SIKORA EXTRA

Your magazine for Hose & Tube | Sheets

Dear readers,

It's about to happen again: The K 2019 is just around the corner. As the leading exhibition for plastics and rubber, from October 16 to 23, 2019, the K in Düsseldorf presents anew current trends for the extrusion of plastic tubes, pipes and hoses. Already for the 8th time, SIKORA will also be present with an exhibition booth.

Whether automotive sector, aviation industry or in the medical area – plastic tubes, pipes and rubber hoses are used for a variety of applications and are even irreplaceable in many fields. At the same time, public and professionals intensively discuss prohibitions of plastic products to counter environment pollution. The ongoing debates clarify the need to rethink and switch to a sustainable industry.

We cordially invite you to visit our exhibition booth in Hall 10, Booth H21. Convince yourself of our future-oriented and resource-efficient technologies for quality control during the extrusion of hoses and tubes and pipes. Use the chance to discover our exhibition highlights beforehand in this EXTRA edition and get an overview of the SIKORA portfolio.

We are looking forward to interesting expert discussions at the K. But until then, enjoy reading!

Sincerely,

Dr. Christian Frank
CEO SIKORA AG

Harry Prunk
Board member SIKORA AG

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

CONTENT

VISIT US AT K!

SIKORA AT K 2019

Numerous premieres at SIKORA's exhibition booth (Hall 10, Booth H21)

At K 2019, from October 16 to 23, 2019, SIKORA presents progessive measurement and control technology for non-destructive quality control and process optimization tailored for the hose, tube and sheet industries.

CENTERWAVE 6000 – plastic pipes in perfection

The CENTERWAVE 6000/1600 was especially developed for quality control of large plastic pipes during extrusion. The system offers a precise 100 % measurement of pipes with diameters from 250 up to 1600 mm (9.8 to 62.9″). It is based on innovative millimeter wave technology and continuously measures over the complete circumference the wall thickness, the diameter, the ovality, the inner profile and "sagging."

Nominal dimensions are quickly reached, start-up scrap is avoided, the highest quality ensured and processes optimally controlled. Furthermore, the CENTERWAVE 6000 does not need any coupling media, measures precisely and independent of influences like temperature or plastic material and does not need any calibration.

Thickness measurement in sheet extrusion with the PLANOWAVE 6000

SIKORA's PLANOWAVE 6000 is a measuring system for non-destructive thickness, grammage and density measurement during the extrusion of plastic sheets. The measuring principle is based on millimeter wave technology and offers the highest measuring accuracy independent of material and temperature. A calibration is not required.

The PLANOWAVE 6000 can be integrated at the hot and cold position directly in the production line. The visualization of the measuring values is done in real time at the monitor of the processor system ECOCONTROL 6000. Besides a numerical display of the measuring values at any number of measuring points over the width of the sheet, the operator receives a graphical display with extensive trend and statistical functions.

