SIKORA EXTRA

Hose and Tube Magazine

SIKORA wishes a
Happy New Year!

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AHEAD WITH PASSION.

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Deutschland/Germany
Tel.:/Phone: +49 421 48900 0
communications@sikora.net, www.sikora.net

Next Events

K 2016
October 19th - 26th, 2016
Düsseldorf, Germany

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

Dear customers, colleagues and business partners,

For over 40 years, the company SIKORA has been excelling by passion for technology, innovative ideas and groundbreaking developments in the areas of measurement, control, inspection and sorting technology. For the hose and tube as well as wire and cable markets, the SIKORA AG has already become an established presence. Furthermore, SIKORA sets new standards in the areas of plastic manufacturing and processing as well as the optical fiber and fiber cable production.

In 2015, SIKORA employees were able to realize promising technologies, which is for example represented by the new PURITY CONCEPT Systems. The devices for the online and offline analysis of plastic pellets, flakes, films and tapes can, according to the individual requirements, be equipped with X-ray, optical or infrared technology. Therefore, the PURITY CONCEPT Systems are suitable for the quality assurance during the incoming goods inspection of plastic materials.

We already see 2016 as a year of advanced new developments. The new millimeter waves technology for the quality assurance during the extrusion of big tubes, which is released next year, is eagerly awaited. The measuring system is based on frequencies in the millimeter waves area and reliably detects diameter, wall thickness and ovality of big plastic tubes.

At the turn of the year we promise you continuously new achievements for all markets and individual solutions for your production.

We wish you personally and professionally all the best for the coming year!

Enjoy reading!
Sincerely,

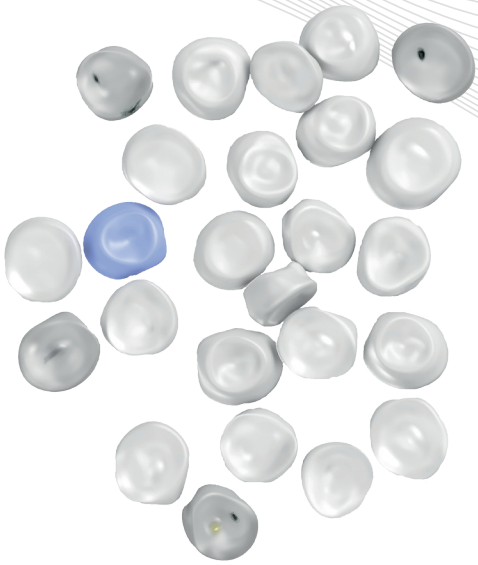
Dr. Christian Frank
CEO of SIKORA AG

Harry Prunk
Member of the Board of SIKORA AG

SIKORA EXHIBITION APPEARANCE

Request for SIKORA devices – continuous increasing trend

Tripled visitor numbers, strong interest in the most novel innovations and a constant request for SIKORA X-ray devices – that is the successful result of this year's Fakuma from October 13th to 17th, 2015, in Friedrichshafen.



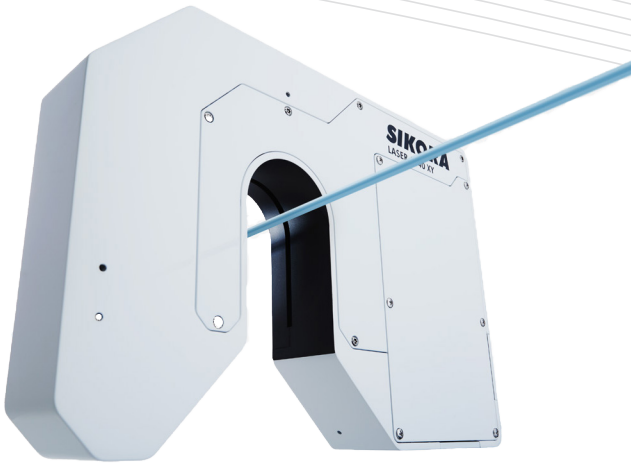
The highlight at the SIKORA booth was the **PURITY SCANNER**, which uniquely combines innovative X-ray technology with a dual-axis optical system and therefore, guarantees a 100% online inspection and automatic sorting of XLPE pellets.

