SIKORA EXTRA

Your magazine for Wire & Cable | Fiber

Dear customers, partners and business friends,

Process optimization is one of SIKORA's core competencies. Customers all over the world rely on SIKORA devices for the measurement and control during the production process. Thus, resources are preserved, scrap rates are reduced and workflows are optimized. However, there is always room for improvement. We regularly evaluate our own processes to guarantee that our reliable devices continuously ensure your product quality. An example is our ERP system, which we are currently updating. *Find characteristics and benefits of an ERP system on page 10.*

In the course of our process analysis, we introduced a new tool for the optimization of our services. The Smart Assistance Manager (SAM) is a 13.3" industry tablet that connects devices, installed in your plant, with a PC of our support engineers. A two-day service visit turns into a significantly shorter and cost-effective process. *See page 8.*

The year comes to a close. At this point, we would like to thank you for your loyalty and the trust you have placed in us and wish you and your family health and good luck for the new year. We look forward to a continued and successful cooperation in 2018.

But first, enjoy reading!

Sincerely,

Dr. Christian Frank
CEO SIKORA AG

Harry Prunk
Executive board SIKORA AG

f.l.: Dr. Christian Frank, Harry Prunk

CONTENT

THERE IS ALWAYS ROOM FOR IMPROVEMENT.

SIKORA AT THE WORLD OPTICAL FIBRE & CABLE 2017 CONFERENCE

Convincing performance with live measurement in the drawing tower

Harry Prunk at the World Optical Fibre & Cable 2017

For the third time, world-leading manufacturers and processors of preforms, optical fibers and communication cables met at World Optical Fibre & Cable Conference in Wuhan, China. From November 1st – 3rd 2017, over 700 leading decision-makers from different countries came together. This year, SIKORA participated for the very first time. Besides the presentation held by Harry Prunk, member of the executive board of SIKORA AG, about "Impact of sophisticated online quality control on the optical fiber drawing process", SIKORA was also represented with a booth. Visitors were able to inform themselves by means of a model of an optical fiber drawing tower with integrated gauge heads of the FIBER Series 6000 about the advantages of the systems for quality control and cost reduction.

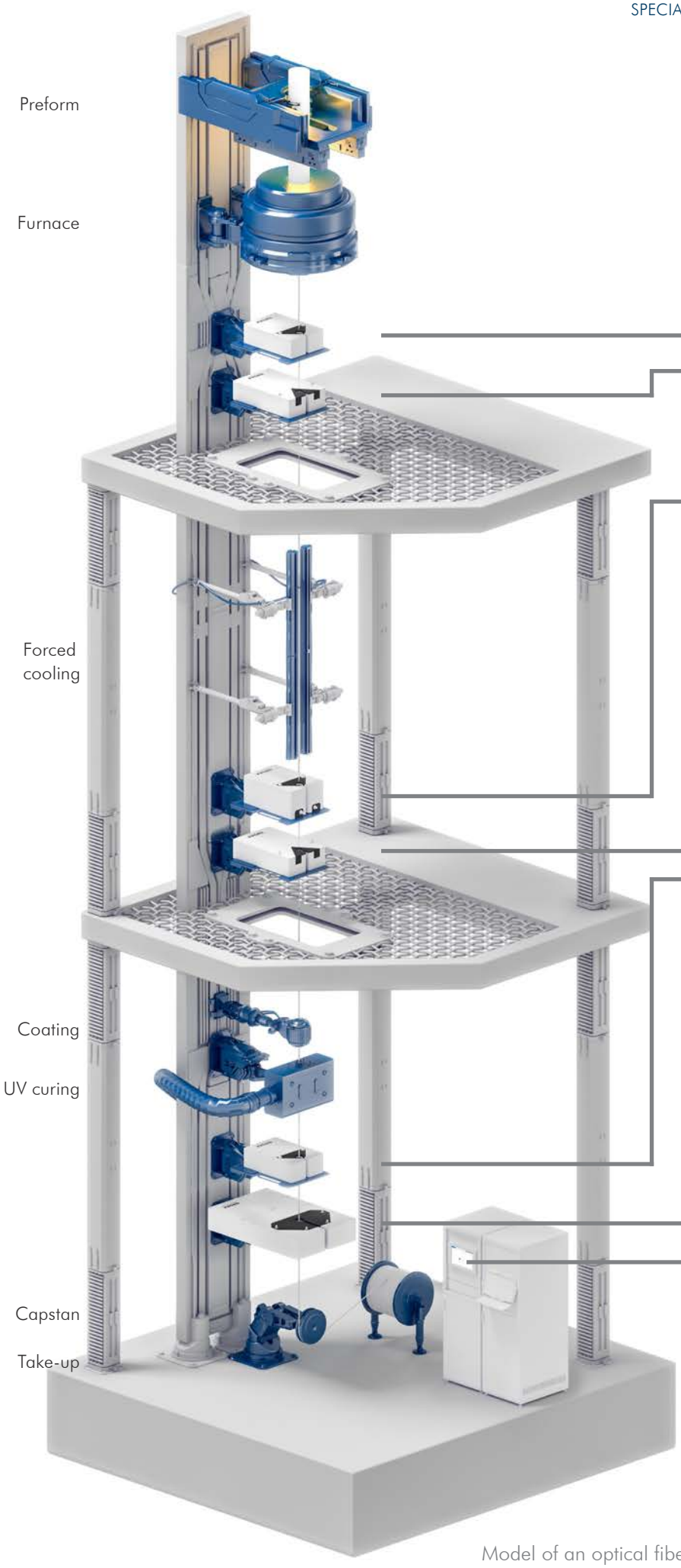
Quality control and process optimization in the drawing tower