ALWAYS KEEPING AN EYE ON MINIMAL WALL THICKNESS

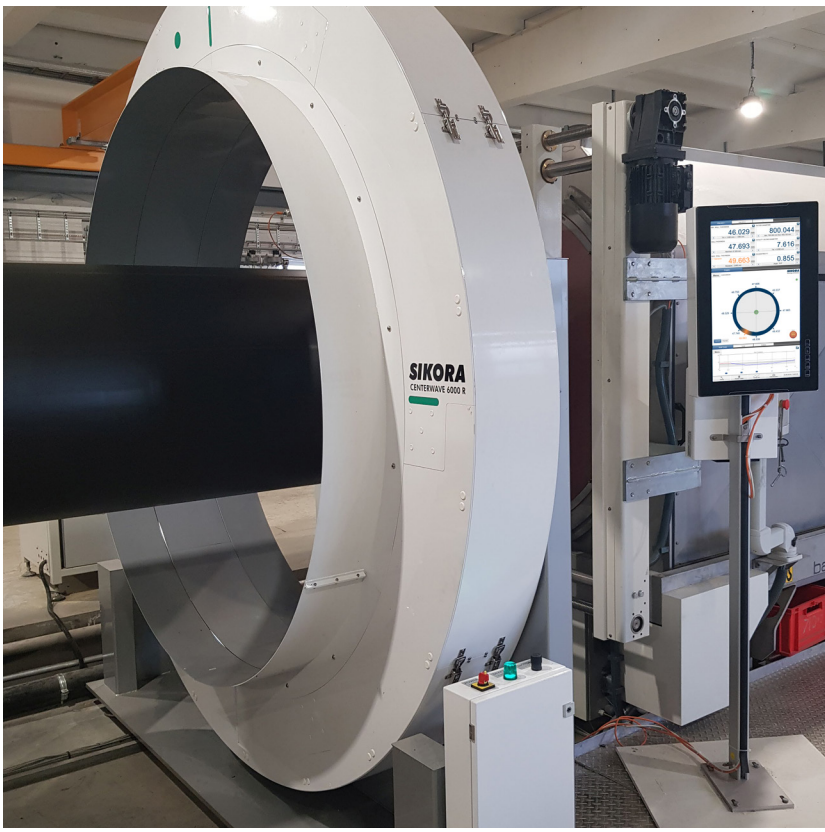
Efficient control with the CENTERWAVE 6000

At the production of plastic pipes with large diameters and wall thicknesses, the product quality as well as the optimization of material costs are of the highest priority. Norms and standards define the minimum and maximum permissible diameters and wall thicknesses of the required pipe dimension. These specifications require a consequent use of measuring and control systems as early as possible in the production process in order to avoid unnecessary scraps and thus, resulting costs.

The CENTERWAVE 6000 measures online over the complete circumference the inner and outer diameter, the ovality and wall thickness as well as the inner profile of plastic pipes. The millimeter waves based system does not require any coupling media, is not influenced by temperature or the plastic material and does not need any calibration. Therefore, the system is predestined for a hot measurement and control as well as for final quality control at the end of the line.

For hot measurement, the CENTERWAVE 6000 is installed in the extrusion line after the vacuum tank. Assuming that the vacuum tank has a length of 9 m (29.5 ft) and that pipes with an outer diameter of 400 mm (15.7") SDR 17 are transported at a line speed of 0.5 m/min (1.64 ft/min) on a 60 m (195.8 ft) long line, the CENTERWAVE 6000 already provides first measuring values after a dead time of 18 minutes instead of 120 minutes at an installation at the end of the line. The measuring values are used for a first control. The CENTERWAVE 6000 controls on average and minimum value.

In order to ensure that the minimum wall thickness will not be undershot, the system automatically adds a safety margin. Afterwards, the CENTERWAVE 6000 determines the standard deviation within the continuous measurements during the second dead time. By means of the standard deviation, a supplement factor is calculated which guarantees that, even at short-term variations, the minimal wall thickness is always reached. The supplement factor is automatically optimized by the continuous measurement and determined standard deviation. Already after the third dead time, meaning after 54 minutes in this example, the CENTERWAVE 6000 guarantees accurate measuring results due to the automatic control. Thus, a reference measurement at the end of the line is not required. Reproducible processes, the assurance of the highest pipe quality as well as a reduction of the scrap rate and involved time and cost savings are the results.



The CENTERWAVE 6000 in use at a client on-site

THICKNESS, GRAMMAGE AND DENSITY MEASUREMENT

The PLANOWAVE 6000 ensures the highest quality in sheet extrusion

During the extrusion of plastic sheets, nothing should be left to chance. The PLANOWAVE 6000 measures online, directly after the start-up of the line, the thickness as well as the grammage and density of sheets and thus, ensures the compliance with specifications. It is suitable for the measurement of any type of plastics, for example, PVC foam, transparent plastics made of PMMA and PC as well as common technical plastics such as PE.