Also, the new **PURITY CONCEPT Systems** for the online and offline analysis of pellets, flakes and films/tapes enthused visitors of the booth. SIKORA uses the open concept and modular design to adjust the devices regarding the wishes and requests of the customers.

Whether **PURITY CONCEPT X** with X-ray technology, **PURITY CONCEPT V** with an optical measuring system or **PURITY CONCEPT IR** with infrared technology – SIKORA **PURITY CONCEPT Systems** stand for highest material quality and stable processes.

Read more on page 6

The devices of the **LASER Series 2000** and **LASER Series 6000** for classical and high-end diameter measurements in hose and tube extrusion lines distinguish especially by their high precision, reliability and continuous functionality without calibration or maintenance times. Visitors of the SIKORA booth were also interested in the non-contact and non-destructive measuring principle as well as the intelligent design. Several applications of the **LASER Series 2000** and **LASER Series 6000** gauge heads completed the conversations.



The request for SIKORA X-ray measuring devices **X-RAY 6000 PRO** is increasingly strong. Especially during the manufacture of multi-layer hoses and tubes, the system guarantees continuous compliance of specifications regarding wall thickness, eccentricity and diameter – for various materials such as PE, PVC, HDPE, foamed products, EPDM, nylon, rubber, silicone and many more.

Forecasts on future exhibitions and further innovations were provided by conversations regarding the new measuring system **CENTERWAVE 6000** by SIKORA. The device uses millimeter waves in order to define product diameter from 120 to 1,000 mm during the production of plastic tubes and is currently developed as the new key technology for the quality assurance during the extrusion of big tubes.

Read more on page 9

Curious?

Save the date for the K 2016 from **October 19th to 26th, 2016**, in Düsseldorf and get inspired by the unique measuring, control, inspection, analysis and sorting devices of the SIKORA product portfolio.

ONE CONCEPT – SEVERAL POSSIBILITIES TO ASSURE QUALITY

Online and offline analysis of Pellets and Flakes

SIKORA presents its new and pioneering models of the PURITY CONCEPT Systems. With that, the company offers an outlook on the varied potential of its systems for online and offline inspection and analysis of plastic material. According to the application, the systems are equipped with X-ray technology (X), infrared technology (IR) or optical sensors (V) and can be used for samples during the production in order to find impurities from 50 µm.

Especially interesting are the systems for the manufacture of medical hoses. An essential criterion for hoses of the medical field is the absolute purity of all materials in order to ensure highest quality for the demanding range of application.

Incoming goods inspection

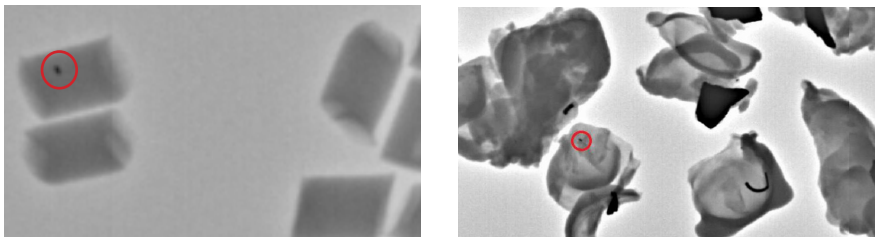
Sensitive end products require a similar reliable control and processing of the raw materials. The transport of the plastic pellets, which are usually transported in large tanker lorries and stored in a silo at the plant, shows several weak points for contamination. For example, the discharge from the transport vehicle to the silo offers potential contamination from dust or other impurities a way. Until now, only samples have been checked manually before the material was processed. But even with the utmost care there might be contamination, which cannot be seen by the human eye – metallic and organic contamination inside the pellets/flakes from 50 µm.

Therefore, SIKORA recommends the usage of a PURITY CONCEPT System device for the inspection and analysis with optical sensors for transparent pellets/flakes and X-ray technology for black pellets/flakes for instance. This is the only way for incoming goods inspections to ensure that the raw material already has the desired quality needed for the end product.