Online quality control of optical fibers in the drawing tower already starts below the preform with the FIBER LASER 6003 for diameter and position measurement of the uncoated fiber and the evaluation of the fiber tension. Furthermore, a FIBER TEMP 6003 is usually installed at the hot end of the drawing process for measuring the temperature of the optical fiber in order to control the furnace.

After the forced cooling, the diameter of the optical fiber is measured once again by a FIBER LASER 6003 or, alternatively, by a FIBER LASER 6003 AIRLINE gauge head. The latter additionally provides airline detection. Also, temperature measurement is carried out by a second FIBER TEMP 6003. At this position, a temperature measuring gauge head is valuable for manufacturers of optical fibers as with the temperature information, they can use the exact amount of helium that is needed for the cooling, and thus, saving on costs.

After the optical fiber has received its coating and has gone through the UV drying process, a final FIBER LASER 6003 determines the diameter of the coated optical fiber. Optionally, a FIBER LASER 6003 CCE, which also gives information on the coating concentricity, can be used as well. In a final step for quality control, the surface of the optical fiber is inspected for any lumps and neckdowns by the FIBER LUMP 6003. For particularly high quality requirements, SIKORA alternatively offers the FIBER LUMP 6003 MICRO with six measuring axes for a 100 % inspection from a fault height of 5 μm.

The measuring values and information on the surface quality are visualized at the connected processor system FIBER ECOCONTROL and support the manufacturer to take further actions to control and optimize the drawing process.



FIBER LASER 6003 – hot position
- Diameter measurement 50 - 500 µm
- Ovality measurement
- Position measurement
- Tension measurement
- Measuring rate 2,500 Hz

FIBER TEMP 6003 – hot position
- Temperature measurement 500 - 1,500 °C
- Measuring rate 100 Hz

FIBER LASER 6003/
FIBER LASER 6003 AIRLINE – cold position
- Diameter measurement 50 - 500 µm
- Ovality measurement
- Spinning measurement
- Measuring rate 2,500 Hz
- FIBER LASER 6003 AIRLINE: airline detection down to 0.5 µm

FIBER TEMP 6003 – cold position
- Temperature measurement 40 - 120 °C
- Measuring rate 100 Hz

FIBER LASER 6003/
FIBER LASER 6003 CCE – coated position
- Diameter measurement 50 - 500 µm
- Ovality measurement
- FIBER LASER 6003 CCE: evaluation of the concentricity