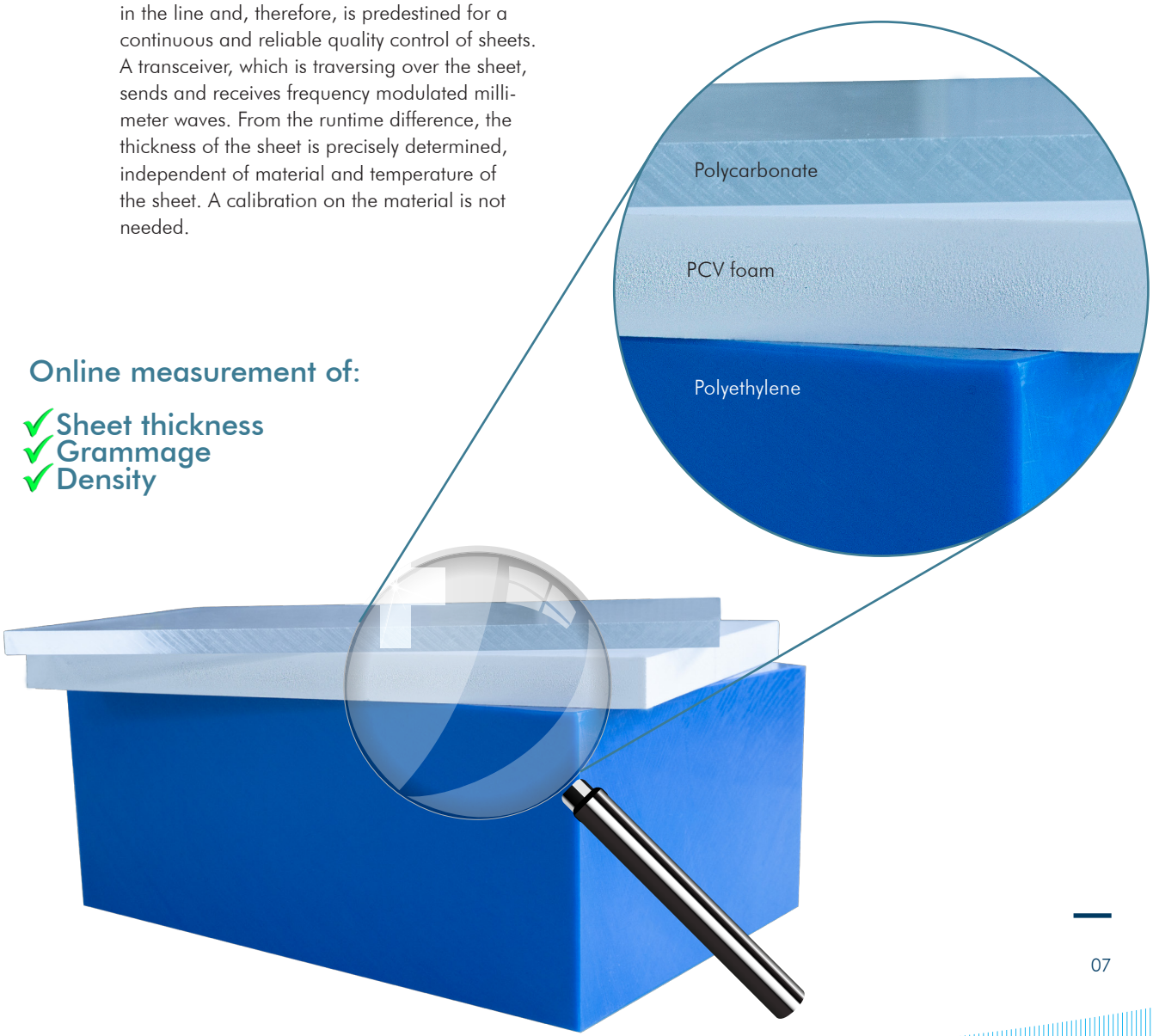
The innovative measuring principle based on millimeter wave technology enables the integration of the system at the hot and cold position in the line and, therefore, is predestined for a continuous and reliable quality control of sheets. A transceiver, which is traversing over the sheet, sends and receives frequency modulated millimeter waves. From the runtime difference, the thickness of the sheet is precisely determined, independent of material and temperature of the sheet. A calibration on the material is not needed.