Online measurement up to 50 kg throughput

During the processing of high-quality and therefore high-priced XLPE materials it is often not enough to rely only on sample tests. Here it is useful to integrate an online analysis in the production process.

For a low throughput up to 50 kg per hour, which is common during the extrusion of medical hoses for example, SIKORA offers the PURITY CONCEPT System with conveyor belt that can



Contamination in pellets and flakes

SIKORA PURITY CONCEPT X for sample analysis

easily be integrated in existing lines. Depending on the model, the device inspects pellets and flakes with optical sensors or by using X-ray technology for contamination from 50 µm before the material enters the extruder.

Highest quality for sensitive applications

QUALITY MONITORING

The quality assurance device LUMP 2000 detects lumps and neckdowns on product surfaces

Today, the fast, precise and reliable detection of lumps and neckdowns on product surfaces is an essential part of hose and tube extrusion lines. For a continuous quality monitoring, SIKORA offers 2- and 3-axis lump detectors LUMP 2000 XY and LUMP 2000 T, which detect lumps and neckdowns at any line speed.

Without the usage of a specially developed lump detector, hoses and tubes can only be checked for lumps and neckdowns after the production process. Usually, manual procedures, such as optical as well as touch tests, are used. The resolution of the naked eye under ideal circumstances is 0.08 mm at a distance of 0.25 to 0.5 m. The human touch precision is about 1.5 to 4 mm[1]. Therefore, manual fault detection either with the optical or with the touch method is possible to only a limited extent.

For a continuous quality assurance, SIKORA offers the measuring technology of the LUMP 2000 series for the detection of lumps and neckdowns in two or three measuring planes. The core of the LUMP 2000 devices is the advanced double sensor technology, which avoids “ghost faults”. The system detects irregularities on the product surface from 10 µm at any line speed.

SIKORA LUMP 2000 Series

[1]Encyclopedia of optics: Resolution

SIKORA CONSULTING

Individual consulting on-site

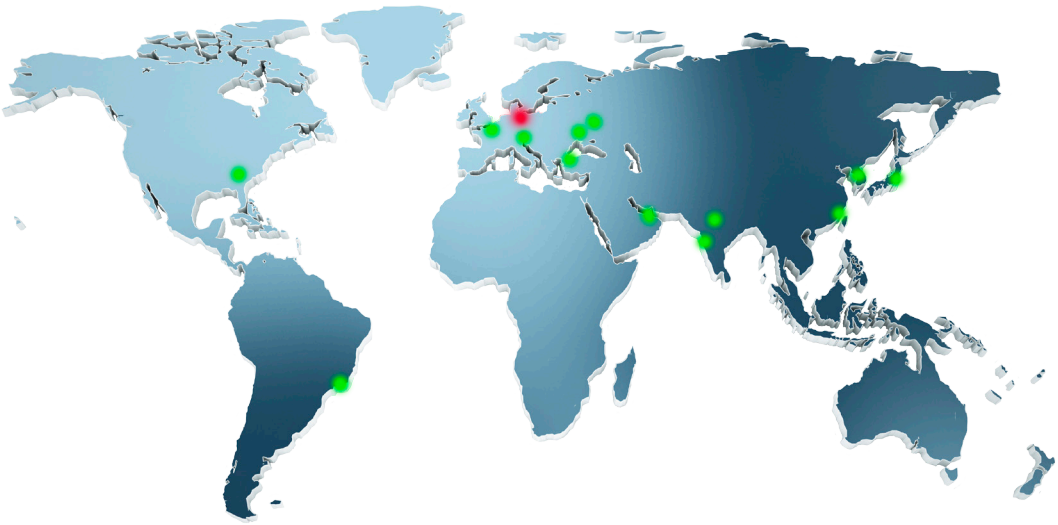
Whether service or sales – at SIKORA we are working according to a simple guiding principle: "Every first encounter is the beginning of a long and successful partnership."

That is true for tasks regarding the modernization of existing production lines as well as for the planning of a new plant. Therefore, SIKORA offers you more than general sales presentations in meeting rooms or impersonal cost estimates.