FIBER LUMP 6003 MICRO
- 6-axis measurement offers 100 % control
- 5 µm min. fault height
- 50 µm min. fault length at 3,000 m/min

FIBER ECOCONTROL
- 15″ TFT color monitor
- Display of production and product parameters, trends and statistics for quality control

Model of an optical fiber drawing tower with gauge heads of the FIBER Series 6000

OVERVIEW: DIFFERENT TECHNIQUES FOR DIAMETER MEASUREMENT

Advantages of the LASER Series 2000/6000 with the CCD line sensors

An increasing quality awareness in many areas of daily life and especially in the field of industrial goods has been observed for some years. Manufacturers of wires and cables have also been investing intensively in measuring and control technology as well as inline control over the last years. At the same time, amongst others, the diameter and ovality of products play a crucial role. These cable parameters can be measured in the production line by different techniques, which shall be described in the following article.

Measuring the diameter

Until now, three different methods for measuring the diameter have been established on the market: laser scanning, the conventional shadow projection, as well as the diffraction-based method (laser shadow projection).

Laser scanner

Laser scanner measuring devices work with a rotating polygon mirror striking a laser beam across the measuring field. Furthermore, two lenses are used to adjust the laser beam almost parallel across the measuring field and onto a light sensor on the receiver side. The diameter results from the time the laser beam is shadowed by the product.

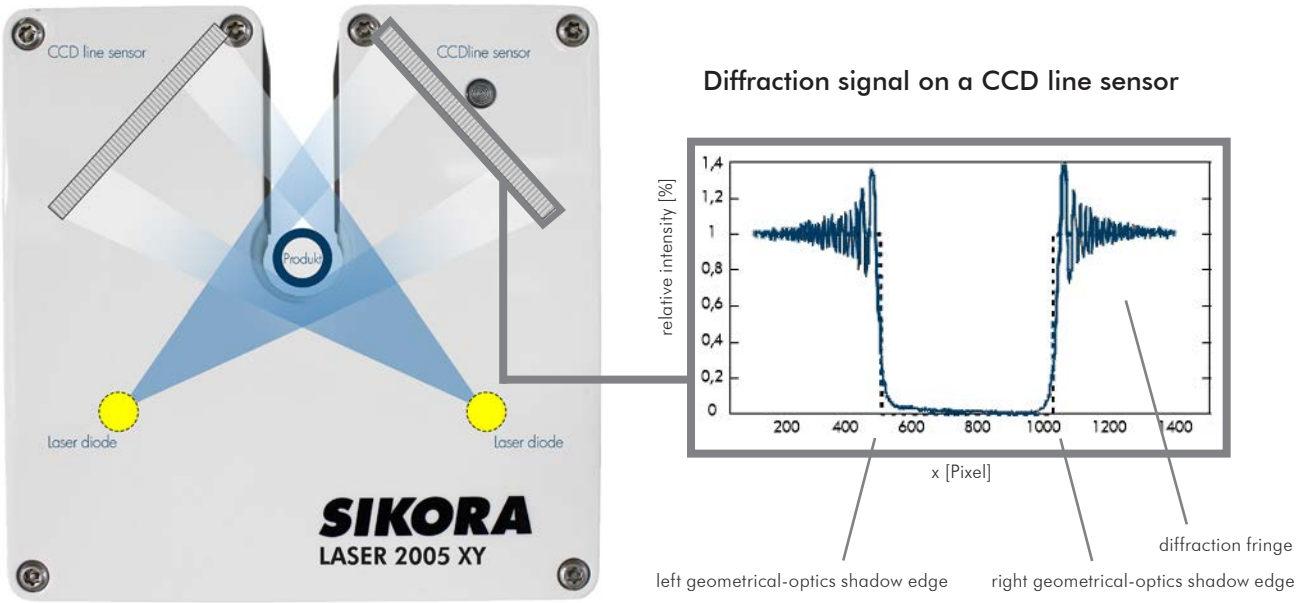
Conclusion: The measuring frequency depends on the rotation speed of the mirror. Furthermore, an averaging from several measurements is often necessary to smooth rotational deflections of the measuring values. A high measuring rate is necessary to minimize measuring errors caused by production-related vibrations of the product.

