SIKORA EXTRA

Wire and Cable Magazine

SIKORA ensures the quality of the data transfer in the deep sea

SIKORA EXTRA
Issue #01/2015
www.sikora.net

INVESTING TODAY IN FUTURE GROWTH.

Impressum/Publisher

Herausgeber/Publisher
SIKORA AG, BREMEN

Anschrift der Redaktion/Editor's Office
SIKORA AG, Bruchweide 2, 28307 Bremen,
Deutschland/Germany
Tel. /Phone: +49 421 48900 0
communications@sikora.net, www.sikora.net

Next Events

- Wireshow
  Aug 21st - Sep 2nd, 2015
  Shanghai, China
  Booth W5B41

- MSV International
  Eingineering Fair
  Sep 14th - 18th, 2015
  Brno, Czech Republic

- wire Southeast Asia
  Sep 16th - 18th, 2015
  Bangkok, Thailand
  Booth J25

Follow us on **Twitter** www.twitter.com/sikoranet

Follow us via **RSS** www.sikora.net/rss


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

Dear customers, colleagues and business partners,

Some time has passed since the publication of the last edition of our EXTRA magazine. Naturally, we have not forgotten about you, but we have pursued further intense development with regard to structure as well as our technical service spectrum. Always focussing on the market requirements and customer needs, besides the wire and cable, fiber and hose and tube industries, we are also present on the market for inspection and sorting technology for plastic granulates.

These markets have the common need for innovative technologies in their production lines in order to stay competitive in the future. Repeatable and stable processes that can also be maintained across different locations are essential in order to be first in the market.

SIKORA's product portfolio contains a wide range of future oriented solutions for quality assurance. We would like to present to you a selection of these solutions in this edition of the EXTRA. Learn which technologies are used to continuously ensure the quality optical fiber cables during production, how to create the optimal adhesion on the conductor independent of environmental conditions by using our conductor preheating system PREHEATER 6000 and how SIKORA products are put into operation at your plant, with the example of our X-ray measuring device X-RAY 6000.

Since April this year, SIKORA has been moving forward into the future with Dr. Christian Frank as CEO of SIKORA's board. Furthermore, our presence in France has been extended. Sylvain Le Foll, the new manager of SIKORA FRANCE, is taking care of our customers in France and the North African Countries across all businesses.

Find these and many more articles in this EXTRA edition. We also cordially invite you to join our lottery.

Enjoy reading!

Yours sincerely,

Harry Prunk
Member of the Board of SIKORA AG

Dr. Christian Frank
CEO of SIKORA AG

1,000,000 KM OF OPTICAL FIBER CABLES IN THE OCEAN

SIKORA assures the quality of data transfer in the deep sea

Part 2: Process optimization for the production of optical fiber cables

In our last SIKORA EXTRA edition, we gave you an overview on the production process of optical fibers and described the corresponding measuring and control technologies used during this process. The production of optical fibers is a single process, of which some manufacturers specialize in. In this SIKORA EXTRA, we are concentrating on the manufacturing of optical fiber cables with a special focus on the measuring technique used for process optimization and quality assurance.

During the production of optical fiber cables, one important aspect is the protection of the fiber inside the cable and to assure that it withstands the strains in terms of moisture and traction for the long term. Typically, optical fiber cables receive an insulation layer made from polyethylene (PE) as an outer protective coating. For this cable type, the measurement of the wall thickness of the outer insulation layer is typically a must, especially with regard to the eccentricity of the insulation layer. The measurement of the diameter is naturally also important, however, a diameter measurement alone is generally not sufficient enough.

The applied measuring technique for the measuring of the diameter, wall thickness and eccentricity of optical fiber cables, also has to be applicable for "loose tube", "fiber ribbon", "loosely bundled" and "tight buffered" cables. Furthermore, the measuring technique should be independent of the shielding material under the outer coating.

X-ray technology

In the last decades, inductive and optical measuring principles, as applied by the CENTERVIEW 8010 und 8025, have proven their effectiveness for the measuring of the eccentricity of cables with an electrical conductor made from copper or aluminum. For larger dimensions, measuring by means of X-ray is a process offering a continuous quality control during production. The applied X-ray technology is rather convincing as no calibration is required for different insulation materials or ambient conditions. SIKORA's experience in the field of this measuring technique goes back over 20 years. During this time, nearly 2,000 extrusion lines have been equipped with X-ray measuring devices.

The devices of the X-RAY 6000 series are also ideally suited for the measurement of optical fiber cables. The diameter, minimum wall thickness, eccentricity and ovality are directly defined from the X-ray image. The recording of the measuring values are carried out by an X-ray sensitive image sensor within fractions of a second. The measuring technique is particularly interesting with regard to the savings potential, which evolves from the integration into the continuous line control at the sheathing of the optical fiber cable. X-ray technology does not need any calibration of the measuring system, which means that incorrect operation is practically impossible. The operation of these devices meets the highest international standards and is absolutely safe for the operator as well as the environment.