On the basis of your request, your personal contact person will get into contact with you in order to familiarize with your production. This person is your contact for all your requests. SIKORA service technicians and sales manager look back on many years of experiences at production sites all over the world and help you at any time to find the best possible potential to assure the quality and processes of your line.

More than 4,000 journeys per year

In 2015 alone SIKORA employees were able to gather experiences and new ideas in over 4,000 journeys to customers. Naturally, this knowledge is spread to their colleagues in regular meetings and trainings and therefore, permanently optimized. Thus, your personal contact is always up to date.



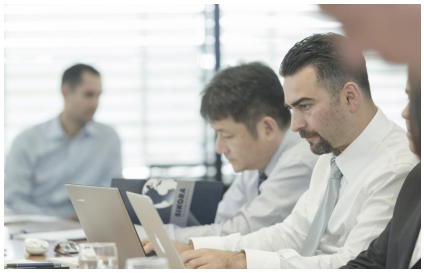
Your advantages

After your SIKORA service technician or sales manager familiarized with your products and requirements he/she will create an individual offer on possible devices, according settings and technical specifications as well as possible combinations and applications.

All SIKORA measuring and control devices as well as systems for inspection, analysis and sorting excel in strong availability values and a fast amortization. Furthermore, they help to lower the resource consumption and therefore according costs enormuously from day one. At the same time, the quality of end products is increased.

Start your modernization now – arrange your personal consulting appointment: sales@sikora.net

Map legend
Red: SIKORA Headquarters Bremen
Green: SIKORA Offices worldwide



INNOVATION: CENTERWAVE 6000

SIKORA develops key technology for quality assurance during the extrusion of big tubes

Stagnation is a foreign word to the 200 SIKORA employees worldwide. Regarding this background, a new product of groundbreaking innovation was created, the CENTERWAVE 6000.
The core: Several transceivers, arranged around the circumference of a tube, sending and receiving continuous frequency modulated millimeter waves for a non-contact and µm-precise online measurement of diameter, ovality and wall thickness for big plastic tubes during the extrusion.

During the last years, enormous successes regarding measuring accuracy were achieved by researching metrological applications with frequencies in the millimeter waves range. Nevertheless, the results could not yet be used for the coating thickness measurement of cylindrical products. With the novel, innovative measuring system, the **CENTERWAVE 6000**, SIKORA creates completely new preconditions for the reliable measurement of the nominal size as well as the outer diameter, ovality and wall thickness of all kinds of extruded DIN-tubes.

Advantages of the new millimeter waves technology

Even without any knowledge of the properties of the extruded materials and its temperatures, the **CENTERWAVE 6000** measures the outer contour as well as the wall thicknesses simultaneously at several places of the circumference, providing a precision to a previously unknown degree. Layer thicknesses of multi-layer tubes can also be measured precisely.

Several sensors, so-called transceivers, arranged around the circumference of a tube, continuously send and receive frequency modulated millimeter waves. Boundary layers, as for example each front and back site of a plastic, reflect these waves, which are detected and demodulated by the receive unit of the regarding transceiver. These receive signals contain information regarding the distance between boundary layers of different materials. After an algorithmic processing of the receive signals of each sensor, the requested measuring values are ready for visualization within only a few milliseconds. The values can as well be used for the control of the different dimensions of a tube in the extrusion line.