Shadow projection

The digital measuring method with CCD line sensors requires no moving components resulting in higher accuracy. One can distinguish between the classical shadow projection and the diffraction-based method.

The conventional shadow projection, like the laser scanning method, uses two lenses, which are installed in front of and behind the product. These lenses adjust the laser beam onto a CCD line. The darkened diodes are counted in order to determine the diameter of the product.

Diffraction analysis of the CCD line sensor signal. Measurement by means of two measuring axis



Conclusion: The advantage of this method is the parallel exposure of the measuring field with a very short light pulse. Any movement of the product does not influence the measuring result. Downside: The quality of the lenses determines the measuring accuracy. Slight impurities on the lenses already influence the measuring result.

Diffraction-based method

Using the diffraction-based method – the measuring principle of SIKORA's LASER Series 2000 and 6000 – the high-resolution, fan-shaped laser beam directly illuminates the CCD line. Due to the absent lenses, a shadow image is cast on the line as visualized in the picture "Diffraction signal on a CCD line sensor".

At the transitions from bright to dark, intensity fluctuations appear which are due to the diffraction of light at the product surface. According to the theory of diffraction, the information regarding the intensity fluctuations are used to calculate the tangents of the left and right geometrical-optics shadow edges. Together with the tangents of the measuring plane, which is shifted by 90 degrees, four tangents result that are touching the product. Therefore, diameter and ovality are independent from the position in the measuring field and determined with an accuracy ranking in the sub-micrometer range.

The diffraction-based method works with extremely short exposure times and achieves highest single value precision, which is important for the determination of standard deviation of the production process. This allows several thousand measurements per axis per second for product diameters from 0.05 to 500 mm. Gauge heads with the CCD line sensor technology measure the diameter of transparent as well as opaque products in two or three planes. In addition, they work precisely independent of the materials used.

Conclusion: The diffraction-based method does not need any moving wear parts or lenses, resulting in high precision throughout the entire lifetime of the devices. The devices are maintenance-free and due to optical slits, resistant to dirt. Furthermore, the gauge heads of SIKORA's LASER Series 6000 guarantee a reliable detection of lumps and neckdowns on the product surface. The measuring values of diameter, ovality, standard deviation, and number of detected lumps and neckdowns are visualized on a display directly integrated in the gauge head or displayed, documented, and analyzed on a SIKORA display and control device.

Even after years of use, SIKORA LASER Series 2000/6000 devices measure as accurately as on the first day!

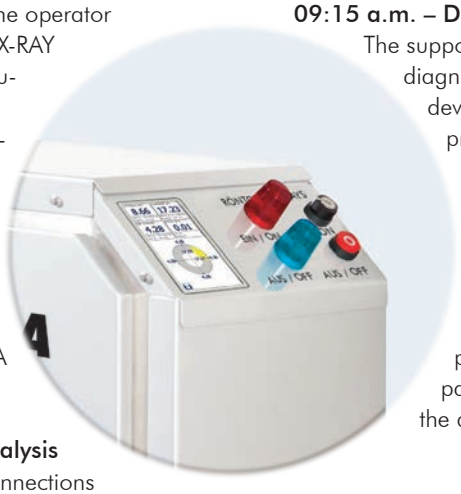
Diffraction analysis with CCD line sensor	
Highest precision	✓
Highest repeatability	✓
High measuring rate	✓
No moving parts	✓
No calibration	✓
Measurement of opaque products	✓
Measurement of transparent products	✓

SIKORA SMART ASSISTANCE MANAGER IN USE

Direct service – fast, easy, successful!

Since its introduction at the beginning of the year, SIKORA customers worldwide are impressed by the Smart Assistance Manager (SAM). The 13.3" industrial tablet pc offers a live video chat feature and thus, a fast and effective service. Via the 5 MP camera and the LTE/UMTS module, you are directly connected to our support. A recent practical example shows why the Smart Assistance Manager is so successful.