When the eccentricity of the wall thickness of the insulation layer is not critical and the focus lies on the compliance with the specified average wall thickness, the diameter of the optical fiber cables is measured online before and after the extruder crosshead, and the average wall thickness is defined by the difference of the measured values. These measuring values are then the basis for an automatic control. The demands with regard to precision and reliability of the applied measuring technique are accordingly high. SIKORA has set standards in this field for decades. Generally the line speed is being controlled for a singular insulation layer and the extruder rpm for

multi-layer extrusion. For an optimum use of resources, an automatic allowance of material shrinkage, resulting from the cooling of the insulation layer, is recommended.

Usability

The applied measuring and control technology can only be successful when it receives a high acceptance by the operator. This implies that the workload of the operator is lightened and that he can concentrate on other tasks. Already at the point of conception of the measuring and control technology, the focus lies on “usability”. The aim has to be the clear visualization of the required data and thus the creation of a more structured process.

Documentation

A function which should not be overlooked is the documentation of the production process. A length-related recording of the measuring values, for example in the form of a reel and batch protocol, is a standard feature today. Additionally, the chronological data storage as part of quality assurance is a factor that should not be underestimated. Today there is no shortage of memory space due to modern technology, but it requires adapted structures, so that the data can be retrieved even years later.

Conclusion

Today the production of optical fiber cables under the aspect of reliability, productivity, process repeatability and hence, quality assurance is supported by a broad range of measuring and control technology. SIKORA supplies the suitable technique and offers national and international competence in this segment for consulting and service.

ENHANCEMENT OF THE ECOCONTROL DISPLAY AND CONTROL UNITS

Intuitive operation and stable processes

SIKORA's display and control units of the ECOCONTROL series enable precise regulation of production lines, resulting in a high repeatability and stability of processes. The units are combinable with all SIKORA measuring systems and thus, offer relevant data for the regulation of processes quickly and clearly.

In order to facilitate the production work for machine operators, SIKORA has enhanced the ECOCONTROL 600 and ECOCONTROL 1000 devices by some practical features. Both devices were equipped with intuitive control elements at the front and a USB port for the optional storage of production data on an external storage medium.

In addition, the operating system of the ECOCONTROL devices was updated to Windows® Embedded, enabling a modern and structured display of measuring as well as trend and statistical data. On a 8" or 15" TFT display, the ECOCONTROL 600 and ECOCONTROL 1000 offer the operator time and length related values, graphical visualization, comprehensive statistics at minimal, maximal and nominal values, information on the standard deviation as well as Cp and Cpk values.

Naturally, you can also find all these functions and features on the 22" TFT color monitor of the ECOCONTROL 6000.

ECOCONTROL 1000 and ECOCONTROL 600 were upgraded by practical features

WITH A VIEW INTO THE FUTURE

SIKORA PREHEATER 6000 TC promotes process stability and repeatability

Today, quality demands on manufacturers and tailors of automotive and data cables as well as products for the aerospace sector are very complex. The products are used for different applications and need to withstand all kinds of strains. In order to guarantee flawless functionality and safety of the cables in all areas of application, manufacturers need to deliver their products with the highest quality.

The use of technologies for the production and quality assurance of cables, as well as a flexible location corporate policy is indispensable in order to be able to transfer optimized processes fast and easy to subsidiaries. For example, in the production of automotive cables, the optimal wire temperature is an important criteria for an end product of the highest quality and the further processing: from wiring harnesses for ABS and airbag systems to light systems and sensors.