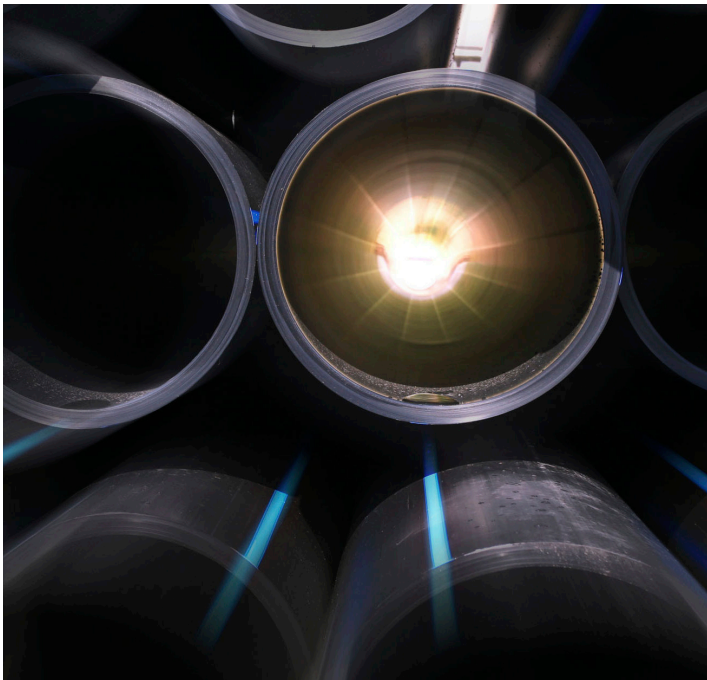
Replacement of conventional technologies

For the development of the technology on the basis of a CW-millimeter wave chip, the goal of creating a non-contact measuring device at the extrusion of tubes that is maintenance-free and durable, was deci- sive. By independently identifying the characteristic values of the material, the **CENTERWAVE 6000** generates the measuring values with highest precision, without the need for specifications regarding the material parameters.

The **CENTERWAVE 6000** is going to provide highly precise measuring values at different positions of the production line (even in the hot area) as there are no coupling mediums needed, temperatures are not decisive and no calibrations are necessary.

Product spectrum

Two stand-alone gauge heads for different tube diameters from 120 to 400 mm and 250 to 1.000 mm were created. The industrial PC **ECOCONTROL 6000** offers, besides a numeric presentation of the measuring values, also a graphic visualization as well as extensive trend and statistic data features. The calculation of virtual measuring values at the position of the extruder allows the line manager to react quickly to changes. Even with larger delay times between the position of extrusion and the measurement an effective and fast control of the wall thickness and especially the elimination of excessive consumed material is guaranteed.



X-RAY 6000 X-RAY RADIATION

With safety for highest quality

On November 8th, 1895, the German physicist Wilhelm Conrad Roentgen discovered the X-ray radiation (Roentgen radiation), which was named after him and brought him the first Nobel Prize in the field of physics in 1901. Since the discovery of the radiation over a century ago, mankind learnt a lot about its applications, advantages but also about the dangers of the invisible waves.

Apart from the medical applications, X-ray radiation is nowadays also used for the inspection of food as well as for the luggage and people screening at airports for example. Furthermore, X-ray technology has become indispensable in production lines of hoses and tubes. Especially for the manufacture of single and multi-layer tubes made of PE, HDPE, PVC as well as foamed products, hoses of EDPM, nylon, rubber or silicone the device guarantees enormous time, material and cost savings by controlling the specifications regarding diameter, wall thickness and concentricity.

For more than two decades, SIKORA is offering X-ray technology, e.g. the X-RAY 6000/6000 PRO measuring devices, which are, accordingly to the requests (hot or cold measurement), installed at any position of the production line and ensure the quality continuously.

Safety is important to us

When it comes to X-ray technology, the question about safety keeps coming up. It is a special interest of SIKORA to build safe devices, which pose no health risk at any time.

The X-RAY 6000/6000 PRO devices are designed in a way that the radiation on the outside of the case and the contact protection, at a distance of 0.1 meter, amounts less than 0.5 microsievert/h. A fact that is also verified by RöV experts[1]. Therefore, the X-ray values are only at 50% of the maximum value, which is defined in the "European Directive 96/29/Eurotom".

SIKORA ensures that the radiation does typically not exceed the natural environmental radiation. For each device there is an expert report as well as the according measuring protocol to proof this fact.

General safety information

People are exposed to several different radiations every day. The natural radiation exposure (cosmic radiation, earth radiation etc.) as well as the civilisatory radiation exposure (nuclear facilities, radiation from research, technique and household etc.) alone amount for 3.9 millisievert/year[2]. A flight from Frankfurt to New York has to be accounted with additional 28 µSv. Somatic cells, which are damaged by the radiation and therefore rejected, can be reproduced without any problems so the body can regenerate itself.

