT (includes 1 year's membership)

Alternative Booth Sizes:

9m ² = US\$4,875	15m ² = US\$7,910	16m ² = US\$8420
18m ² = US\$9,430	20m ² = US\$10,445	24m ² = US\$12,470

OPTIONAL EXTRAS

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

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 Russia 2013, 25th-28th June, wire SE Asia, 17th-19th September, and wire South America, 1st-3rd October.

Members should also bear in mind that the IWMA website can accept 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 this year's exhibitions.
- 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 Autumn 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 the 15th of June 2013

Visit us at Interwire 2013

Interwire is the largest and longest-running wire and cable marketplace in the Americas and is an international trade event that includes exhibiting companies, speakers, and attendees from more than 50 countries around the world.

Introduced in 1981 and organised by the Wire Association International (WAI), the show crosses dozens of vertical industries including automotive, construction, aerospace, transportation and communications, among others.

Interwire 2013 will take place from 23rd to 25th April at the Georgia World Congress Center, Atlanta, Georgia, USA, and the IWMA will be there, so please call by and visit us on booth number 902.

A clean business: Development project for pellet inspection



▲ Sikora's development project "Pellet Inspection" ensures flawless pellets before starting production

The cleanliness of PE material is gaining in importance at higher cable voltage classes. In particular, alternative wind energy generation in the off-shore area requires a cable network with the minimum number of joints. In order to achieve this goal, long production cycles should be run. Where production lines formerly ran from Monday to Saturday, now a

continuous production run of 10 to 20 days is common.

Long production cycles are achieved by leaving out the screens before the crosshead in order to ensure a constant material flow. However, the manufacture without screens also results in contaminations passing directly into the cable insulation rather than being caught. Hence there is the need for other measures to detect possible contamination in the pellet and to remove them.

A special challenge is the contaminated pellet itself. Contaminations are most often not only on the pellet surface, but they are also melted down in the pellet. By means of optical testing systems these contaminations cannot be detected.

That is the reason why Sikora is currently developing a completely new system that differs in two ways

from existing but flawed solutions: The Sikora system is based on X-ray technology and detects also contaminations in the pellet. The smallest detectable particle size is 50 µm, at a throughput of up to 500 kg/h. Higher throughputs are possible by installing several units in parallel.

In addition, the pellet inspection is installed directly in the joint tube between the silo/octabin and the extruder. The system is consequently hermetically sealed and there is zero risk that dust particles get into the material flow.

The Sikora solution for pellet inspection is perfectly suitable for both manufacturers of energy cables and pellet manufacturers within the plastics industry.

Sikora AG – Germany
Email: sales@sikora.net
Website: www.sikora.net

M101 cold welder in demand

British company PWM, a manufacturer of cold pressure welding equipment, found its best-selling M101 cold welder much in demand at the Cable & Wire Fair at the CNR Expo Centre in Istanbul.

"The fair certainly exceeded our expectations," said PWM's managing director, Steve Mepsted.

"It was very well attended by manufacturers from a wide range of industry sectors and provided some excellent new business opportunities. The tone of the show was upbeat, with a steady flow of high quality decision-makers from all regions of Turkey, as well as Algeria and Tunisia,

visiting the PWM stand to discuss new projects and applications.



▲ The M101 from PWM

"Our M101 machine, in particular, attracted a lot of interest from manufacturers looking for a robust, reliable manual cold welder to join non-ferrous wire 1 to 5mm in diameter quickly and cost-effectively. The M101

can be used on a workbench or a trolley, making it easy to take to the weld area, which is another bonus.

"PWM is well-established as a leading supplier within the expanding Turkish wire and cable industry and the fair provided a good opportunity to meet existing and potential customers, as well as an excellent showcase for presenting our manual and powered cold welders."

Pressure Welding Machines – UK
Email: pwm@btinternet.com
Website: www.coldpressurewelding.com

IWMA new members

Anglia Metal

Anglia Metal manufactures plain and tinned (tin plated) copper wire to support a wide spectrum of market sectors, including automotive, data, power, specialised cables and various other applications.

Anglia is the only copper wire manufacturer in the UK and Irish market, and focuses on supply chain excellence and the ability to provide a broad range of plain or tinned wire products.

Nanoelectro LLC

Nanoelectro LLC is a company established in 2011 by JSC Vniim (Tvel company) and JSC Rusnano. The company's key goal is the

industrial-scale production of a new class of nanostructured materials – electrotechnical conductors featuring high strength and electrical conductivity.

Comsuc Technology

Comsuc Technology Development Ltd (CST) is one of the leading manufacturers and exporters of plastic reels and steel bobbins for the global wire and cable industry, with two separate production sites.

Shanghai Kingway

Shanghai Kingway Technology Group Limited is a high-tech group company, with subordinate manufacturers of wire drawing dies,

special wire and cable, pressure gauges and thermometers in China, as well as a holding company of research and development, sales and brand holding in Hong Kong.

The company has been developing in the international market at a great speed, and has been concentrating on the technical research of the wire drawing industry, and dedicated to the research and development for the wire drawing needs of the industry.

Inosym

Inosym's engineering and logistics teams can design, manufacture and deliver worldwide a comprehensive range of reels and drums for all cable making processes.

COMPANY	COUNTRY	WEBSITE
Shanghai HOSN Machinery Technology Co Ltd	China	www.hosnglobe.com
Special Steel Wire Ropes Pvt Ltd	India	www.specialsteel.co.in
Anglia Metal Ltd	UK	www.angliametal.com
Nanoelectro LLC	Russia	www.nanoelectro.net
NeoFil Ltd	UK	
Ningbo Kaite Machinery Co Ltd	China	www.kaite-machine.com
Britec Industrial (Zhangjiagang) Co Ltd	China	www.sanfeng-cm.cn
Shanghai YinGong Cold Welder Mfg Co Ltd	China	www.syg-sh.com
Suzhou Forever Import & Export Corp Ltd	China	www.fecchina.com
Hangzhou Harbor Technology Co Ltd	China	www.hzharbor.com
Comsuc Technology Development Ltd	China	www.comsuctech.com
Honghui (Shanghai) Int. Trading Co Ltd	China	www.honghuish.cn
Huzhou Jindu Micro-Nano Materials Co Ltd	China	
Shanghai Kingstrong Special Machinery Co Ltd	China	
Yangzhou Hongri Machinery Co Ltd	China	www.hrbobbin.com
ACME Engineering	Pakistan	
Wire and Tube News	UK	www.wireandtubenews.com
Shanghai Kingway Technology Group Ltd	China	www.kingwaytechnology.com
Sanfeng Machinery & Electric Development Co Ltd	China	www.sangeng-cm.com.cn
NETDA	China	
Kelani Cables PLC	Sri Lanka	www.kelanicables.com
Zhangjiagang Victor Textile Machinery Co Ltd	China	www.victormac.com
Inosym Ltd	New Zealand	www.inosym.com
Fapricela Industria de Trefilaria SA	Portugal	www.fapricela.pt

Filtration of high viscosity lubricants

Filtration systems are built to keep the operating fluid as clean as possible, ie, they have to remove the particles loosened during the drawing operation. Pure filtration of coolants and lubricants will give the effect of higher productivity due to fewer wire breaks, less down time, lower wear of the dies and much better surface quality of the wires.

To achieve these goals, RESY developed and introduced the compact-band-filter (KBF), which has gained acceptance all over the world for more than 30 years.



▲ The RESY filtration and supply system

For high viscosity lubricants (larger than 120 cSt), which are mostly used for aluminium, band filters are not suitable. In these cases, the separation of the particles occurs by sedimentation in the system tank. This has to be cleaned on a regular basis.

The sludge on the bottom is discharged together with a big part of the lubricant.

Another effect of the fine aluminium filters is that the viscosity of the media increases. This higher concentration affects the whole supply and cooling system.

RESY's filtration and delivery system is especially developed for this application. The unit consists of a centrifuge, a delivery pump, a heater, cooling system and electrical control. It is built modular to suit customers' needs and can be easily integrated in existing systems.

The lubricant is cleaned and cooled continuously during operation. The concentration of the particle in the lubricant stays on an acceptable level and ensures high quality of the wire and a consistent drawing process. Maintenance efforts and discharge costs will be reduced by this new system and higher productivity achieved.