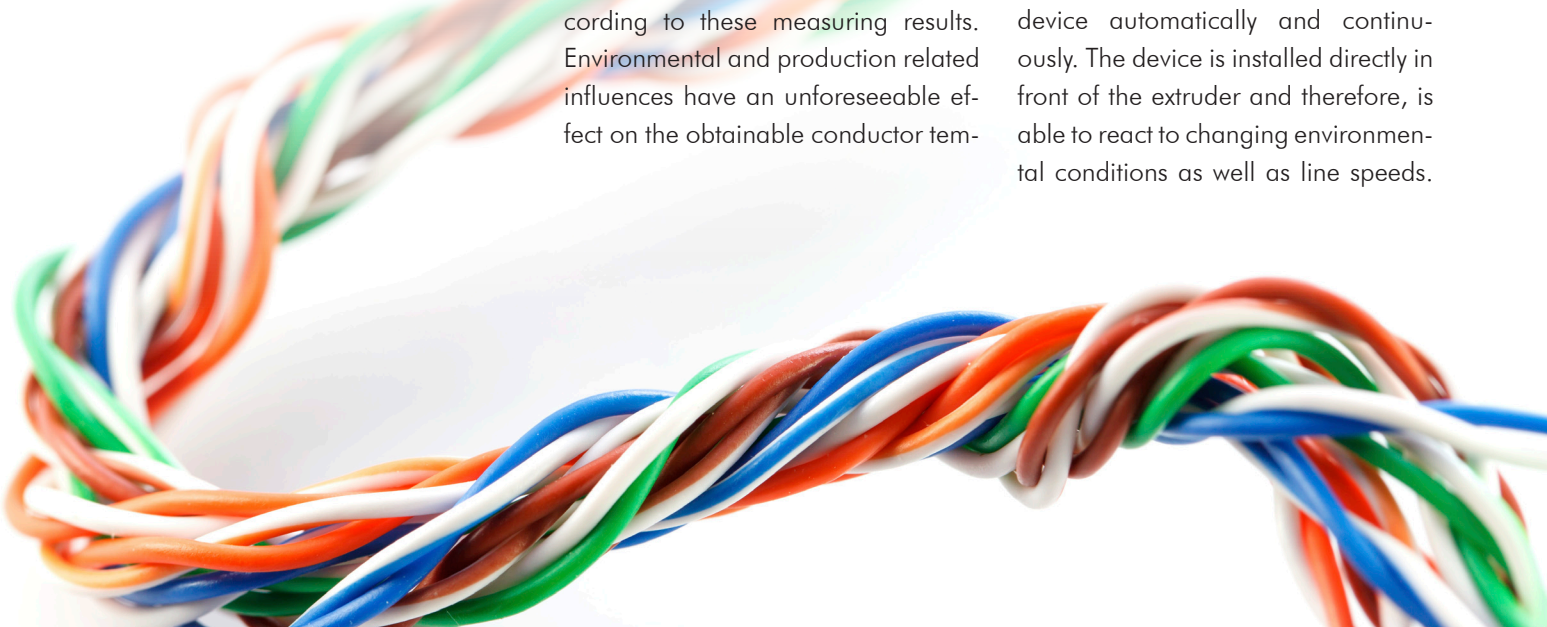
Ensuring a stable conductor temperature

Many manufacturers of automotive cables work with devices for the preheating of the conductor in order to create a better adhesion of the insulation to the conductor. In order to achieve a defined adhesion of the insulation to the conductor, it is important to set the conductor temperature according to the insulating material prior to the feeding into the extruder. Only when the conductor temperature is kept constant within a small tolerance during the entire production run, it can be expected that the withdraw forces meet the specifications.[1] Inadmissible scattering regarding the adhesion complicate the process considerably and often lead to claims.

For devices without a continuous measurement and control, the desired conductor temperature has to be measured manually and selectively with external sensors in order to set the power of such a preheating according to these measuring results. Environmental and production related influences have an unforeseeable effect on the obtainable conductor temperature. First of all, this includes the different temperatures of the entering copper wire (day/night/summer/winter), the changeable production speed and the gradual heating or cooling of the short circuit wheel of a preheating device. When cheaper conductor preheating devices are used, different supply voltages can also cause a change in the conductor temperature.

At this point, it is to mention that especially for the production of data cables with foamed insulation, the foam grade is largely dependent on the temperature of the preheated conductor. A constant temperature of the conductor is an important requirement for a stable foaming process.

The innovative technology of the SIKORA PREHEATER 6000 TC bypasses those risks by measuring the temperature permanently. An innovative camera captures the temperature of the conductor after the heating and controls the power of the preheating device automatically and continuously. The device is installed directly in front of the extruder and therefore, is able to react to changing environmental conditions as well as line speeds.