The PLANOWAVE 6000 directly measures through the sheet, making it especially interesting for products, whose material structure does not show homogeneity over the sheet width. This inhomogeneity is shown online by the system.

The measuring values are visualized in real-time and in correlation with the segment width of the dies at the monitor of the processor system ECOCONTROL 6000 and can be used for an automatic thickness control. A graphical visualization with extensive trend and statistics functions are also available. This way, the operator receives a broad overview about the process.

Online measurement of:

- ✓ Sheet thickness
- ✓ Grammage
- ✓ Density



MEASURING MICRODUCTS PRECISELY

SIKORA measuring technologies ensure high quality requirements of microducts

Optical fiber cables are considered as pioneering technology. The construction of fiber-optic networks quickly continues and is promoted by large investment projects in network applications like "Fiber to the home" (FttH) up to the home. In the view of the above, the demand of microducts, which surround optical fiber cables as protection duct, also increases. Therefore, a continuous quality control of microducts at the production process is essential.

The dimension of microducts has to match exactly with the respective optical fiber cable, for which the microducts are provided. Depending on cable type, specific requirements result due to norms for inner and outer diameter of the microducts. Even a minor deviation, for example of the inner diameter, might lead to the phenomenon, that the optical fiber cables rub against the inner layer during the air-blowing process and, in worst case, get stuck. Process safety permits a permanent monitoring of the production process and control of the product parameters.

The X-ray based X-RAY 6000 PRO of SIKORA continuously measures the inner and outer diameter, the eccentricity as well as the total wall thickness of microducts during production. The X-RAY 6000 PRO precisely determines the wall thickness of up to three layers of different materials. The production data is visualized on the 22'' TFT monitor of the processor system ECOCONTROL 6000. The X-RAY 6000 PRO guarantees the compliance with the specifications, a constant quality and reproducible results by its continuous measurement.

If only a diameter and ovality measurement is required, the LASER 2000 T devices will be predestined. The 3-axis laser gauge heads are characterized by their high precision, reliability and continuous functionality.

For a surface inspection of microducts, the LUMP 2000 is used. With two or three measuring planes (depending on the selected model), the system detects even the smallest irregularities at line speeds of up to 3,000 m (9,842.5 ft) per minute. Due to the combination of double sensor technology, at which the difference of two sensors is evaluated, and infrared light sources, lumps and neckdowns on the surface of microducts are detected to 100 %.

More about microducts

Microducts are small, flexible ducts, which are used for the installation of microduct optical fiber cables. They consist of two layers: an outer layer of flexible plastics for the protection of the optical fiber cable as well as an inner smooth layer with little abrasion.

SERVICE: MEASUREMENT SYSTEM ANALYSIS (MSA)

Save time, costs and resources with the SIKORA service

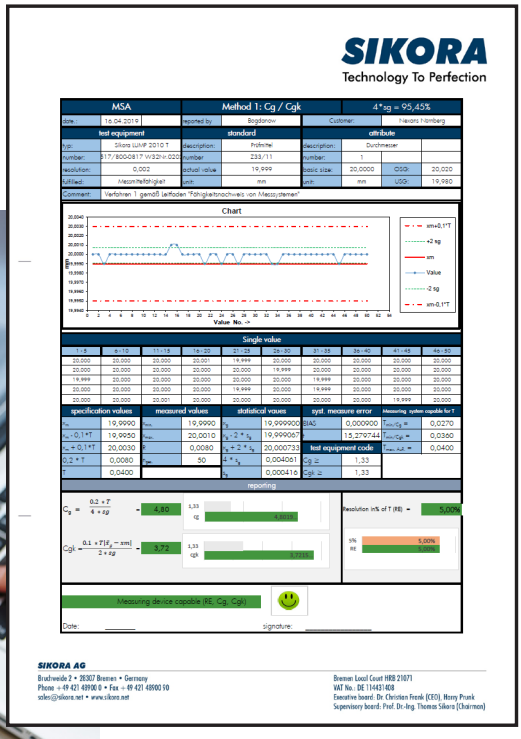
With their request for tests of measuring equipment according to the MSA method, the automotive industry has set standards that are now also being required by other industrial areas. Regular inspections of measuring devices for diameter according to the MSA method provide information on repeatability, linearity, stability and accuracy of the measurement. With the fast and simple measurement analysis, especially designed by SIKORA, effects on production are minimized and time, costs and resources are saved.