08:00 a.m. – Start-up of the production line
During the start-up of the extrusion line for multi-layer cables, the line operator discovers that SIKORA's X-RAY 6000 PRO for the measurement of diameter, wall thickness, ovality and eccentricity of cables does not power up. As the trained worker for this device is not present, his colleague quickly reaches for the SAM and contacts the SIKORA support in Bremen.



08:30 a.m. – Event analysis
Thanks to the various connections and interfaces of the SAM, SIKORA's support engineer can directly connect his PC with the device and can lead the customer via the built-in video chat feature through the event analysis. It soon becomes clear that a control lamp in the safety circuit of the X-ray device blocks the starting of the device.

08:45 a.m. – Troubleshooting
Control lamps are consumable parts and therefore, typical stock items. SIKORA's service database shows that this customer has a spare lamp at stock. Whilst the operator collects the spare part from the warehouse, the SIKORA support engineer already opens the device documentation, which is saved on the SAM, with the relevant chapter regarding the replacement of the control lamp. Via the video chat feature, the SIKORA employee is watching the exchange and supports with useful tips and hints.

09:15 a.m. – Device analysis
The support engineer uses the SIKORA diagnosis software to check the device, which is ready for production.

10:00 a.m. – Production
Meanwhile the line has completely started up and production is in full swing. SIKORA's X-RAY 6000 precisely measures the cable parameters and thus, ensures the quality for end customers.

SIKORA'S SALES TEAM IS GROWING

Aguinaldo Ramalho supports sales in Europe

SIKORA continues its expansion campaign for the areas Hose & Tube, Wire & Cable, Optical Fiber and Plastics with constantly new product innovations and the enlargement of its sales network. Since January 2017, Mr. Aguinaldo Ramalho has been reinforcing the sales team at SIKORA's headquarters in Bremen and has been looking after Wire & Cable customers from Scandinavia, Portugal and Spain.

Mr. Ramalho, you joined the sales team of SIKORA AG almost a year ago. What fascinates you about your new role?

I feel comfortable to emphasize with other people, to understand their requirements and to find suitable solutions with technical know-how. The position at SIKORA enables me to fully exploit these talents. SIKORA and I are united by the claim: advantage by competence!

SIKORA produces very specific technologies and devices. What qualifies you to advise customers about such complex subjects?

After successful completion of my apprenticeship as a master electrician, I wanted to gain further qualification. Therefore, I enrolled at a university of applied sciences and graduated as industrial engineer. Hence, I do not only understand the technical backgrounds of the devices and production processes but I also combine them with an economic aspect and thus, always find a suitable gauge head for our customers.

You provide support for customers from Scandinavia, Portugal and Spain. Which is the biggest challenge?

The different cultures and customs. As Portuguese, I am already familiar with the rules of conduct in Portugal and Spain. In contrast, the cool Scandinavia was completely new territory. However, I quickly understood that the contrast to my adopted home Bremen in northern Germany was not too great, and therefore, the first few travels to Scandinavia were very successful. Moreover, I am fluent in German, Spanish, Portuguese and English – this helps!

Mr. Ramalho, thank you very much for the interview!

PROCESS OPTIMIZATION IS OUR CLAIM

New ERP system at SIKORA

If used optimally, Enterprise Resource Planning (ERP) systems are the neural system of a company. The connection of all company units, as well as mappings of all business relevant data and processes, enable a company to use its resources efficiently and to automate recurring processes.