Reber Systematic GmbH + Co KG – Germany
Email: info@resy-filtration.com
Website: www.resy-filtration.com

IWMA delighted to support the new wire South America 2013

The IWMA is delighted to announce its support of Messe Düsseldorf GmbH for the new wire South America 2013 in São Paulo, Brazil, from 1st to 3rd October.

A fantastic exhibitor package is available to ensure that members have the opportunity to be part of this landmark event.

Brazil is one of the world markets with emerging growth and is now the sixth largest economy in the world.

The country has long been the second largest global producer of iron ore and the eighth largest manufacturer of steel. It is the third largest aircraft manufacturer and the fourth largest automobile maker. It also has some two million kilometres of highway, 70 airports and by far some of the largest deposits of oil and gas in the world.

Brazil is also widely seen as having considerable economic potential, due to, among other reasons, its rapid pace of industrialisation, its political stability and its considerable reserves of raw materials and resources. Brazil belongs to the states emerging from the BRICS – Brazil, Russia, India, China and South Africa.

Stand size 12 m² (4 x 3m)

- Shell scheme stand in prime location
- Grey carpet floor covering
- White stand partition walls – 250 cm high
- Fascia with black lettering
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Nextur Agência de Viagens e Turismo Ltda
 Website: www.nextur.tur.br
 Email: viagem1@nextur.tur.br
 Tel: +55 (11) 55854355

Plasmait's new website



▲ Visitors to the new website will be able to review short outlines of Plasmait's products

Plasmait GmbH, a supplier of plasma heat and surface treatment lines for wire, tube and strip production, has updated its company website. Visitors to www.plasmait.com will be able to review short outlines of Plasmait's products.

Newly presented on the website is the PV Ribbon Tinning Line used for production of PV ribbon. The line has become the production process of choice for most producers of premium quality PV ribbon worldwide. Also updated is the overview of

PlasmaANNEALER, which has been subject to successful installations in copper and copper alloy annealing as well as increasingly in stainless steel and nickel alloy applications.

Visitors, who have the interest to test plasma heat and surface treatment on their specific materials are welcome to book their trial online. Plasmait runs client trials on three different test lines, one of which is dedicated to PV ribbon lines and the other to welding wire applications. Plasma heat and surface treatment

tests are performed to various requirements and for many different materials.

Peter Ziger, Plasmait's R&D director, explained that the trial facilities have been utilised by many manufacturers who strive to improve the quality of their wire or tube products, reduce production costs or want to make the production chemical-free and operator-friendly. Plasma treatment will most benefit applications with demanding surface needs or challenging annealing requirements. Such applications are usually found in sectors such as medical, precision mechanical, electronics, aerospace and energy sectors.

Since the introduction of the high-speed plasma heat and surface treatment process in the wire industry in 2003 Plasmait has continuously improved the technology and widened the scope application of plasma heat and surface treatment in the ferrous and non-ferrous sectors.

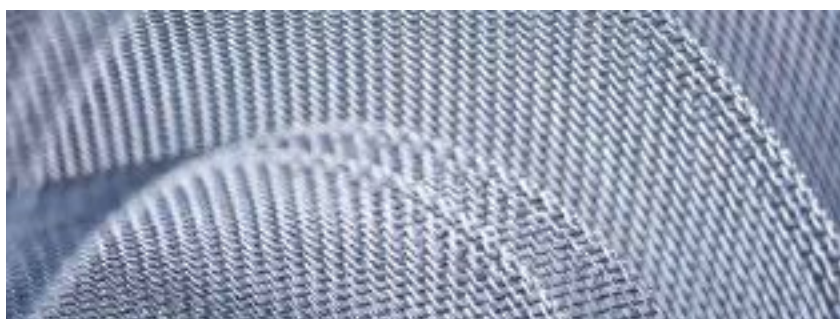
Plasmait GmbH – Austria
Email: info@plasmait.com
Website: www.plasmait.com

New stainless steel wire lubricant – Inoxol™ 5108

Metalube launched a semi-synthetic oil, Inoxol™ 5108, at Wire & Cable India 2012. This latest addition to its lubricant range is specifically designed for the wet drawing of stainless steel wire and significantly outperforms rival products.

Inoxol™ 5108 contains the very latest synthetic additives, improving film strength and providing outstanding extreme-pressure and anti-wear properties.

Technical director Chris Nettleship said: "Our test results for this product are exceptional. We are witnessing excellent drawing performance that will considerably extend the life of dies, and as the cost of dies is noticeably higher than that of a lubricant, the results speak for themselves. Inoxol™ 5108



▲ Laboratory wear tests have shown that Inoxol 5108 reduces wear by more than 20 per cent compared to its nearest rival

will radically reduce customer overheads."

Inoxol™ 5108 also contains special additives to minimise thermal and oxidative degradation of the oil, extending the service life of the oil, reducing both the quantity of oil consumed as well as the cost of

waste oil disposal. The improved lubricity benefits provided by these additives also produce an exceptionally bright surface finish.

Metalube – UK
Email: post@metalube.co.uk
Website: www.metalube.co.uk

Association spices up India

The International Wire & Machinery Association again exhibited at Wire & Cable India 2012, as did 57 members, 20 of which used the IWMA's exhibitor package, and were amongst a record number of 291 exhibitors from 25 countries, a strong indication of the thriving Indian wire and cable sector.

The exhibition was organised by Messe Düsseldorf and its subsidiary Messe Düsseldorf India – with the support of the IWMA, International Wire and Cable Exhibitors Association (IWCEA), the Italian Wire Machinery Manufacturers Association (ACIMAF) as well as the Wire and Cable Industry Suppliers Association, USA (WCISA) and the Steel Wire Manufacturers' Association of India (SWMAI).

IWMA Chairman Steve Rika said: "This is the first time I attended the trade fair and I got positive feedback and contacts. New members joined the association and we had 30-40 inquiries. The show was successful for us.



▲ From left, executive manager Andy Lewis, chairman Steven Rika, executive board members Peter Large and John Stanaway

We have a good relationship with Messe Düsseldorf and that company made vast improvements since it took over the show."

New Strecker welder

Germany's August Strecker presented its most recent development – a welder with vertical orientation of the wire axis for wire rods up to 26mm diameter. An enlarged range up to 30mm diameter is planned by the end of this year.

Not only is the "SS 120" machine able to join the ends of hanging wire coils in the radius, eg without straightening the ends prior to welding, but it incorporates an automatic deburring process which produces welds of identical cross-section compared to the original material.

Reworking through manual flash removal is unnecessary which is an enormous step forward considering that earlier, using conventional welding machines, the welding flash had to be removed through time-intensive manual work.

Automatic flash removal means not only enormous time savings, but also simplification of the operator's work. Additionally, there is no risk of wire breaks due to excessive deburring, ie reduction of the cross section at the welded joint.

Equipped with dual upset technique, the machine produces welds of excellent quality. Nearly all the heated

and therefore molten material is pressed out of the joint so a weld with extremely high tensile strength is created.

It is also the first time Strecker has offered a so-called "handling unit" to relieve the operator from physical strains of gripping the wire rod and pulling it into the welder – a job almost impossible to achieve for wires this big by a single person.

On the new design, the operator only manipulates the joysticks to move the hydraulic arms and seize the material, bring it to an incorporated cutter which at the same time serves as a tool to centrally position the material in the welder.

Once the automatic welding and deburring cycle is finished, the arms again help to push the material back into position, reducing the risk of accidents by a wire snatching back due to self-tension in the material.

August Strecker GmbH & Co KG – Germany
Email: info@strecker-limburg.de
Website: www.strecker-limburg.de

► The new SS 120 from August Strecker



PWM launches new cold welding video demonstrations



▲ Videos will show PWM's cold welders in action

PWM, leading manufacturer of cold pressure welding machines and dies, has produced a series of videos demonstrating four of its high-performance cold welders in action.

The videos show how PWM's P1500, P1000, EP500, and HP200 cold welders utilise the multiple

upset technique to create strong, permanent welds on copper and aluminium wire and rod, without heat, flux or fillers.

Steve Mepsted, managing director of PWM, said: "We have been manufacturing cold welding machines and dies for over 25 years but still find that many wire and cable

manufacturers are unfamiliar with the process and the benefits it offers. Cold welding is cleaner and easier than electrical welding and also more cost-effective, particularly for joining large rod sections up to 30mm diameter.

