

SIKORA^{EXTRA}

Wire and Cable Magazine

**Smart Assistance Manager
SIKORA service expertise in
your hand**

SIKORA^{EXTRA}
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Special topic:
**Inspection and Analysis
of XLPE and HPTE**

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GOOD RESOLUTIONS – DIRECTLY REALIZED.

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Next Events

■ wire Russia
June 8 – 11, 2017
Moscow, Russia
Booth FO D33-1

■ Laser World of PHOTONICS
June 26 – 29, 2017
Munich, Germany
Booth B3.112



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

Dear customers, partners and business friends,

SIKORA has started a new financial year for the 44th time – naturally, we are aiming again to further optimize processes for our customers and support you as a competent partner for production and service tasks. Just as our measuring devices, SIKORA employees deliver results in real-time and therefore, put good resolutions directly into practice.

For example, the new Smart Assistance Manager (SAM) makes professional service even simpler and more direct. The 13.3" industrial tablet enables the direct connection of your devices with SIKORA service engineers. The result: optimized support as well as a fast and reliable device diagnosis. You are always perfectly secured with the SIKORA service competence in your hand.

SIKORA has been repeatedly classified as an A level supplier and convinces with an efficient production and reliable delivery. In order to keep the resolution to maintain and further develop this standard, we are going to grow – also in floor space. Therefore, mid-2017 we are laying the foundation for the expansion of the SIKORA headquarters in Bremen, Germany, to generate more room for production and logistics.

We are looking forward to supporting you in realizing big plans and good resolutions to optimize your production processes in 2017.

Enjoy reading!
Sincerely,

Dr. Christian Frank
CEO SIKORA AG

Harry Prunk
Executive Board SIKORA AG

INSPECTION AND ANALYSIS OF XLPE AND HPTE INSULATING MATERIAL

PURITY SCANNER and PURITY CONCEPT Systems guarantee the highest purity

■ **Plastics used for the insulation of medium, high- and extra-high voltage cables have to comply with the highest purity standards. Most commonly, XLPE material (cross-linkable polyethylene) is used for the insulation. The cross-linking takes place at a temperature of the radiant heaters of up to 450 °C. Thereby, the temperature of the insulation may only reach 280 °C. Therefore, the insulated cable runs through the heated pressure pipe of a CV line at approximately 10 bar and cools down in the pressure pipe as well. Before the cable can be processed further, a degassing is necessary. During this process, the methane gas, which occurred during the cross-linking, escapes. The degassing itself can take up to 10 days.**