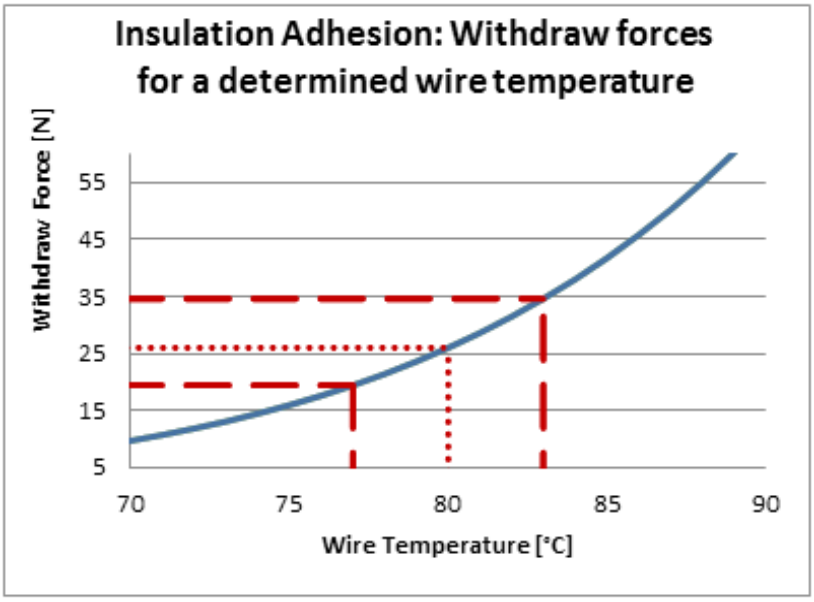
The result is a stable conductor temperature independent of the material. This is especially interesting for the production of automotive cables as the conductor material is not only made of copper anymore but also of aluminum.

Repeatability in all plants

For a supplier it is often of utmost importance to adapt the production to the market geographically. As the export of cable products would cause an enormous cost increase, many automotive cable manufacturers establish their plants close to the automobile plants. In order to guarantee a stable quality worldwide, the same technologies, respectively the same technical equipment should be available everywhere to specialists and operators – an automatically regulating technology at best. Industry 4.0 is the keyword in order to link production plants internationally. The PREHEATER devices of the series 6000 TC are therefore, equipped with comprehensive interfaces.

The PREHEATER 6000 TC from SIKORA can be integrated into both, new and existing production lines. The PREHEATER is able to measure continuously the temperature of the conductor and control the preheating due to the innovative IR (infrared) camera. Therefore, the PREHEATER 6000 TC works independently of external influences. This makes the devices from SIKORA the foundation for one of the most important pillars within cable production – stable process repeatability and a guarantor for a sustainable and future-oriented production.

The PREHEATER 6000 TC by SIKORA is easily integrated in new and existing production lines.



[1]Example: The diagram shows the connection between the wire temperature and the withdraw forces of the insulation.

CHANGE IN THE EXECUTIVE BOARD OF SIKORA AG

Dr. Christian Frank moves to the top

Dr. Christian Frank
Chief Executive Officer SIKORA AG

A change in the leadership of SIKORA AG took place in April 2015. Dr. Christian Frank, who has been a member of the board since 2013, took on the position as Chief Executive Officer effective April 1st, 2015.

Dr. Christian Frank replaces Harry Prunk as chairman. However, Harry Prunk, who has successfully fulfilled the role as CEO since 2011, will continue on as an important member of the board.

In the course of reorganization, Dr. Christian Frank is now responsible for Human Resources, Controlling, Research and Development, Business Development/Strategy as well as Operations. Furthermore, he is in charge of the plastics sector for all departments. Harry Prunk is now managing Sales, Marketing and Service and is interdepartmentally leading the divisions of Wire and Cable, Hose and Tube as well as Optical Fiber.

Dr. Christian Frank brings his expertise for new markets to the lead position of the executive board. For the new CEO, the objectives of the company are clear. "Our main focus is on finding solutions for our customers, to optimize the production processes and the end product itself, with innovations and the possibility of reducing costs at the same time" says Dr. Frank. "We want to continue to expand, and therefore, we want to use the vast technical potential of SIKORA in order to develop new products for new markets but without losing sight of inherent markets."