"The videos give manufacturers an opportunity to watch the process from start to finish. They can see how our user-friendly machines operate and view the welds produced by our precision-engineered UK-made dies. These welds are reliable, consistent and stronger than the parent material, and the electrical integrity of the material is not affected."

PWM's EP500, P1000 and P1500 freestanding rod welders cater for wire/rod sizes from 5mm to 30mm (0.197" to 1.181"). The HP200 portable model, mounted on a trolley, is for wire 2mm to 6.50mm (0.079" to 0.256") diameter.

PWM's new videos can be viewed at www.pwmltd.co.uk

Pressure Welding Machines – UK
Email: pwm@btinternet.com
Website: www.pwmltd.co.uk

Making it safer

With recent advances in cordless and portable tool technology, high security welded wire fence systems that were previously considered practically impossible to breach has had their delay factors reduced.

Siddall and Hilton Products have been working hard to develop a new range of high security fencing panels which hand the advantage to the property owner.

With a modern fleet of the most flexible and productive mesh welding machines in the market, SHP is able to mix and match wire diameters, mesh configuration and aperture size, enabling the company to formally announce the availability of several new products:

Conventional prison mesh is manufactured from 4mm horizontal and vertical wires. Prison Superior

utilises 6mm vertical wires to increase the durability of the panel and increase the attack withstand factor.



▲ Prison safe from Siddall and Hilton

This panel is the same as Prison Superior but with a second series of 4mm horizontal wires welded to the back face of the panel at 152.4mm intervals.

The flagship of the high security mesh panel range, Prison Ultimate,

replaces the 4mm wires used in conventional 358 panels with 6mm wires throughout. Attack withstand is significantly improved, cut-through time is increased by 50 per cent and the increased wire size throughout rules out some hand tools that can be used to breach 4mm wire panels.

These retrofittable fence toppings are bent to customer preferences and bolted to the top of existing 358 fence panels. Depending upon the exact configuration, these toppings can increase the height of the existing fence and provide a formidable overhang, which further reduces the likelihood of an intruder being able to climb the fence.

Siddall and Hilton Products – UK
Email: info@sandhp.com
Website: www.sandhp.com

Technical Committee Report 2012-13

by Peter Large

I took over this year as chairman of the technical committee following the retirement of Don Tucker. His will be a hard act to follow after serving in the position for 28 years and he was responsible for almost all of the 49 conferences and seminars run by the IWMA.



▲ Peter Large

He also chaired many of the conference sessions and his knowledge and sense of humour will be much missed. On behalf of the committee I would like to officially thank Don for his service to the association and I am pleased to say that he remains in good health and remains available for much-needed advice.

2012 was of course a “Düsseldorf year” and awards were presented for the best technical papers of the previous year to Dr Ing Horst Scheid of Siebe Engineering for his excellent paper on colour identification in cables, and to Dr Veronika Geinitz and Dr Ruediger Lux of Ilmenau University for their contribution on tempering in highly loaded springs.

Planning is now well advanced for CabWire World Conference 2013, a major event to take place on the 4th and 5th November 2013 in Milan. The conference title is “Innovations Driving Worldwide Wire and Cable Markets” and it will be a joint venture between the IWMA, IWCEA, ACIMAF and the WAI which is another major collaboration by these associations which represent the activities of the wire and cable industry worldwide.

The conference will also be supported by CET of France. I would like to thank all these associations for joining with us to provide a first class technical conference of major interest to our industry.

We have secured an excellent venue in the Palazzo Turati in the centre

of Milan, close to major hotels. The format will be for two separate sessions covering ferrous and non-ferrous topics simultaneously. With the first day’s formal conference content over we will gather together for dinner – an invaluable opportunity for people to get together from all over the world. On the second day we will arrange plant tours of interest to both ferrous and non-ferrous sides of our industry.

This year the technical committee was enhanced by the addition of two new members – Amanda Shehab of Cimteq and John Stanaway of Stanaway Wire. I would also like to thank Stephen Wood, Terry Robinson and Geoff Church for their continued support throughout the year.

We are always interested in new ways to develop our contribution to the wire industry and would welcome any suggestions through the Secretariat at any time.

Finally I would like to thank Andy Lewis, the IWMA’s executive manager, for both his and the Secretariat’s contribution, without which events simply would not happen.

Next-generation flange detecting system

In 2004, Uhing launched the non-contact FA flange detecting system for rolling ring drives. This economically priced solution automatically corrects the reversal points of rolling ring traversing gears, relieves the production employees of manual adjustment work and reduces time requirements and costs.

Uhing has now launched the second generation of this product – equipped with new sensor technology and expanded function range.

The non-contact FA flange detecting system corrects the reversal point of the traversing system automatically.

Over the years, the non-contact FA flange scanning system has undergone several technical development stages leading to the new version.



▲ The FA II from Uhing

The most significant novelty of the FA II is the laser sensor. It replaces the previously applied light barrier

detection system. The sensor detecting the flange is mounted on the traversing system. Within a specified range, it captures the offset between the surface of the spool core and the maximum permissible height stored in the system software and saves this value as reference offset for each new layer.

During winding, the flange detecting system continuously measures the respective offset and compares it with the reference offset. A reversal is triggered when the permissible height deviation, also stored in the system, is exceeded. A display indicates the measured height or the permissible height deviation.

Joachim Uhing KG GmbH & Co – Germany

Email: info@uhing.com

Website: www.uhing.com

CabWire World Conference 2013

Palazzo Turati Milan, Italy
4-5 November 2013

Innovations driving worldwide wire and cable markets



CabWire World Conference 2013

The leading international wire and cable industry associations are collaborating to host the 6th biennial world conference at the Palazzo Turati in Milan, Italy, on Monday, 4th November 2013.

This year's theme will be "Innovations driving worldwide wire and cable markets" and will feature a panel of both ferrous and non-ferrous expert speakers, presenting papers on the latest technological developments within the industry.

The conference will also have table top exhibits on display for the duration of the day and there will be excellent networking opportunities with industry colleagues.

In the evening, there will be the opportunity to attend a gala dinner at the nearby Royal Palace overlooking the historic Duomo Piazza.

The following day, Tuesday, 5th November, there will be the chance to visit both local ferrous and non-ferrous facilities for guided tours.

Why not share your expertise, current research findings and your viewpoint with your industry colleagues at CabWire World Conference 2013?

If you are interested in your company being considered to present a paper at the conference then please complete the form opposite and return to the IWMA office.

Similarly, if you are interested in attending as a delegate or would like information on the table-top exhibitor package and sponsorship opportunities then please email the completed form to info@iwma.org or telephone: +44 (0)1926 834680.

www.cabwire.com



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Association



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& Machinery
Association



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International, Inc.

ABSTRACT SUBMISSION & PAPERS

In order for the conference organisers to assess the scope and content of a proposed technical article please submit a 75 word abstract.

Accepted speakers will receive an Author's Guide with details about manuscript and presentation preparation. Only original papers not previously published will be eligible for paper awards presented by the IWMA and ITA, or possible publication in the association's newsletters and magazines.

Accepted authors receive:

- Complimentary meeting registration
- A copy of the conference proceedings materials
- Access to the conference sessions, tabletop exhibits and reception

DEADLINES

- Abstract deadline: **15th May 2013**
- Acceptance notification: **12th June 2013**
- Manuscript deadline: **3rd September 2013**

Check your category:

- Ferrous
 Non-ferrous
 Electrical
 Fibre Optic
 General

Author(s) _____

Title of paper _____

Company _____

Address _____

Tel _____ Email _____ Web _____

Abstract (75 word maximum) _____

Please send me further information when available on:

- Attending the conference as a delegate
- Booking a tabletop exhibit
- Conference sponsorship

Strengthening surface preparation role in the wire industry



▲ Vapormatt's Profelis wire cleaning unit

The success of Vapormatt's wet blast surface preparation technology in the wire industry is demonstrated by a growing number of installations and, now, the appointment of a sales engineer dedicated to this key sector of manufacturing.

The high levels of process consistency that can be achieved with wet blasting have been proven by Vapormatt in a long list of applications. These include cleaning,

degreasing and descaling as well as etching and satin polishing – across a large number of wire cable and strip products.

Newly appointed sales engineer David Clements mentions manufacturers of rotary extrusions, carding wire, power cables, bandsaw blades, fibre optic cables and high carbon steel wire as being among those gaining from Vapormatt technology.