Benefits of an ERP system

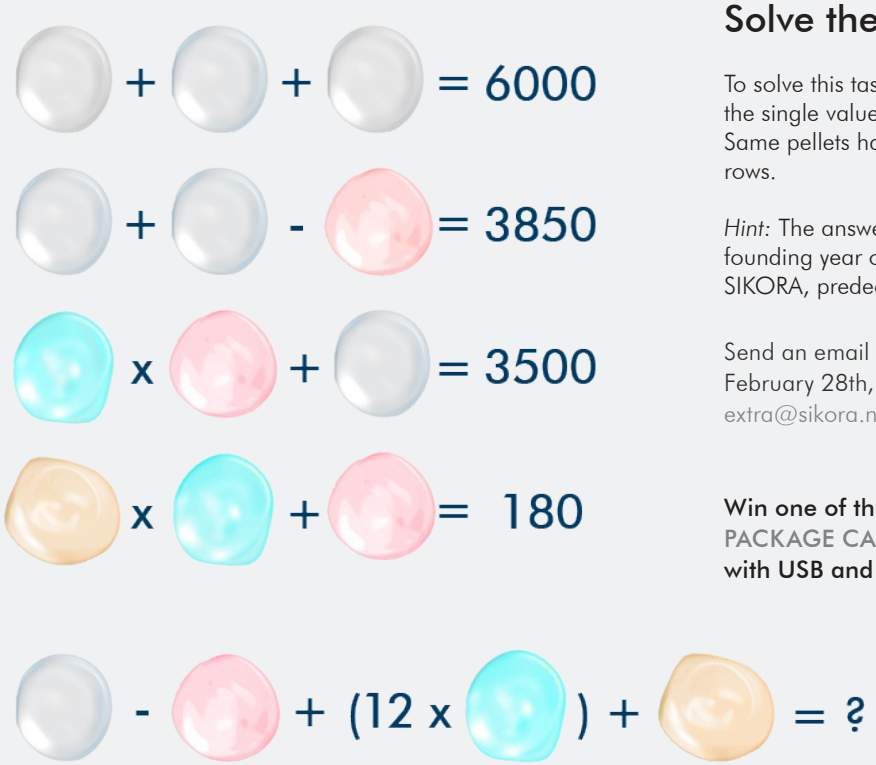
Though many different ERP systems are available, they all have one thing in common: process monitoring and optimization. By reducing the data administration to one central system, duplications and long searches for relevant information are outdated. This does not only increase the quality of information but, at the same time, reduces process costs. Due to automated processes and easy preparation of documents, such as quotations, orders or invoices, employees have their hands free to focus on other tasks. Furthermore, targeted evaluation possibilities guarantee comprehensive process monitoring, and therefore, repeatable quality.

Benefits for SIKORA customers

At SIKORA, everything is designed for process optimization. From the consulting regarding the usage and installation of measuring devices to the devices that ensure efficient quality controls and cost savings with their innovative technologies, up to the comprehensive service portfolio our customers can rely on in all eventualities. "Despite, or perhaps precisely because of our success, it is a matter of course for us to evaluate our own processes again and again", says Sonja Hülscher, ERP project manager at SIKORA. "Only those companies who exemplify optimized processes are able to take them to customers. Furthermore, production times are reduced and new developments promoted, which benefits our customers."

Sonja Hülscher, Project manager ERP

RAFFLE



Solve the math quiz

To solve this task, you need to determine the single values of the pellets.
Same pellets have the same value in all rows.

Hint: The answer also equals the founding year of the company HARALD SIKORA, predecessor of SIKORA AG.

Send an email with your solution until February 28th, 2018 to:
extra@sikora.net

Win one of three MOKEY KEY PACKAGE CARBON Key Organizer **with USB and bottle opener**

Your contact details will not be passed on to third parties. Each correct answer takes part in the raffle. Employees of SIKORA AG and SIKORA Holding GmbH & Co. KG and their relatives are excluded from participation. Each player can only participate once. We value the first e-mail, all subsequent e-mails will be considered invalid. The legal process is excluded.
GOOD LUCK!

Congratulations
to the winners of the last raffle! The solution was "Page 7".