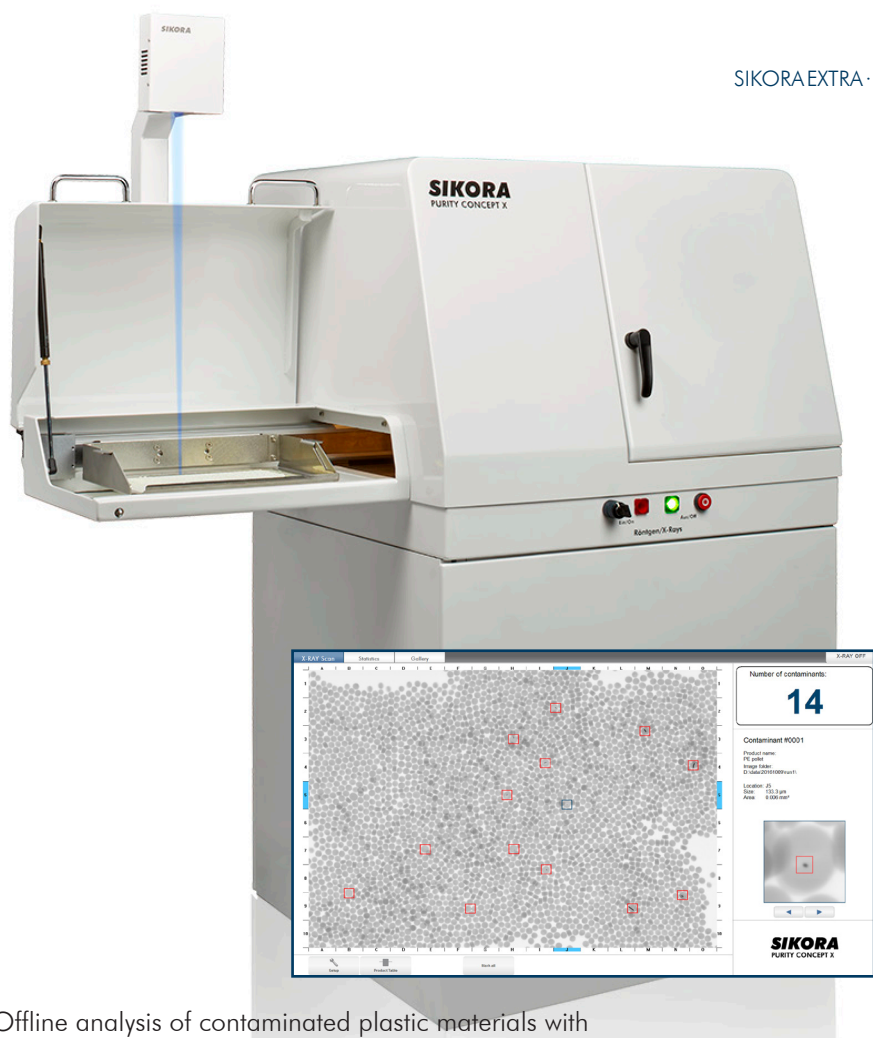
As an alternative, a High Performance Thermoplastic Elastomer (HPTE), based on Polypropylene, can be used as insulation material. The material shows good electrical and thermo-mechanical properties, comparable to those of XLPE and in some aspects even superior. The HPTE does not require a cross-linking section and no degassing treatments. This means that the complete cable is manufactured in one production process without a CV line and can be jacketed directly in the inline process.

No matter which approach is applied respectively which material is used, the purity of the insulation material is an essential factor for the durability of the cable, while disregarding purity

demands, means to accept for the risk of a breakdown and the accompanying costs. At this point, the advanced purity inspection and sorting system PURITY SCANNER comes into focus.



PURITY SCANNER: Online inspection and sorting of plastic materials



Offline analysis of contaminated plastic materials with the PURITY CONCEPT Systems and visualization on the SIKORA ECOCONTROL 6000

tapes/films. The models of the PURITY CONCEPT Systems are perfectly designed for smaller throughputs as well as production lines where sample testing is sufficient, or the control of incoming goods is required. Depending on application, the systems are equipped with X-ray technology (X), Infrared technology (IR) or optical sensors (V) and are used for the detection of contamination in XLPE and HPTE material.

An example: The laboratory inspection and analysis device PURITY CONCEPT X with X-ray technology inspects up to 3,000 pellets (200 ml) that are placed on a tray. Within seconds, these pellets are inspected for contamination. Subsequently, contaminated pellets are optically highlighted. Quality assurance does not get better than this.

Online inspection and sorting of contaminated XLPE and HPTE material

The purity of the plastic material used for the insulation of HV and EHV cables is an essential criterion. The purer the compound, the lower is the risk for a breakdown. Accordingly, it is eminent to inspect and sort the material for purity to 100 % before it enters the extrusion process.

Today, inspection systems are used either in laboratories or for online monitoring during the production process. The majority of these systems is based on optical technology to detect contamination on the pellet surface.

Contamination inside the pellets cannot be detected by using this method. The inspection and sorting system PURITY SCANNER allows for a 100 % online quality assurance. By using X-ray technology and optical technology, pellets with contamination on the surface or inside the pellet are reliably identified and automatically separated.

Offline analysis of contaminated XLPE and HPTE material

In addition to online inspection and sorting devices, the modular designed PURITY CONCEPT Systems are available for on- and offline inspection and analysis of pellets, flakes and

Combined strengths for optimized processes

For comprehensive process optimization, cable manufacturers combine the online inspection and sorting system PURITY SCANNER with an offline inspection and analysis device of the PURITY CONCEPT Systems.