“As one of the world's leading wet blasting companies, Vapormatt is constantly developing its in-line processing applications for wire manufacturers, not least because wet blasting offers clear-cut advantages over mechanical and chemical methods of wire cleaning, both of which can present performance and environmental issues,” he said.

As an example of the company's commitment to application focus, Mr Clements draws attention to the Vapormatt Profelis. The

design can handle wire and cable products of varying geometries and material, while avoiding the use of harsh chemicals and potential contamination risks experienced with alternative methods.

Fully self-contained, the Profelis comprises two adjacent units that provide a combination of wet blast, spray rinses and drying, to produce high quality results that meet both cosmetic and performance objectives.

“This is an exciting time to join the company and I look forward to building on its success to date, and helping to fulfil Vapormatt's aim of becoming the wire industry's choice whenever in-line wire cleaning is required,” added Mr Clements.

Vapormatt Ltd – UK

Email: sales@vapormatt.com

Website: www.vapormatt.com

UK tooling manufacturer invests due to high overseas demand



▲ Some of the products on offer from Bar Products and Services

High overseas demand has led to UK-based Bar Products & Services Ltd continuing its expansion programme with the purchase of a series of new CNC machines.

The production facility has already seen considerable investment in new equipment and an increase in staff this year. The company now exports its products and services to more than 30 countries.

Attending several overseas exhibitions in Germany, China and India last year through the company's

membership of the IWMA has seen a pronounced increase in interest from many international customers, and plans have been made to have a presence during 2013 at Interwire, wire Moscow, wire SouthEast Asia in Bangkok, and São Paulo, Brazil, exhibitions.

A key growth area has been the supply of products and services into the 'wire rope' manufacturing industry, particularly the 'wire rope compaction systems', along with the supply of many consumables that are allied to the wire rope industry. The

consistent quality and reliable service has been a major contributing factor to the company's expansion.

Bar Products & Services Ltd has further expansion plans including plans to invest and expand the manufacture of wire and tube drawing components, such as dies, plugs and tooling.

“We have always supplied these products as part of our basic range, however, due to our future marketing strategy we intend to increase our market share by developing and investing in 'bespoke' equipment, and employing the skilled personnel to develop this area of the business at home and overseas,” said Steven Rika, managing director.

“Investment has always been part of the company's philosophy and this has contributed to its continued success,” he added.

Bar Products & Services Ltd – UK

Email: info@barproductsandservices.com

Website:

www.barproductsandservices.com

Zhengzhou wire rope detection and inspection centre

Zhengzhou's wire rope detection and inspection centre was founded in 1982 and is an authoritative test organisation which has national measurement authentication, national laboratory certified, national safety production detection and inspection of class A certificate; and the test report can be issued by the global identity.

The centre has a total of 29 employees and more than 70 sets of instrument equipment, including for items for domestic and imported wire rope, flame retardant conveyor

belts, flame retardant cable, steel wire strands, connection device and safety sign inspection.

The inspection items can be divided into mechanical tests, composition tests and metallographic examination.

The centre can also provide various technical advisory services for coal mine enterprises such as wire rope selection, use and maintenance, broken rope accident analysis and quality evaluation, judgment and arbitration.

Except in specialisation on testing technology, method and ability, the centre also has a large investment in scientific research, having made advances in the research of inspection instruments, equipment and appliances; and the centre has successfully fabricated portable, environmental protection, energy-efficient tension appliances.

Zhengzhou wire rope detection and inspection centre – China
Email: zzgss666@126.com

Pioneering cable packaging



▲ A result of commitment - the PS630/15 2B

PS Costruzioni has recently pioneered its latest cable packaging line model, the new Double Automatic Spooling line, model PS630/15 2B – a result of PS's commitment to material-technology based innovation and product development.

This machine, which has the capability to execute the manufacturing process fully automatically, having the operator purely as a supervisory function, has been sold and installed by some of the most demanding customers

throughout the world, who are already taking advantage of its engineering excellence and high level of performance.

Customer feedback on this new product has already been favourable. Another outstanding strength of this machine, 'ad-hoc' built with distinctive features of reliability and solidity, is the possibility to work on three shifts, immediately giving customers the chance to maximise their investment.

This line has been conceived to work with the following technical features:

- Spools diameter: from 400mm up to 630mm
- Flexible cable diameter: from 6mm up to 15mm
- Rigid cable diameter: from 6mm up to 10mm
- Flat cable: width from 4mm up to 16mm

- Thickness from 4mm up to 7mm
 - Full spool max weight: 150kg
 - Spools wrap material: stretch film.
- Linear speed ranges from 0 up to 400/500m per minute, depending on the cable type, the length to be wound and diameter of the reel barrel.

The line consists of:

Driven pay off, accumulator, metre counter plus one spark tester, double automatic spooling head (400/630), labelling machine, automatic pallet unit and an automatic pallet wrapper.

The machine is available in different models, depending on spool dimensions, and customer service provides tailor-made offers.

PS Costruzioni Meccaniche Srl – Italy
Email: ps@pscostruzioni.com
Website: www.pescostruzioni.com

Flux bath filtration

Flux bath in hot-dip galvanising industries must be filtered to improve quality. The iron concentration has to be maintained at a low level to avoid any problem in the treatment.

Siebec, with more than 50 years' experience in the plating industry, has developed a filter system for flux filtration: P51 filter fitted with



▼ Filtered to improve quality

exclusive high load L-TECH pleated cartridges.

This filter system will provide better filtration than a filter press. It can also be installed in series after a filter-press to clean the residual sludge and work continuously with a clean flux bath.

Advantages include:

- Reliable PP/glass-fibre filter chamber
- Economic first-class 50µ plated cartridges
- Cleanable and reusable cartridges

- Huge 20m² filtering capacity up to 40m³/hours per filter chamber
- Iron maintained below 1 gr/litre
- ZnCl₂ is not removed by filtration
- Consistent flux bath quality
- Sharply reduces iron in flux
- Reduces coating defects and rework
- Properly maintained flux bath can reduce immersion time, lowering zinc pick up and dross formation

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

Wire tension monitoring in stranding machines



▲ A multi-stage planetary strander that was upgraded with FMS Tension Monitoring System RTMX42

Anyone who is familiar with the Indian cable industry understands the significance of high performance capability in a user-friendly package.

Products that include useless features, that are difficult to handle, and complicated to apply have a difficult position in this market. With that in mind, FMS has launched a new wire tension monitoring series for stranding machines.

A company that values high productivity while counting on

advanced production facilities is the Indian Usha Martin group. The enterprise manufactures all styles of cables. Usha Martin's Wire Rope division has begun to modernise major production lines and modify its equipment to state-of-the-art levels.

Ease of retrofitting and operational simplicity was at the top of the requirements list for the RTMX42.

The RTMX42 series utilises force sensors to measure the tension of

individual wires or strands, and then transmits the data wirelessly from the rotating to the static part of the machine. On the receiver side the system provides a sophisticated range of interface options for controlling or tension monitoring applications.

It can be efficiently integrated into the existing communication infrastructure of the machine. RTMX42 is offered in five different sub versions:

- RTMX42.IOs for tension monitoring with up to 42 channels and analogue outputs to provide controlling capability
- RTMX42.PC: Tension monitoring with data processing and analysis capability (data logging, quality reports)
- RTMX42.PC/IOs combines the features of the PC and IOs versions
- RTMX42.MODBUS makes the system very appealing for machine builders because of its fast bus interfaces. It allows real time control of breaks or drives in the machine
- RTMX42.PC/MODBUS combines all advanced features of the MODBUS and PC version.

FMS Force Measuring Systems AG – Switzerland

Email: info@fms-technology.com

Website: www.fms-technology.com

Making dies an art form

Mikrotek's name has become synonymous with the art of die making and die technology.

In today's fast moving technology, Mikrotek has edged forward to make dies which exceed customers' expectations. With a strong, qualified team and a high-tech production centre, stringent quality control checks and a new die manufacturing facility, Mikrotek has the expertise and in-depth knowledge to provide the complete solution for its customers.

The company's product line includes superfine natural diamond dies (0.013mm-0.05mm), natural diamond dies, mono diamond dies,

polycrystalline diamond dies, shaving dies, compacting dies, tungsten carbide dies, enamelling dies with TC and PCD inserts, reconditioning and repolishing services.