NEW MANAGER OF SIKORA FRANCE

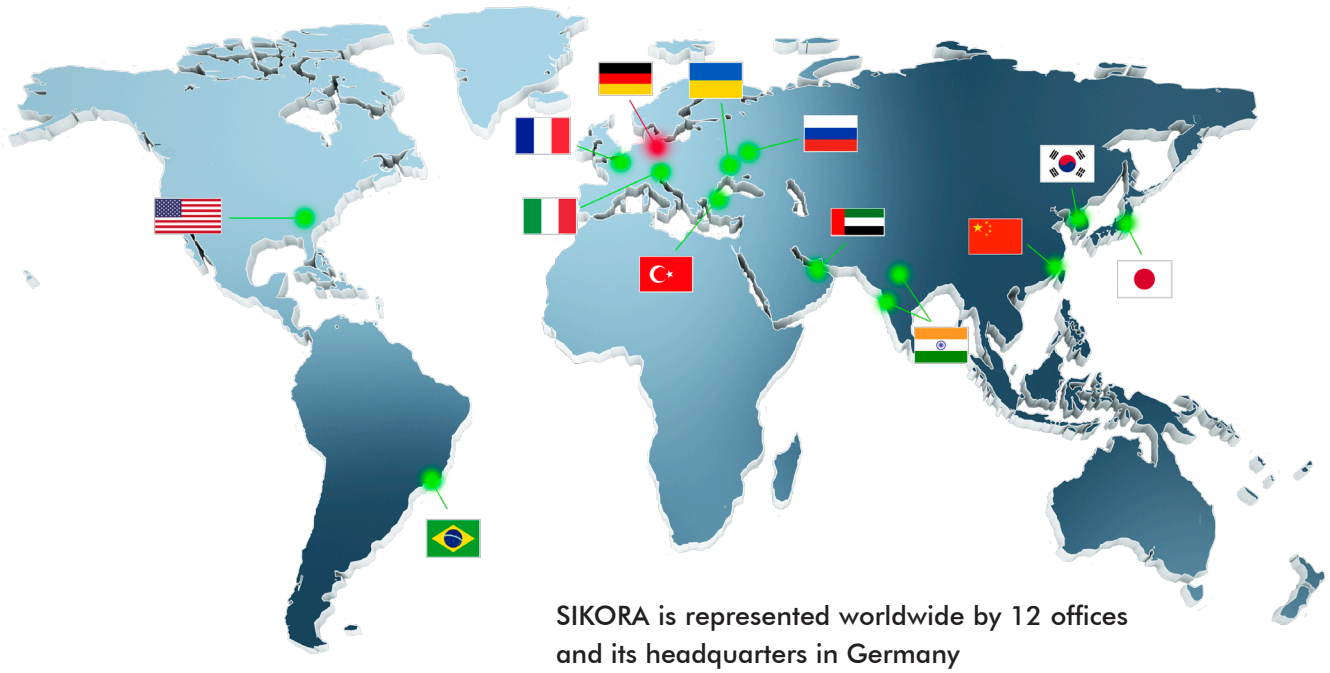
Expansion of existing and future markets

Sylvain Le Foll has been managing the SIKORA FRANCE office since April 1st, 2015. He is now responsible for all sales activities in France and the North African countries Algeria, Morocco and Tunisia. With his support, intensive supervision of the „Wire and Cable" area as well as the expanding of the "Hose and Tube" and "Plastics" markets are planned.


Sylvain Le Foll
Managing Director SIKORA FRANCE

"France is an important market for SIKORA, where many cable producers of industrial areas of communication, automotive, energy and installation are located. With the help of Sylvain Le Foll, we want to strengthen and extend our market position and local presence" says Harry Prunk, Executive Board SIKORA AG.

The graduate mechanical engineer, Le Foll, was able to gather experiences regarding extrusion technology in his previous occupation and is therefore a competent contact person for SIKORA customers. In his position, Le Foll will take on the responsibility for the areas sales and service. Next to his mother tongue French he speaks English and German fluently. With Sylvain Le Foll and Jérôme Charbonnel, service engineer SIKORA FRANCE for support and service, SIKORA has a strong team that is perfectly positioned to serve this economically important area.



SIKORA is represented worldwide by 12 offices and its headquarters in Germany

www.sikora.net/preheater6000

»Perfect conductor temperature is the benchmark!«

Holger Lieder
Sales Director SIKORA AG

Use our PREHEATER 6000 TC Power Calculator to determine your required device type:
www.sikora.net/powercalc

Inductive preheating and control of the conductor temperature

Non-contact temperature measurement and preheating with the PREHEATER 6000 TC is the advanced solution for cable extrusion lines. The PREHEATER 6000 TC is available for temperatures of up to 250°C, for a product diameter of 0.32 to 4.5 mm (0.08 to 16 mm²) and for line speeds of up to 2,500 m/min.

Your benefits:

- Optimum adhesion of the insulation (PE or other plastics) on the conductor
- Stable conductor temperature
- Unique, continuous, non-contact temperature measurement and control
- Wire break detection
- Can easily be installed in new lines and retrofitted into existing lines

SIKORA
Technology To Perfection

wire Southeast ASIA

See us at wire/tube Southeast Asia, September 16-18, Bangkok, Booth J25

CLEAN ROOM IN OPERATION

The PURITY SCANNER laboratory and developing area was extended by a new clean room in January of this year. Due to the constantly filtered air and the slight overpressure in the room, plastic materials can be tested for impurities under clean room conditions.

Klaus Bremer
Project Manager PURITY SCANNER

SIKORA provides the perfect conditions for reliable detection and sorting results by the PURITY SCANNER. "Thanks to the implementation of the clean room, we are able to work with the smallest probability of external contamination and achieve the best possible test results", states Klaus Bremer, project manager for the PURITY SCANNER.