The PURITY CONCEPT System detects and highlights single contamination within the 200 ml of the rejected material. This interaction of online and offline inspection and analysis ensures the monitoring of the purity of the material as well as the creation of a database to avoid contamination in the future.

SIKORA SPARK 6020 DC

Direct current spark tester with higher performance

■ In 2017, a more powerful device will be joining our direct current spark tester SPARK 2020 DC for the online inspection of the insulation during the production. As of now, the SPARK 6020 DC with a test voltage from 1 to 20 kV is available and perfectly suitable for the control of phone lines, data cables and mini coax cables with foam insulation.

The SIKORA SPARK 6020 DC combines the proven technology of the SPARK 2020 DC with the innovative advantages of the devices of the SPARK 6000 Series.

Integrated display

Just as the SPARK 6030 HF, the new SPARK 6020 DC has an integrated display to show the selected test voltage, the number of high voltage breakdowns and the capacitive load. In combination with a control panel, the specification of the test voltage is done intuitive, fast and direct.

Integrated self-test module

According to European standards, openly operated measuring and testing equipment must be checked regularly. Accordingly, spark testers are examined with regard to accuracy of the high voltage, touch current and func-

tion (sensitivity). As all models of the SPARK 6000 Series, the SPARK 6020 DC is optionally equipped with an integrated self-test module that controls the function and safety in three steps.

For the re-calibration, the test module can simply be removed from the spark tester and is replaced with a calibrated module. Thus, the submission of the complete device is not necessary.

SIKORA SPARK 6020 DC
with self-test module



SPARK 2020 DC

For production lines where a test voltage of 1 to 7.5 kV is sufficient, SIKORA continues to offer the SPARK 2020 DC with a reduced test voltage.

SIKORA EXPANDS COMPANY HEADQUARTER

More space for production and logistics

■ SIKORA AG expands again its production capacities at their headquarters in Bremen, Germany. Only 4 years ago, SIKORA expanded its office space by 2,688 m² for the divisions research and development, service, marketing, sales, purchasing and production. The new planned building, with an effective area of 7,000 m², offers space for the production and logistics departments on three floors as well as a stacked storey for communication purposes. The new and modern building will be built on the area of the production facility, which was built in 1990 and which now will be torn down. Start of construction will be in mid-2017. The completion of the building is planned for 2018.

Reasons for the expansion are the growth of the company as well as its diversification into new markets lead-

ing to new and further developments of technologies and devices over the last years.

Today, SIKORA serves four industries with innovative measurement, control and sorting technology: Wire & Cable, Optical Fiber, Hose & Tube and Plastics. "With the product range for the cable segment, which has grown strongly over the last years, as well as the markets for hose, tube, sheet and plastic industry, we have been working at maximum capacity in the existing buildings", says Peter Früchtenicht, Director Operations at SIKORA AG. "The new building offers us more space for the vast growing businesses in the field of large pipe measurement technology and the inspection and sorting for the plastics industry. This opportunity is also used to restructure jobs according to even leaner processes. The separation of logistics and value-adding activities including Lean Production Concepts are essen-

tial elements used to increase the productivity", explains Peter Früchtenicht.

Preceding the new building, an intensive planning phase took place, during which all processes were assessed in order to optimize the material flow from the incoming goods to the production right up until shipment. To never stop challenging our production processes for a most efficient and economic production at increased product quality as well as delivery reliability is a continuous task we work for with focus on our customers' expectations.

There will be no restrictions during the construction phase for SIKORA customers. During this time, the production has been moved to a building only 400 m from the SIKORA headquarters, ensuring a very short connection to the main building.



SIKORA SERVICE: SMART ASSISTANCE MANAGER (SAM)

SIKORA service competence in your hand

■ Fast, competent and reliable support for our customers all over the world – SIKORA meets these requirements with the Smart Assistance Manager (SAM). For our customers, this means a significantly more efficient support and therefore, optimized service processes.

The device for professional service

SIKORA's Smart Assistance Manager is a 13.3" tablet, optimized for the rough industrial environment.