Related product lines include diamond powder, diamond paste, diamond suspension, diamond angle pins, GHCS pins and measuring pin sets.

Mikrotek is a modern company with its plant housing state-of-the-art machines that perform well-designed, intricate processes.

Mikrotek – India

Email: info@mikrotek.org

Website: www.mikrotek.org



▲ Mikrotek's head office in India

IWMA annual golf tournament 2013

The annual IWMA golf tournament will take place on Wednesday 5th June 2013 at the Fairhaven Club, Lytham St Anne's, a course listed by Golf World as one of the best ten Open Championship qualifying courses.

This will be followed by dinner at the Best Western Glendower Hotel on Lancashire's charming Fylde Coast, with stunning views across the Irish Sea.

As usual, prizes will be awarded for the highest points scored, longest drive and nearest the pin in what is traditionally a great day's entertainment.

If your company would like to take part in the event then please visit www.iwma.org or contact the IWMA office for more information.

Tel: +44 1926 834680
Email: info@iwma.org

Quality from the start

Kingway has been concentrating on the technical research of the wire drawing industry, and dedicated to the research and development for the wire drawing needs of the wire industry.



Quality control is monitored all the way from raw material to the production process, to ensure each piece of die qualifies before delivery. Kingway has been ISO 9001 and SGS certified.

The company's main products cover: Polycrystalline diamond wire drawing dies (PCD), natural diamond wire drawing dies (ND), tungsten carbide wire drawing dies (TC), bunching and stranding dies, cleaning, repolishing, recutting machines and wire drawing lubricants.

Shanghai Kingway Technology Group Limited – China
Email: martinding@188.com
Website: www.kingwaytechnology.com

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 and cable industry

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FIB helps with mill upgrade

Bridon International is upgrading its equipment at the Doncaster Wire Mill in order to increase production and capacity.



▲ Boosting Bridon's production and capacity in Doncaster

Reiterating its confidence in FIB Belgium, Bridon has called on the supplier of industrial furnaces for the manufacturing and commissioning of a new austenitising open fire furnace.

This state-of-the-art component, equipped with the latest safety technology, was commissioned at the start of September 2012.

Thanks to exemplary collaboration between FIB Belgium and Bridon, the assembly and commissioning of the furnace were completed in record time in order to minimise downtime of the Bridon production line.

FIB Belgium sa – Belgium

Email: info@fib.be

Website: www.fib.be

Call in the specialists

GER sa, Belgium, is specialised in the sale of new and second-hand machinery for wire and cable, tube and sheet works, for the ferrous and non-ferrous industry. For sale are



▲ Just one of the machines on offer from GER

single machines and complete plants for steel rod and wire, non-ferrous wire, steel ropes, electrical insulated cables, etc.

A large stock of machinery is immediately available, guaranteeing quick help and GER will also search for equipment for customers.

Worldwide exports and selling the machinery in the as is condition or reconditioned and modernised make GER a strong partner for the industry. The sales department can also send an estimate for complete, ready-to-use production units.

Test-runs of the machines before shipment, as well as installation and commissioning of the machine at the customer's plant, and training for operators complete the service.

GER SA – Belgium

Email: ger@ger.be

Website: www.ger.be

Sun becomes energy thanks to Belgian technology

Chinese company Sichuan Ruiyu Photovoltaic Materials (ReneSola Group), a leading producer of solar wafers, is using two patenting lines from FIB Belgium with Ecoquench fluidised bed to produce sawing wires.

The results are expected to lead to an increase in production for the company in the near future.



▲ The two lines from FIB Belgium

FIB Belgium is a leading supplier of patenting lines within the framework of sawing wires. New induction solutions are also available for the diffusion process, both in steel cord and in the scope of sawing wires.

FIB Belgium sa – Belgium

Email: info@fib.be

Website: www.fib.be

Unparalleled heat recovery

QED Wire Lines has completed the design and is in final field testing of its brand new immersion burner: the Mark 4 ART.

This Advanced Recuperative Technology burner offers unparalleled heat recovery from an extended double-pass recuperator that pre-heats incoming combustion air. The finite element analysis design optimises energy efficiency and delivers with cooler burner skin temperatures.



▲ Advanced recuperative technology from QED

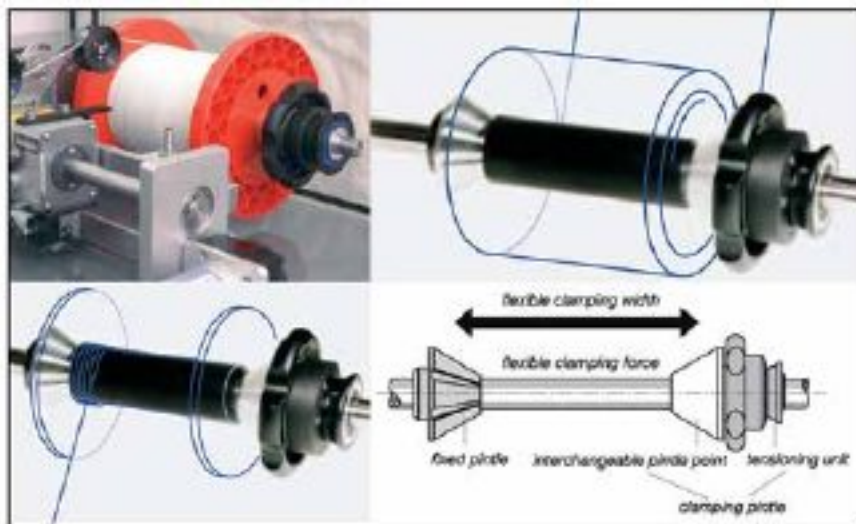
Building on the strengths of the Mark 3 burner, this unit also delivers air spin dynamics for excellent flame retention, smooth starting and reliable operation. This single ended radiant tube type of burner is now available for upgrading existing immersion burner systems.

QED Wire Lines Inc – Canada

Email: sales@qedwire.com

Website: www.qedwire.com

Tried and tested system



▲ The shaft clamping system from Techna

The Uhing-Easylock®, available from Techna International, provides a tried and tested system for the secure clamping of items (spools, reels, etc) onto rotating shafts, in a range of sizes for shaft diameters of 10, 15, 20, 22, 25, 30, 35 and 40mm, with tension from 400N on the smallest unit up to 5,000N on the largest unit.

The units comprise a fixed cone, an interchangeable cone point and a tensioning clamping ring, which is increasingly offset to the shaft with which it engages, in response to axial or tensioning forces, so creating an increasing friction contact. The greater the tensioning force, the greater the clamping effect of the ring.

As the item is held firmly between the fixed cone and the clamping cone, braking moments are able to be transmitted from the shaft to the item being clamped, allowing fast stopping of the machine if a fault occurs.

These units provide several advantages including:

- Single-handed operation for assembly and disassembly

- Shortest possible changeover times
- No tools required
- High tensioning forces on a plain, round, greaseless shaft
- Suitable for use with driven shafts
- Emergency stop secure
- Maintenance-free
- Suitable for static applications
- Resistant to vibration

For less arduous clamping operations, Techna provides two ranges of spool clamping collars both with single-handed, quick release operation, without the need for tooling.

The Uhing “U-Clip”, in a range of shaft diameter sizes of 8, 10, 12, 15, 16, 20 and 22mm, utilises a clamping ring which is offset to the shaft to provide clamping forces from 200N to 320N depending on size.

The Fastlock range is available in 15 metric shaft diameter sizes from 10mm to 56mm and in 14 imperial sizes from 0.375 (3/8") to 2 inches.

Techna International Ltd – UK
Email: richard@techna.co.uk
Website: www.techna.eu

Eye-catching caps!

Metalube entirely re-branded last year and the company has now taken its whole new look to its next phase with the introduction of impactful new barrel caps on all its product ranges.

Commercial director Douglas Hunt said: “These striking new caps with our distinctive and colourful logo on them really make an impression on our barrels. Our aim is for Metalube to be instantly recognisable across the globe. Our image reflects the quality of our lubricants and is very important.”

The new barrel caps are being phased onto all the product ranges with immediate effect.

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. Over 20 per cent of Metalube’s workforce is dedicated to science, ensuring technical excellence and innovation across its products and services.