The measurement systems analysis is based on a high number of single measuring values and therefore, particularly suitable for determination of the accuracy, stability and repeatability of a measuring system. According to the requirements of MSA procedure 1 – maintenance of the measuring device without the operator's influence – a calibrated sample or measurement standard is measured 50 times (at least 25 times). All single measurements are transmitted into a corresponding formula for the calculation of the aptitude scores Cg and Cgk.

SIKORA uses a procedure, whereby our service technician realizes the required measurements in a fraction of the time and in which the data is automatically transferred to a special software for the calculation of the aptitude scores. In consequence, downtimes of the production line are massively reduced and the information value of the calculations increases.

If the maintenance of a measuring device shows a wrong measuring result, a specialist would already be on-site in order to arrange the corresponding calibration.

Of course, SIKORA issues a detailed measuring report after the measurement systems analysis and thus, certifies the measuring capability of the device as well as its conformity to the market requirements.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MSA | Method 1: Cg / Cgk | 4*sg = 95,45%

Chart

Single value

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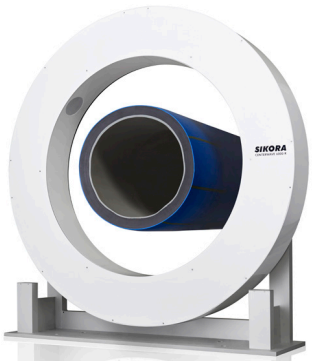
SIKORA
Technology To Perfection

Quality in its innovative form.

With passion, we develop future-oriented measuring and control devices for quality assurance of hoses and tubes, such as the **CENTERWAVE 6000**. A non-contact system for the measurement of diameter, ovality, wall thickness and inner profile (sagging) of large plastic pipes with a diameter from 90 to 3,200 mm (3.5 to 126.0″). An innovative solution based on millimeter wave technology that increases product quality and ensures significant material and cost savings during extrusion.

- Rotating measurement around 360° of the circumference
- Easy operation without presetting product parameters, reliable without calibration
- Independent from material and temperature, no coupling media necessary
- Measurement data available in real time
- Hot and cold measurement



www.sikora.net/centerwave6000

RAFFLE

SIKORA pictures

There are 5 flaws in the lower picture. Can you find them all?

Send us an email with a picture of your solution until November 30, 2019 to: extra@sikora.net

Win one of three **Baseus Bracket Wireless Charger and Powerbank**
(Picture similar)

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 email, all subsequent emails will be considered invalid. The legal process is excluded. GOOD LUCK!

Congratulations to the winner of the labyrinth – SIKORA EXTRA 1/19. Solution: 640

- **Andy Bruneel**
- **Jose Ruiz**
- **Semih Ferik**

NEXT EVENTS

- Rubber Expo | Oct 08-10, 2019 | Cleveland, OH, USA
- K | Oct 16-23, 2019 | Düsseldorf, Germany
- Plastic Pipes | Nov 21-22, 2019 | Mumbai, India

Sustainability at SIKORA

Our environment is important to you, but you do not want to do without the informative SIKORA EXTRA articles? Register today at extra@sikora.net and receive the SIKORA magazine conveniently via email instead of printed material.