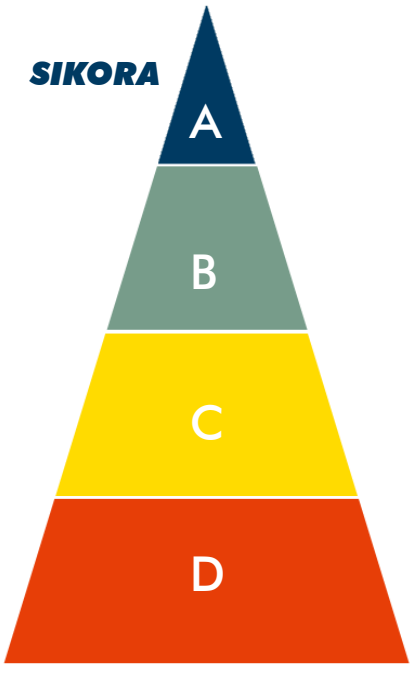
The new clean room for the PURITY SCANNER was positively tested and perceived by many customers. Further material tests are also planned for the second half of the year in Bremen and can still be requested on short term. When purchasing the device, charges for material tests are refundable.

SIKORA – A-LEVEL SUPPLIER

As a worldwide respected producer of outstanding product quality, it is of high importance that SIKORA excels in all business areas. Therefore, delivery reliability, competitive prices, fast response times and flexibility are as important as SIKORA's extensive expertise.

Those types of criteria are considered when classifying suppliers in the four categories A, B, C and D. At the beginning of 2015, SIKORA was evaluated twice as an "A-level" supplier. OMAN CABLES as well as COFICAB Tunisie rated SIKORA as top provider in overall service and performance.

Evaluations like this are generally done once a year and provide an important basis for decision making regarding the procurement of material within the purchasing department. SIKORA views these positive evaluations as motivation to continue to provide the highest quality levels and to support its customers as a competent partner.



General supplier classification in four categories


Michael Schaffrath
Head of Software, SIKORA AG

"A SUCCESSFUL PRODUCT IS THE BIGGEST REWARD"

Michael Schaffrath, Head of Software at SIKORA AG, talks about today's indispensable technology trends and gives an outlook on further requirements

Mr. Schaffrath, what are the tasks of the software development department at SIKORA AG?

The software division works closely together with the hardware, construction, research, service, sales and production departments in order to identify technical challenges, customer requirements as well as new developments and to find suitable solutions. According to the principal "Our aim is to offer an innovative and efficient measuring and control technology that serves all customer and market demands", SIKORA's developers are working on the continuous improvement and development of the systems. Furthermore, we regularly present special solutions and adaptations of the system in order to meet the individual requirements of our customers.

What are today's most important requirement characteristics regarding industrial processor systems?

Today, the requirements for industrial processor systems vary due to technological capabilities. Ten years ago, applications were strongly user oriented towards the machine operator and relatively inflexible. For example, metallic front panels with hardware displays were used.

Besides the machine operators, process technicians and quality management (QM) expect to obtain information from the system, which is used for continuous production optimization. Our colleagues from SIKORA service, QM and R&D also need information in order to provide qualified service, offer continuous process optimization and, naturally, develop the systems further. In order to equip our

customer's production lines with sustainable and future-oriented devices, SIKORA's software division is always working on developing expandable systems. Thus, with regular updates, our devices and applications always meet the highest quality requirements, even after many years.

What are the customer benefits of the ECOCONTROL Series from a developer's point of view?

With the ECOCONTROL Series, the customer receives compatible software solutions for his SIKORA measuring, controlling and sorting systems from a single source. An ECOCONTROL can be used with all measuring devices at the production line and supports the machine operator with comprehensive visualizations and, additionally, offers the possibility of remote maintenance of the SIKORA systems.

Where is the trend heading regarding software development for industrial computers in general and ECOCONTROL in particular?

In general, the trend is clearly heading towards HMIs (Human Machine Interface), which are more intuitive to use. Multi-touch and gesture control open up completely new operating options. Moreover, a location-independent access to HMIs from mobile devices is becoming increasingly important. Today, this is being discussed as IoT (Internet of Things). Therefore, we equip our measuring devices more frequently with central access points via LAN or Wi-Fi (WLAN).

With the ECOCONTROL we focus on reliability. Our customers operate the devices 24 hours, 7 days a week. In addition, support for the machine operator, the process technology of QM and SIKORA (service, QM and R&D) as well as easy servicing and the possibility of remote maintenance are essential aspects we consider when developing processor systems.

How important is the data security for the software development?

Data security is a very important topic as it has a direct connection with the permanent availability of our devices. Our measuring and control devices are used for process and continuous quality control during production. Therefore, issues like "outside attacks", virus protection, protection of customer data and protection of the complete system are essential in the software development. Special encryption algorithms ensure that no data is lost or passed on and prevent viruses from entering the systems.