Nevertheless, one should seek to avoid unnecessary additional radiation. According to § 31a of the RöV, the effective dose for occupationally exposed persons is not allowed to exceed the limit of 20 mSv per calendar year. The limit of radiation of 20 mSv/year, even for a continuous work in the close proximity[3] of the X-RAY 6000/6000 PRO, is not roughly reached but only amounts 1 mSv/year. SIKORA guarantees safety and highest quality!

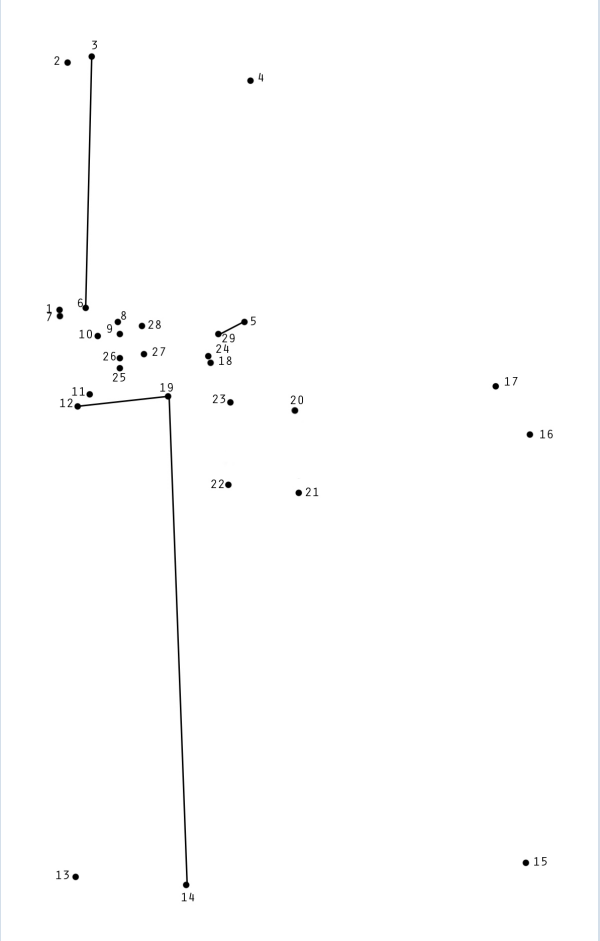
[1] RöV (Röntgenverodnung): German X-ray regulation

[2] Radiological clinic Bonn: X-ray radiation in the radiological diagnosis – www.uni-bonn-radiologie.de/front_content.php?idart=430.

[3] Based on a daily working time of 8 hours on 5 days per week and 50 weeks per year.

RAFFLE

SIKORA Picture Puzzle



Connect the dots in the right order to solve the puzzle.

Which SIKORA measuring device that stands for highest quality and impressively exact measuring values regarding the diameter, eccentricity and wall thickness hides in the SIKORA picture puzzle?

_____

If you know the answer, send an e-mail until January 31st, 2016 to:
communications@sikora.net

The prize is one of three powerful Sennheiser Headphones

(Picture similar)

Each correct answer takes part in the raffle. Employees of SIKORA AG and SIKORA Holding GmbH & Co. KG and their relatives are not allowed to participate. 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!

The correct answer of the last raffle was:

PERFECTION

Congratulations to the winners!

SIKORA AG
Bruchweide 2 · 28307 Bremen
Germany
Tel.: +49 421 48900 0
www.sikora.net
sales@sikora.net

BRAZIL
sales@sikora-brazil.com

CHINA
sales@sikora-asia.com

FRANCE
sales@sikora-france.com

INDIA
sales@sikoraindia.com

ITALY
sales@sikora-italia.com

JAPAN
sales@sikora-japan.com

KOREA
sikora@chol.com

RUSSIA
sales@sikora-russia.com

TURKEY
sales@sikora-turkey.com

UKRAINE
sales@sikora-ukraine.com

UNITED ARAB EMIRATES
sales@sikora-uae.com

USA
sales@sikora-usa.com

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