SIKORA

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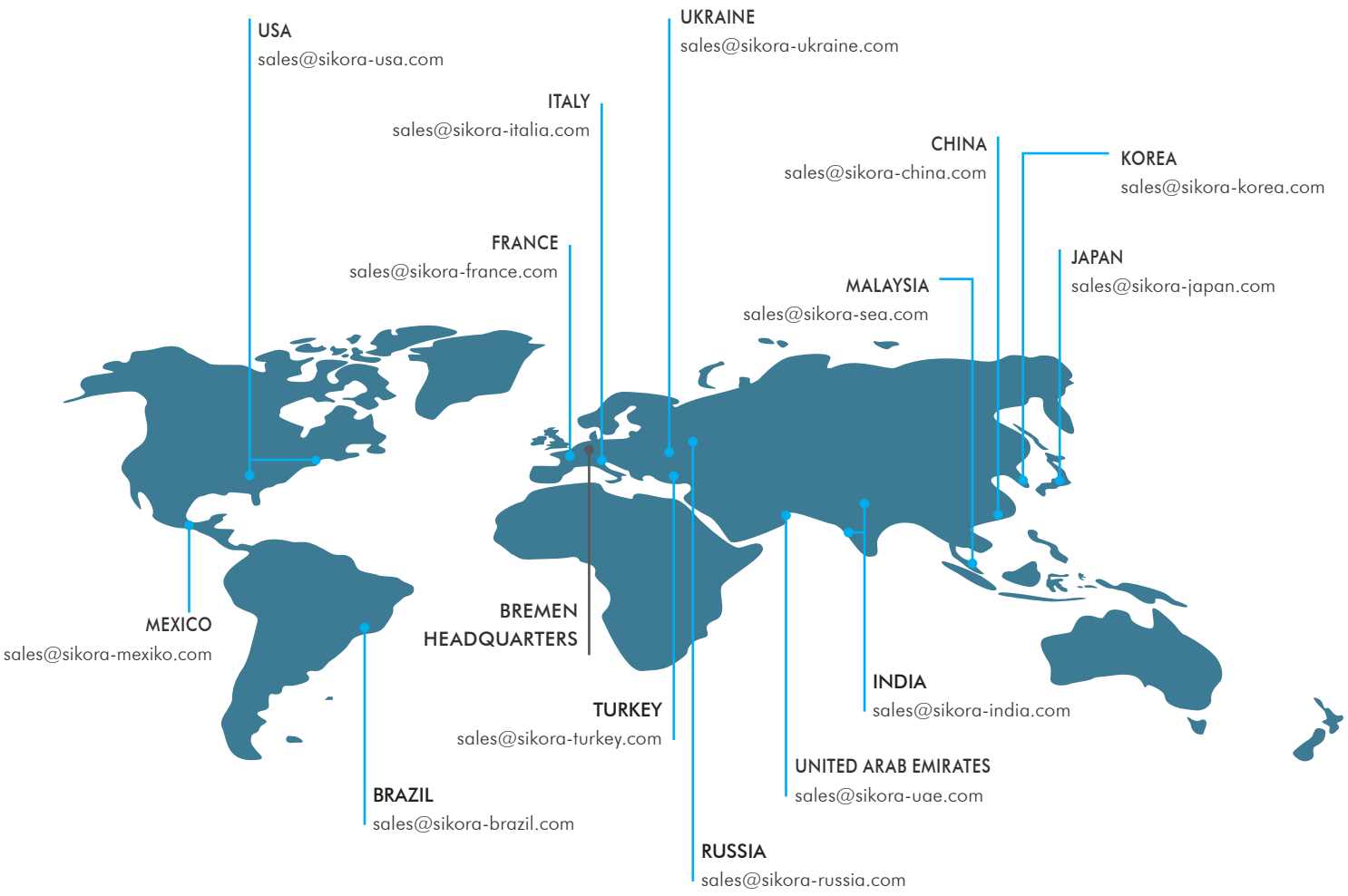

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