With the Smart Assistance Manager, you are able to establish a direct connection with a SIKORA support engineer to receive instructions for all maintenance, support and diagnosis

tasks via the integrated video chat feature (5 MP camera). SIKORA's support engineer uses the SAM for a direct connection to your SIKORA device to receive an immediate diagnosis in real-time or to upload software updates.

The assignment of the Smart Assistance Manager already starts with the installation of the measuring device. With the SAM, you can show us the environmental conditions as well as the line layout. The SIKORA support is happy to assist you, starting with information on the best possible positioning of the equipment.

Due to diverse connection possibilities, such as USB 3.0, RJ 45 Ether-

net, Bluetooth 4.0 and the LTE/UMTS module, as well as various application possibilities, the Smart Assistance Manager is an important tool for modern production lines, for example to support maintenance and diagnosis tasks, as well as every Smart Factory in the era of the Industry 4.0. *Learn more on page 10.*

Our individually designed license module always guarantees the most current version of the SIKORA diagnosis software for a live session for fault detection or as an offline diagnosis system for all SIKORA measuring, control, inspection, analysis and sorting systems.



SIKORA Smart Assistance Manager

MANUFACTURING CABLES FOR THE USE IN NUCLEAR POWER PLANTS

Sophisticated online measurement and control technology with the X-RAY 6000

■ In 2016, 435 nuclear power reactors were in operation worldwide. Together, they produce 14 % of the world's electricity.* As nuclear power reactors work with radioactive materials, safety is essential. Therefore, all components implemented in nuclear power reactors have to fulfill certain safety regulations. This also applies to signal cables, which are used to operate the reactor plant as well as for the electric power supply. Already during the production of these cables, reliable measuring and control technologies are used to ensure cable specifications. This guarantees safety as well as durability, robustness and a long maintenance free service.

Whether supply cables, control cables or cables used in the control room respectively for instrumentations and

sensors – continuous and repeatable quality is of utmost priority for all cable parameter, such as wall thickness and diameter. The continuous control of these parameters can be achieved for example with the diameter, wall thickness, ovality and eccentricity measurement device X-RAY 6000.

In combination with the display and control system ECOCONTROL 6000, dimensional deviations are detected and adjusted. The X-RAY 6000 devices require no calibration, are easily integrated into existing production lines and are similarly usable for cables with single or multi-layered insulations.

The X-RAY 6000 measuring devices assure the quality of cables for the use in nuclear power plants. The result is a long maintenance-free application and the highest safety.

*Nexans: Safe and reliable cable solutions for the world's nuclear industry – https://www.nexans.co.uk/eservice/UK-en_GB/fileLibrary/Download_540250489/UK/files/Nuclear%20Power%20Brochure.pdf

Visualization of relevant measuring data of the X-RAY 6000 on the SIKORA ECOCONTROL 6000



Alternative measuring methods

If the measurement of the **diameter** is sufficient, SIKORA offers various diameter measurement devices – LASER Series 2000 and LASER Series 6000.

For the determination of the average **wall thickness**, SIKORA laser diameter devices (LASER Series 2000/6000) are used before and after the extruder. The wall thickness is calculated by the **differential measurement method**.

Diameter, ovality and **eccentricity** for products with a diameter from 0.05 to 25 mm are measured by the CENTERVIEW 8000.