What fascinates you most about your work in the software division? What makes your job exciting? What are the challenges?

I enjoy working with my committed colleagues – including the other departments: hardware, construction, research, service, sales and production – searching for new solutions and realizing them.

Furthermore, I am fascinated by the technological developments in the areas of operating systems, development tools, computer platforms and interfaces. In addition to the ECOCONTROL systems, at SIKORA we are working in the varied field of Embedded Systems with DSPs (Digital Signal Processor) and MVCs (Model View Controller). This is rather close work with the hardware and with high real-time requirements.

Motto: Boredom is a complete foreign concept.

It is exciting to witness technological developments and to be creative at the same time. Furthermore, there is no bigger reward then a successful product that serves its purpose.

The biggest challenge is to consider many customer requests and to find a fitting standard. That means to connect "request" and "reality" with each other in a meaningful manner. As a developer you like to see all the available possibilities, but the aim always is to realize the needs of the customer as the user of the product.

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

SERVICE ORDER – COMMISSIONING OF AN X-RAY 6000

One week as a SIKORA service technician

Day 1 – The Order

In order to optimize an extrusion line, the measuring system X-RAY 6000 for the measurement of the diameter, wall thickness and eccentricity was ordered together with the processor system ECOCONTROL 6000. A SIKORA service technician is assigned the task of commissioning the system and starts his preparations.

Day 2 – The Preparation

The service technician gathers all data regarding this order as, for example, information on the product range, the operation time or the line parameters. Additionally, he packs spare parts and tools needed for the commissioning of the X-RAY 6000 and the ECOCONTROL 6000. Therefore, the service technician uses detailed documentation of previous service orders for SIKORA devices. Subsequently, he familiarizes himself with the special challenges of the plant location, plans the chronological order of his assignment and prepares the training of the future operator.

Day 3-6 – The Commissioning

On site, the SIKORA service technician first checks that the X-RAY 6000 is in perfect condition and whether the mechanical installation work was carried out correctly. Thereafter, he prepares all further settings and connections needed for the commissioning, following a detailed checklist, which was created for each SIKORA device based on broad experience.

After the X-RAY 6000 and the ECOCONTROL 6000 have been connected, the service technician completes a comprehensive functional test. However, his mission is not finished until the operator of the X-RAY 6000 has been fully trained. For SIKORA it is of utmost importance that the safety regulations are not just communicated, but are correctly implemented. SIKORA's technician will only leave the plant when he is certain that all the client's questions have been answered sufficiently and that SIKORA's measuring and control devices are being operated safely and correctly. During a final meeting with the customer, a debriefing including transfer and acceptance takes place.

Day 7 – The Follow-up

Back at SIKORA's office, the service technician first writes a detailed travel report for the service manager and the quality control management. All data is saved and can be accessed by his colleagues for future assignments. The next service operation can begin.

Anton Vilchynskyy, service technician SIKORA AG: "The commissioning at the plant is the final step of a great process that includes several different departments of SIKORA AG working hand in hand. This knowledge makes me especially aware of my responsibility during the assignment."

UPGRADE OF THE X-RAY 8000 NXT PANEL PC

Stable functions. Reliable service.

As a technology leader, SIKORA is constantly developing and optimizing its products. One aspect is the availability of the devices even after years in operation.

As the devices are used in the challenging area of producing medium, high- and extra-high-voltage cables in CCV, VCV and MDCV lines it is necessary to guarantee the availability of the system. This is also true when considering the fact that components can be reconditioned over time. Especially fast is the development when it comes to processor systems. "Our focus lies on timely information, in order to prevent potential default risks", says Jörg Hischer, department head customer service. One component in this matter is the upgrade of the panel PC used for the X-RAY 8000.

Since the delivery of the very first X-RAY 8000 device in 1993, the requirements regarding processor based display and control units have changed enormously. Back then, 130 MB storage capacity, a 486 DX/66 MHz processor and the operating system Windows® 3.11 were the standard. Now, SIKORA produces the X-RAY 8000 NXT devices with advanced technical features as well as a powerful processor offering many practical functions and technical innovations.

Secure the advantages

With the upgrade of the panel PC there are several features that further optimize the production process. Thanks to a 22" TFT monitor with touch-screen, the control is even more comfortable. The product relevant measuring values are displayed and saved in a time and length related interval.

With Windows® 7 from Microsoft, the panel PC runs on an intuitive state-of-the-art operating system. Producers of wires and cables who use an X-RAY 8000 NXT with the upgraded panel PC from SIKORA detect possible deviations even earlier in the production process and are able to control the line directly after starting-up. Hence, stable processes are quickly ensured.

Did you know…?