▲ The barrel caps from Metalube

Metalube – UK
Email: post@metalube.co.uk
Website: www.metalube.co.uk

SEE OUR SUPERB PACKAGE DEALS FOR WIRE SE ASIA ON PAGE 6 AND WIRE SOUTH AMERICA ON PAGE 9

COPRA® wire rolling software



▲ Helping to exploit deep-sea oil and gas resources

Exploiting deep-sea oil and gas resources is a major challenge for exploration and conveyance. Ideal for the purpose are flexible, multilayer pipes that are able to withstand the

enormous pressure at depths of more than 1,000m.

The pressure armour presents a challenge in the construction of flexible conveying pipes. This is produced by means of a winding process from a Z-shaped profile. The starting material for this profile is solid round steel, which first has to be roll formed.

Processing material up to 32mm in diameter, roll forming it into a Z-profile, calls for high-performance tools – and an experienced designer. COPRA® RF wire rolling software is a highly efficient means of support, for instance, by automatically configuring individual roll forming stations based on the starting and end cross-section of the desired profile.

An essential element of roll forming solutions from data M is simple and

speedy verification of the generated tool rolls by COPRA® FEA RF wire rolling. The software is powerful enough to analyse the entire process in 20 to 30 minutes, so the results of any modifications are available within a very short time.

An FEA simulation allows different kinds of investigation direct onscreen, in other words without prototyping and machine set ups.

COPRA® RF wire rolling solutions from data M can significantly increase efficiency in the construction of flexible pipes to convey oil and gas. The powerful simulation tools in particular allow early pinpointing of problem areas.

data M – Germany
Email: datam@datam.de
Website: www.datam.de

SIEBE Colour Match (SCM)

The difference of colours between two cables can be safety relevant. For controlling purposes, visual inspection with colour cards is used to check the acceptance limit of the specified colours. Visual assessments are subject to subjective impression arising from factors such as illumination, angle of vision and colour sensitivity of the observer.

SIEBE Colour Match (SCM) is an automatic system to get objective, reproducible and comparable results. An own white light source avoids measurement errors with inappropriate illuminants. Cable colours are often

specified with RAL colour system or with Munsell colour model. A comparison of the measurement with these systems is possible. This data will be stored in a database and serves as reference for productions with the same colour requirement.

For the classification in RAL or Munsell colours choose 'best fit scan' and you will get the code of the colour shade, that is the most similar to the measured colour. In mode 'scan with dE', the measured colour is only accepted within a given tolerance interval around the reference colour.

Using the 'teach-in' function, new colours can be added to the database enabling

customers own specification or other colour reference systems.

The minimal visual width of stripes is approx. 0.5mm. Cable diameter can be 1-10mm (optional bigger sizes with extended optics).

The inline version can be integrated into a control system via ethernet without having its own display. Provided with an optional touch screen the device can also be operated stand-alone. An extended version is designed for operation in the quality control or laboratory with mechanics to ensure inspection of short samples.

The usage of SCM is not only inline production control. Harnessing the adherence of defined colour values can also be controlled. The database with all relevant product colours can easily be copied as a file from one device to another. This ensures a colour compliance regarding production of same cables in different facilities.

SIEBE Engineering GmbH – Germany
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Website: www.siebe.de



▲ The SCM from Siebe

IWMA at wire China 2012

The International Wire & Machinery Association (IWMA) scored major successes at the wire China 2012 exhibition.

The exhibition, in Shanghai's New International Expo Centre (SNIEC), has become one of the most important events in the exhibition calendar in recent years, drawing major companies from around the world.

The IWMA, which works to promote business and awareness of member companies worldwide, was prominent among exhibitors – not only in its own right – but through 51 members, seven of whom used the IWMA's exhibitor package, designed by the association's experienced teams to smooth the experience of the event for first-time and smaller exhibitors.

Chairman Steve Rika said: "It was a fantastic exhibition as a whole this year, and great for IWMA members because we were there in force to show the sort of engineering capability we have to draw on.

"Not only that, but members met some very useful people throughout the four days and the association had a lot of new sign-ups and inquiries."

Mr Rika represented the association at the exhibition's opening ceremony, organised by Messe Düsseldorf and its Chinese arm and partners, including the Metallurgical Council of China's international trade council and the Shanghai Electric Cable Research Institute.

The fair saw record exhibitor and visitor numbers, and hundreds of products ranging from systems for wire manufacturing and processing to tools and auxiliary materials and special wires. Current trends in cable, measuring, control and inspection technology were also hot topics among many member companies and other exhibitors.



▲ Chairman Steven Rika being interviewed at wire China

"It's a simply massive event: anyone who is anyone in our business goes to WTC – that's why we were there in force for our members," added Mr Rika.

The next wire & Tube China exhibition is at the SNIEC from 24th-27th September 2014.

Ultra fast diameter gauges

Zumbach's ODAC® F gauges offer high-precision, non-contact laser diameter measurement with extremely high scan rates and an integrated fault detection function.

Thanks to the ultra high scan rates and single scan function, these scanners are, in addition to the standard diameter measurement, especially suited for efficient fault detection (lumps/neckdowns) for cables with bigger diameters at medium line speeds. Therefore, a separate and conventional fault detector becomes needless for such applications.

Combined with the powerful Zumbach USYS processors, up to 4,500 measurements per second from 3-axis scanners can be processed.

A special laser beam geometry enables the detection and process of very small defaults or diameter variations.

Up to 333 data packets per second can be processed forward to a higher-level system. Data packets can include minimum and maximum diameter values, ovality, etc. A complete line of gauges is available for dimensions between 0.25 and 550mm (0.01 to 21.65").

Advantages:

- Double or even higher scan rates than before, ie more measurements per time unit
- Maximum fault detection (lumps/neckdowns) at increased line speeds
- FFT/SRL analysis with higher bandwidths

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

► High precision from the ODAC F gauges



Manufacturing highly loadable helical springs through optimisation of tempering processes in both spring steel wire and spring production

By R Lux, U Kletzin, P Beyer, Ilmenau University, Germany

Abstract

Recent research activities have shown that for improving the strength and forming behaviour of oil-hardened and tempered spring steel wire the tempering processes of both wire and spring production need to be adjusted. In a newly developed laboratory heat treatment device, three different qualities of wire of two different diameters were each hardened and tempered with a large quantity of tempering and time parameters. All hardened and tempered (wire production) samples were then tempered in a second tempering process (spring production) in order to achieve their final quality (especially strength). In order to provide parameters for manufacturing springs, nominal values for the variously treated samples of wire, tensile and torsion tests were determined. This paper presents an overview of the necessary changes in respect of the tempering processes of wire and spring production; also the values found for wire and spring parameters (eg torsional yield stress, tensile strength, pre-setting behaviour or fatigue of helical compression springs).

Introduction

In recent years, the specifications for wire products have steadily become more demanding. Industry requires components which will take ever-greater loads while becoming lighter in weight. One example of the

phenomenon is helical compression springs, which are required to be designed for higher loads, both thermal and dynamic. The “Wire and Spring” research group at Ilmenau University of Technology has therefore cooperated in recent years with wire and spring manufacturers on a number of projects. In the investigations carried out into wire hardening and spring tempering, reserves have been found which can enhance the spring parameters. The results have, however, made clear that any progress can only be based upon extremely accurate knowledge of the material strength properties and how to target these specifically to improve them.

Demands on spring steel wire for helical compression springs

In accordance with the applicable standards, wire types used for springs are classified according to their tensile strength R_m . However, the dimensioning of helical compression springs is carried out according to the permitted torsional stress:

$$\tau_{\text{vorh}} = \frac{8 \cdot D \cdot F}{\pi \cdot d^3} \leq \tau_{\text{zul}} \quad (1)$$

For the proof of strength, the permitted torsional stress τ_{zul} is a necessary parameter. This being the case, DIN EN 13906 is applied and

the tensile strength R_m is converted into τ_{zul} using a certain factor, which is set in the standard for preset helical compression springs as $\tau_{\text{zul}}/R_m = 0.56$.

One way of increasing the load-bearing strength of helical compression springs is, as can be seen in (1), to raise the permitted torsional stress τ_{zul} . Reducing τ_{vorh} , by optimising the geometry of the springs, for instance, is not the subject of the present paper.

Equation (1) makes it clear that the wire should have high permitted torsional stress τ_{zul} so that the spring will have maximum capacity for energy storage, optimal installation space and the most efficient use of material. To achieve specific raising of the yield point under torsional stress by optimising the crucial processes in the manufacture of both wire and spring, the first necessity is the possibility of exact measurement. The “Wire and Spring” research group at Ilmenau TU has developed a testing station for this purpose by which it is possible to record torsion characteristic curves with a precision shear recorder [1]. At the moment, this measuring technology is unique.