INDUSTRY 4.0

Intelligent and flexible production processes

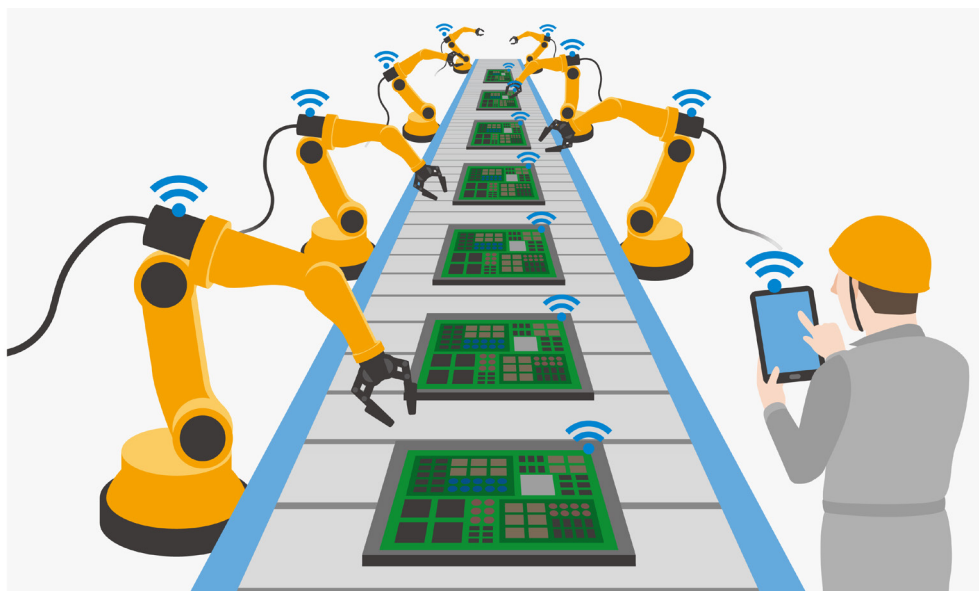
■ In Germany, the term “Industry 4.0” was first introduced in 2011 at the HANNOVER MESSE and defines the digital agenda of the German Federal Government under the leadership of the Federal Ministry of Economics and Technology as well as the Federal Ministry of Education and Research.* It stands for the connection of industrial production with advanced

“Industry 1.0” was introduced by the launch of mechanic production facilities. With the invention of mass production at the end of the 19th century, “Industry 2.0” was introduced due to the use of conveyor belts and electrical energy. The “Industry 3.0” and the use of electronic engineering and IT for the automation of the production superseded this in 1969. Due to various possibilities of the “Internet of

the complete lifecycle of a product, from the idea to the development, production, usage and maintenance up to the recycling is monitored and controlled.

Benefits of the Industry 4.0

The introduction of Industry 4.0 influences working and living environments of humans and enables a more efficient interaction between employ-



information and communication technology. The result: production processes are independently coordinated by intelligent machines, service robots cooperate in an intelligent way with humans during the assembly and (unoccupied) transportation vehicles complete logistic orders autonomously.

“Industry 4.0” – the next (R)Evolutionary Step

Towards the end of the 18th century,

Things” and intelligent machines, we are now on the cusp of the next revolution – the “Industry 4.0”.

Smart Factory – the factory of Industry 4.0

Smart Factories are based on once passive parts, such as tools, machines or means of transport, which have been equipped with “eyes and ears” (sensors) and “hands and feet” (actuators) and are operated centrally via IT systems in real-time. Therefore,

ees and intelligent production machines. This development opens up chances for reorganization of work, for example, healthy designed workplaces as well as flexible and family-friendly work time regulations.

*Similar programs are for example “Industrial Internet Consortium” (IIC) in the USA or “Industrial Value Chain Initiative” (IVI) in Japan. Also, China, South Korea and several other European countries work on comparable platforms.

Harry Prunk, Executive Board at SIKORA AG, about SIKORA and the Industry 4.0

"As an innovative technology company, SIKORA has long focused on the trends and the possibilities resulting from Industry 4.0. Almost every SIKORA device is now built with integrated WiFi (WLAN) or with a network interface to enable a network of several lines and even to connect complete production facilities. Industry 4.0 leads to optimized and reproducible processes. Furthermore, due to the intelligent recording and analysis of production data, our customers are able to produce more efficiently and with reproducible quality."



RAFFLE

Find the contamination



We have hidden a contaminated pellet in one of the pictures of this EXTRA edition.

To participate in the raffle, please send us the correct page number as well as your name and contact details.

Send us an e-mail with your solution until July 31st, 2017 to: communications@sikora.net

The prize is one of three Archos VR Glasses 2 (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 e-mail, all subsequent e-mails will be considered invalid. The legal process is excluded.

Good luck!

Congratulations to the winners!

- Martin Kaufmann
- Marius Mihalca
- Djordji Boskoski

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Technology To Perfection

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