When purchasing a PURITY SCANNER before August 31st, 2015, SIKORA is currently offering a discount of 25,000 Euro ($ 28,000) on the upgrade of the panel PC of your existing X-RAY 8000 NXT!

The upgrade of the panel PC offers various new advantages

KNOWLEDGE

SIKORA quality management and service ensure high availability

Availability is the degree to which machines and technical measuring devices can be in operation without breakdown or maintenance. In order to calculate the availability, two factors are considered.

The first factor is the Mean Time Between Failures (MTBF) and describes the nominal time a device can be in service without a need for repair or maintenance. The second factor is the Mean Time To Repair (MTTR) and is calculated from the time that is necessary to put the device or line back into operation in the case of a breakdown.

Due to exceptional quality management - SIKORA has been certified according to ISO 9001 since 1993 - and the technical innovations which make maintenance procedures of the SIKORA devices nearly unnecessary, very high availability values are achieved. In order to guarantee limited down times, SIKORA also has a global well-developed network of service subsidiaries, which are available with quick response of our service engineers or the provision of replacement devices when needed.

All SIKORA devices are built to be in service 365 days a year, 24 hours a day and can be operated with minimal maintenance times. Some devices reach peak values of up to 99.98% availability.

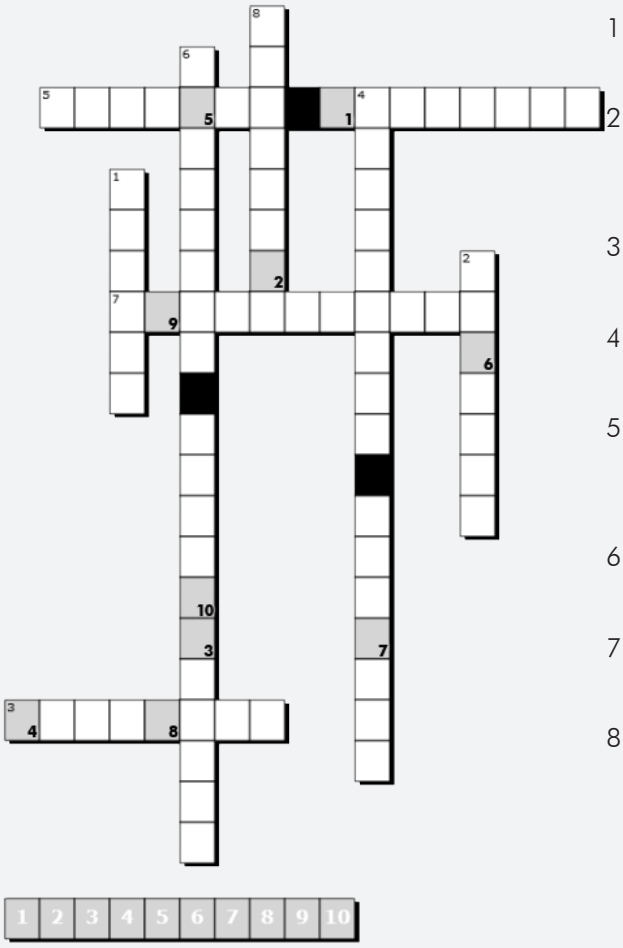
Customer satisfaction is of utmost importance for SIKORA AG. Therefore, we are constantly optimizing our devices and services to offer our customers the optimum availability.

An element for achieving a high availability is the SIKORA calibration verification program that ensures a preventive annual inspection.

SIKORA measuring devices have a high availability

RAFFLE

Solve our crossword puzzle and barbecue like a champion!



1. Which international SIKORA office has been managed by Sylvain Le Foll since April 1st, 2015? SIKORA ...
2. In which month was the SIKORA research and development center of the PURITY SCANNER in Bremen extended by a clean room?
3. Which position within the SIKORA AG was taken on by Dr. Christian Frank on April 1st, 2015?
4. The SIKORA display and control devices are combinable with all ...?
5. Which operating system was used in the upgrading process of the SIKORA ECOCONTROL display and control devices?
6. Which SIKORA department is managed by Michael Schaffrath?
7. Besides France, which area falls under the responsibility of the SIKORA FRANCE office?
8. By changing his position within the company, Dr. Christian Frank took over the responsibility for six departments. Which department are we looking for?

If you know the answer, send an e-mail until September 18th, 2015 to:
communications@sikora.net

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.

The price is one of three 3-part barbecue cutlery sets „Style“ by Weber®!

Good luck!

The correct answer of the last raffle was:

40-75°C / 104-167°F

Congratulations to the winners!

SIKORA AG
Bruchweide 2 · 28307 Bremen
Germany
Phone: +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

SIKORA
Technology To Perfection

KG/SB/DH 07/15 MD 5400