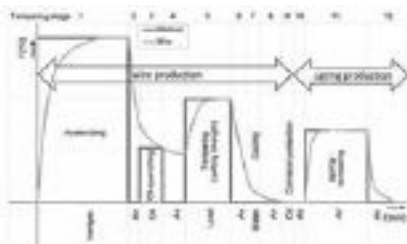
It has been used to prove that the yield point under torsional stress can be raised by optimising the tempering procedures during wire and spring manufacture. With it, the group has also been able to prove that there is no fixed relationship

between the nominal strength values in tensile testing (yield point $R_{p0.2}$ and tensile strength R_m) and the values in torsion testing (yield point under torsional stress $t_{0.04}$ as $T_{t.zul}$ and maximum torsional strength t_{max}). The relationship between the strength values is dependent on the wire material and then on how the wire is heat-treated and how the spring is heat-treated [2].

Wire hardened by different wire manufacturers to the same R_m may well thus show a wide variation in yield point under torsional stress $T_{t.zul}$. When the wire is used to make springs, these variations result in springs which vary in their capacity and may thus be the cause of early failure of a component.

Increase in load capacity of springs by optimising tempering of spring steel wire and spring

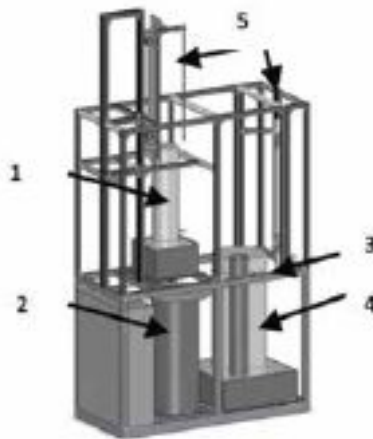
The aim of the investigations presented in this contribution was to increase the load capacity of helical compression springs by optimising the tempering processes at the wire and the spring manufacturing stages. The heat treatment of the wire, also known as hardening, takes place in two stages: the hardening of the material and the tempering which follows. A simplified view is that the hardening is dependent only on the austenitising temperature and time, and the quenching temperature and time. The tempering is, again,



▲ Figure 1: Qualitative diagram of the stages of the hardening process and the tempering of the spring or component

dependent on the temperature and time spent in the tempering medium, which is, in most cases, lead. There is further tempering after the springs have been created. The entire sequence is shown in Figure 1.

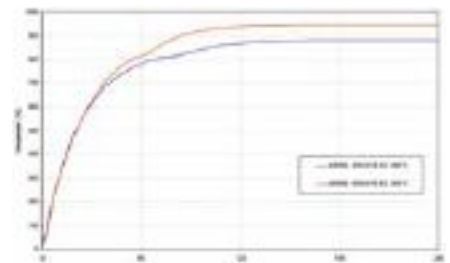
To improve the strength properties of a wire it is necessary systematically to fine-tune all the 8 relevant and independent parameters in the treatment process shown above (4 temperatures and 4 periods of time). As a great number of variations is required here, it was not possible to apply the passage tempering method used in industry as this would have cost too much in material and time.



▲ Figure 2: Experimental hardening plant (CAD model):
 1- austenitising furnace,
 2- oil bath,
 3- lead bath,
 4- water bath,
 5- robot handling systems

For this reason, the hardening and tempering plant shown in Figure 2 was developed by the research group. This apparatus has the additional advantage of not being tied to the sequence followed in industry and the periods spent by the wire in the individual process stages there, which are dependent on each other because of the building and construction constraints (austenitising furnace, oil bath, lead bath, water bath). The hardening and tempering possible in the laboratory equipment thus offers the only possibility of varying the parameters completely and independently for all tempering stages.

Complete austenitisation, by which is meant the conversion of the ferrite structure of steel into austenite, is a crucial prerequisite to the succeeding setting of the wire strength. The experiments therefore began with austenitization. First, heating curves were recorded for wires of $d = 4.5\text{mm}$ at furnace temperatures of 880°C and 940°C (Figure 3). These curves were used to identify the period of

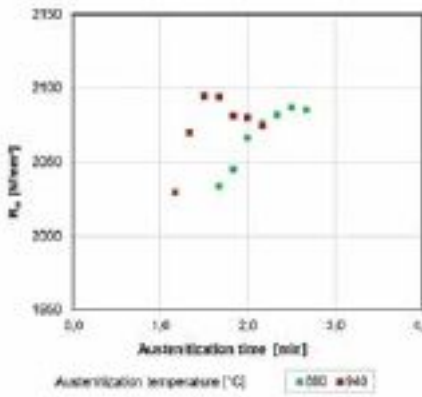


▲ Figure 3: Heating curves at 880°C and 940°C - Sample wire 65SiCrV6 SC of $d = 4.5\text{mm}$

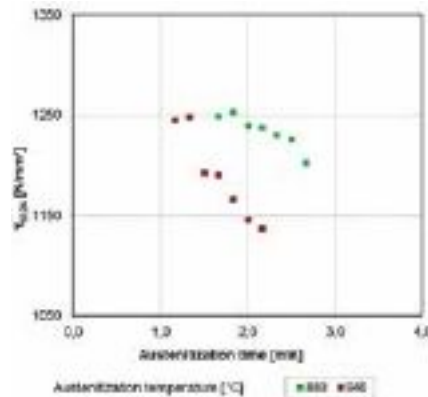
time during which the structural change took place. In this time period, the wires (with their various austenitisation times) were hardened at the temperatures stated. The times were varied at 10-second intervals. The samples were quenched in an oil bath at 50°C . The tensile and torsional characteristics of these samples (Figures 4 and 5) were evaluated, as were the metallographs, so that optimal austenitisation parameters could be established.

After the austenitisation and succeeding quenching, the wire is tempered in a lead bath. The strength of the wire and thus its susceptibility to reshaping during spring manufacture is set using the parameters from the austenitisation and the hardening/tempering process. Good forming behaviour will reduce the strain on the coiling machine. It is therefore necessary to determine the tensile and torsional characteristics of the material even at the stage following austenitisation and tempering. The next experimental step is to simulate the tempering of the spring or component, and this can be carried out on the wire.

A commercially available fan oven is used for this heat treatment. Again, the parameters for the temperature and time are varied. Then tension and torsion nominal values are established for these samples, too. Comparing the samples made of hardened material with those made of hardened and then tempered material makes it possible to state the increase or decrease in the strength parameters caused by the heat treatment in the spring manufacturing stages. With the aim of achieving results that can be put to practical use in industry, the parameters selected for the hardening and tempering were close



▲ Figure 4: Tensile strength R_m from austenitisation curves for 65SiCrV6 SC of $d = 4.5\text{mm}$



▲ Figure 5: Technical yield point under torsional stress $\tau_{t,0.04}$ from austenitisation experiments on 65SiCrV6 SC of $d = 4.5\text{mm}$

to those already used by industry: tempering times between 0.5 min and 5 min at tempering temperatures of 420°C to 460°C (for the wire manufacture) combined with spring tempering times between 15 min and 60 min and temperatures for spring tempering of 300°C to 400°C.

The basic thinking behind the experiments was the need to find hardening parameters in both wire and spring manufacture that would lead to the best material properties in the finished spring. In relation to

$T_{t,zul}$ during tempering of the spring.

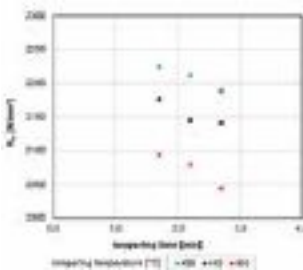
The parameters of the wire production were comprehensively combined in the experimental plant presented with those of the ensuing heat treatment of the springs. Tensile strength and torsional strength tests then established the properties of the wire. Simulating the spring tempering process on the wire and then determining the nominal strength values to be expected in the spring made from it both increases strength and facilitates more precise dimensioning and manufacture of springs.

samples which received component tempering in addition. It can be clearly seen that the yield point under torsional stress $T_{t,0.04}$ is considerably more influenced by the spring tempering (up to approx. 10%) than is the tensile strength R_m (approx. 0% to 2.5%).