Peter Holdsworth • Brian Tomblin • Thorsten Albrecht

NEXT EVENTS

- wire Expo May 15-16, 2018 | Nashville, TN, USA
- wire China Sep 26-29, 2018 | Shanghai, China
- IWCS Oct 14-17, 2018 | Providence, RI, USA
- Wire & Cable India Nov 27-29, 2018 | Mumbai, India

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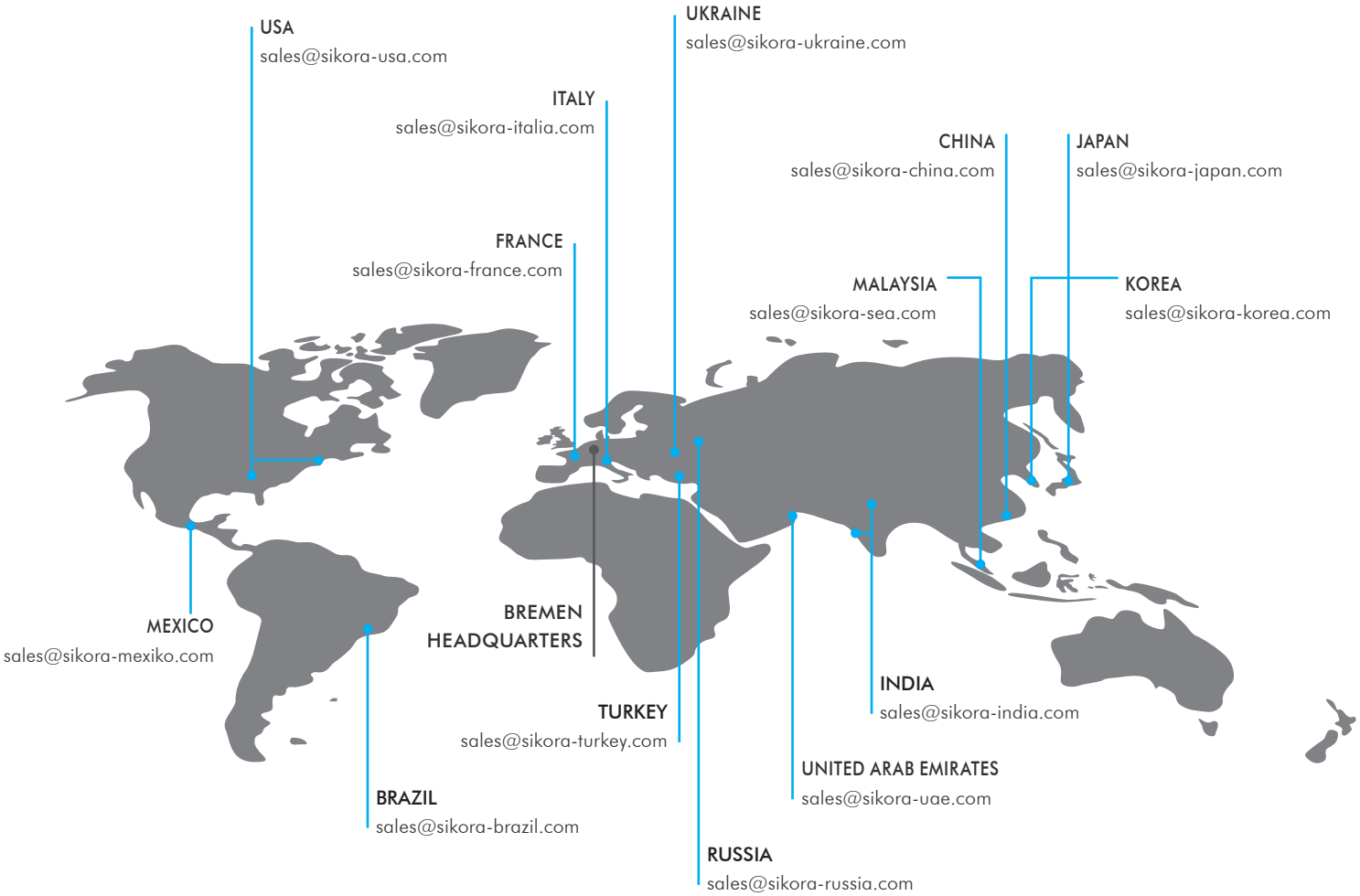

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