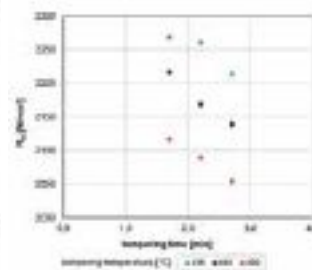
The experiments also show that the increase in strength to be achieved by spring tempering is the higher, the lower the hardening temperature set previously during the wire manufacture.

Proof of raised load capacity in helical compression springs by means of setting and dynamic fatigue experiments

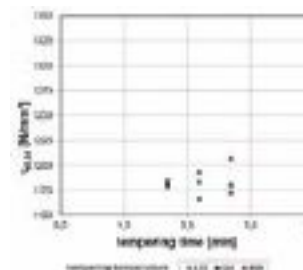
By using the researchers' hardening and tempering plant for about 5,000 hardening experiments, it was possible to find optimal parameter combinations for wire hardening and spring tempering. These experimental results were then computed to fit industrial wire manufacture using thermal substitution models and applied to passage tempered wires. This produced wire material with optimal strength properties (see Fig



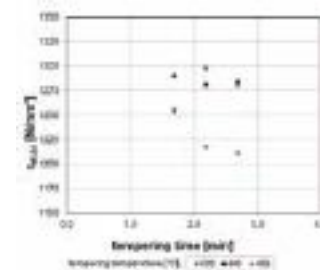
▲ Figure 6: Maximum tensile strength R_m in relation to tempering regime, without spring tempering of the 65SiCrV6 wire, $d = 4.5\text{mm}$



▲ Figure 7: Maximum tensile strength R_m in relation to tempering regime, with spring tempering of the 65SiCrV6 wire, $d = 4.5\text{mm}$



▲ Figure 8: Technical yield point of torsional stress $\tau_{t,0.04}$ in relation to tempering regime, without spring tempering of the 65SiCrV6 wire, $d = 4.5\text{mm}$



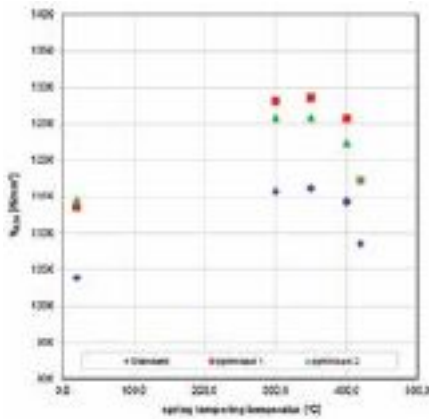
▲ Figure 9: Technical yield point of torsional stress $\tau_{t,0.04}$ in relation to tempering regime, with spring tempering of the 65SiCrV6 wire, $d = 4.5\text{mm}$

the wire from which the spring is to be made, first a low yield point should be set at the wire works in order to minimise the forces and wear suffered by the coiling pins when the springs are being coiled. To achieve as end product a helical compression spring that will cope with demanding static, dynamic and/or thermal stress, it will not be until the wire reaches the spring works that the necessary high strength is set by targeted influencing of the

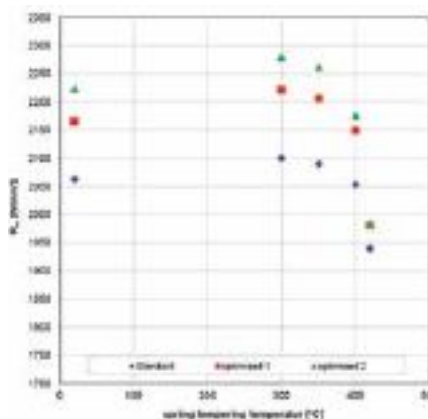
Figures 6-9 show the technical yield point under torsional stress $T_{t,0.04}$ and the tensile strength R_m . These levels were determined from samples of 65SiCrV6 material of $d = 4.5\text{mm}$ which were austenitised at a temperature of 880°C for 2.5 min. For the tempering time and temperature, a number of variants were used. The Figures on (6 and 8) show the nominal values for the relevant samples immediately after hardening. The Figures on (7 and 9) show the same nominal value for

10 and 11), which it was possible to use for the production of experimental springs. The experimental springs were compared with versions produced identically from material that came from a non-optimised lot. It is quite clear that springs made from material with an optimised yield point under torsional stress show significantly lower pre-setting values (Figure 12).

Furthermore, in the springs made of optimised wire, longer life is achieved



▲ Figure 10: Technical yield point under torsional stress $\tau_{t0.04}$ from spring tempering experiments on passage tempered wires of diameter $d = 4.5\text{mm}$, material 65SiCrV6 SC



▲ Figure 11: Tensile strength R_m from spring tempering experiments on passage tempered wires of diameter $d = 4.5\text{mm}$, material 65SiCrV6 SC

both in time and in fatigue strength (Figure 13 and 14).

Conclusion

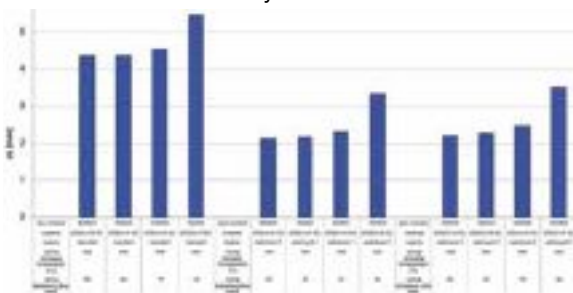
With the test stations available to the research group (developed by them) and the newly developed experimental hardening and tempering plant, it has for the first time become possible to imitate in the laboratory all the heat

completely independent parameter variation, and then to improve the springs' strength properties.

The research group is thus in a position to find the optimum tempering processes for other wire products and provide industry with the results, all without high expenditure of time and money. Thus, conclusions can be drawn for the design and operation of new passage tempering plants to be used in wire manufacture and for the selection of process parameters at the spring tempering stage.

operation of new passage tempering plants to be used in wire manufacture and for the selection of process parameters at the spring tempering stage.

The knowledge obtained (to the effect that heat



▲ Figure 12: Pre-setting values for springs made of 65SiCrV6 SC with $d = 4.5\text{mm}$

treatment procedures from the wire works to the finished spring, using

combination for wire and spring

manufacture will enable shaping and strength properties to be specifically improved) is promising for improved manufacture and more accurate dimensioning of heavily loaded springs. It was proved that the hardening and tempering parameters have varying effects on yield points and ultimate tensile strength. The nominal value for the yield point under torsional stress $T_{t\text{ zul}}$ which is particularly important for the materials used in helical compression springs can be increased by up to 10% by optimally tuned wire hardening and component tempering parameters.

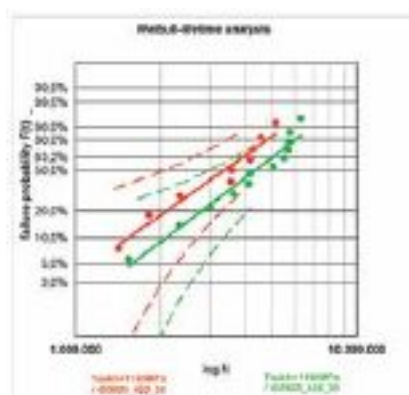
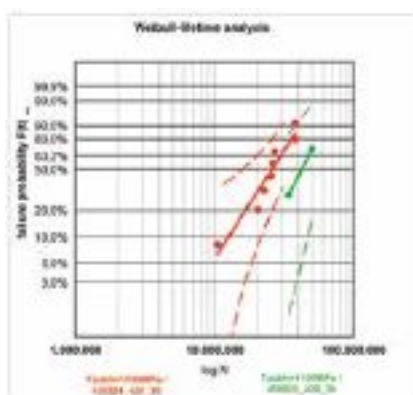
It is fundamentally possible to achieve reduction of maximum strength of the material to improve capacity for coiling after the wire works and then to set the desired high strength levels during the manufacture of the spring. It was also made clear that static and dynamic strength cannot be optimised simultaneously but that the heat treatment must be set at all stages to meet the use to which the spring is to be put.

Acknowledgment

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▲ Figures 13 and 14: Weibull lifetime analysis of springs tempered at 420°C for 30 min made of 65SiCrV6 SC with a wire diameter of $d = 4.5\text{mm}$. Red: normally hardened wire; green: optimised



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