PROFINEWS

PROFIBUS & PROFINET news from around the world

Table Of Contents

TSN and OPC at Hanover Fair - Any Other News?

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/tsn-and-opc-at-hanover-fair-any-other-news/

OPC UA wherever you look. This was my first impression at Hanover Fair, which just closed its doors for 2017. With the rise of Industrie 4.0 and the IIoT, OPC UA came into focus of all industries and so came the products which support it. Well-deserved of course. And then there is TSN - another attention-grabber for the fair visitors. Although not quite as ready as OPC UA, the promise for a standardized real-time Ethernet solution is a big attraction. At least for the vendors. If you mention OPC UA and TSN in the same sentence, the fascination multiplies of course. So with all this buzz, was there any other news? Anything from PI?

Indeed, there was. We also presented our TSN strategy. We can even proudly say, we will blend very well with OPC UA. Now and in the future. With or without TSN. OPC UA will be our strategy for Controller-Controller communication, while PROFINET is best suited for Controller-Device communication. It is the best of two worlds.

But this is only half the battle, the communication - the other half is data semantics. This is the holy grail for IIoT. If you only have raw data, it will be hard to create new business models with it. But if you have semantic information, the value of data multiplies. Now you can start with big data analytics and the like. At PI, we have a long-standing history of defining syntax and semantics for data. Our PA Profile is proof of that. At this fair, we announced a new cooperation with eCl@ss. They are well known in standardizing product master data, e.g. for purchasing. We plan to leverage both our expertise to bring data semantics in Industrie 4.0 to a new level. To me, this is the big news from the fair! This is the first cooperation of this kind. At PI we break new ground – again. Sometimes you need to look beyond the hype to find the real gems. But what was your eye-opener at the fair?

Karsten Schneider

PI Chairman

At Hannover Fair

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/at-hannover-fair/

"More attendees, more solutions, more international!"

Hannover Fair 2017 by the numbers:

- 225,000 Attendees (75,000 from abroad)
- More than 1500 lectures were presented.
- Over 500 Industrie 4.0 solutions were presented.
- 6,500 Exhibitors from over 70 countries
- 3,900 Exhibitors from outside Germany (200 from fair partner country of Poland, 150 from the USA)
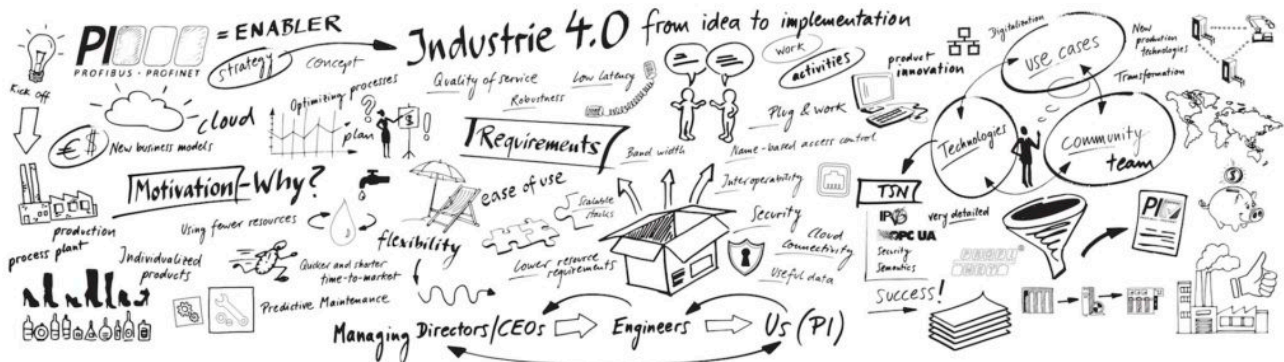- Every last square meter of the fairgrounds was sold out.

From the fair organizer:

> "More attendees, more solutions, more international – that aptly sums up HANNOVER MESSE 2017," commented Dr. Jochen Köckler, Member of the Managing Board at Deutsche Messe. "Over the past five days, Hannover has served as a global hub for all things related to Industrie 4.0. Every sector involved in the digitalization of industry was on hand to showcase its answers to the key question faced by industrial enterprises everywhere: How can I best get my company into shape for the digital future? HANNOVER MESSE has resoundingly underscored its value as a prime source of orientation for decision-makers from around the globe," he added. The show's chosen lead theme of "Integrated Industry – Creating Value" put a major spotlight on the benefits of Industrie 4.0 and the role of humans in tomorrow's integrated factories. As this year's featured Partner Country, Poland called added attention to the need for close cooperation throughout Europe, while impressing attending professionals with its credentials as an innovative partner to global industry.

Photos from the fair organizer:

At the PI Booth

The PI Booth this year made a splash that will not be soon forgotten. With our multi-vendor PROFINET wall at the front and center, visitors were welcomed to see the breadth and depth of products available. Inside the booth, an 'idea wall' highlighted all of the relevant issues currently being tackled by PI.

The theme 'Backbone of Industrie 4.0' is not just a marketing message, but real work being done in the Working Groups of PI. We look at actual customer use cases, apply our technology to solve their problems, and receive feedback from the community.

Opposite the 'idea wall' was the IO-Link area, which is growing every year. IO-Link was a big theme of the Hannover Messe in general, and so we were proud to be at the center of this attention.

The location of the PI booth was really critical to its success. Located along the 'Automation & IT' walkway, foot-traffic was immense. Hall 9 was by far the busiest hall (there were two dozen exhibit halls in total).

The end result: thousands and thousands of visitors came by the PI booth.

Around the PI Booth in pictures:

_____

Integrating TSN into PROFINET

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/integrating-tsn-into-profinet/

TSN (Time-sensitive Networking) is a promising new IEEE technology for Ethernet that combines the bandwidth of IT (information technology) networks with the latency of OT (operational technology) networks. TSN consists of a tool kit of standardized mechanisms that can be used in Ethernet-based networks. In the PI (PROFIBUS & PROFINET International) "Industrie 4.0" working group, the requirements and goals for the future use of TSN in PROFINET have now been worked out.

The focus of the work is first and foremost on easy handling for PROFINET users. They should be able to use the new technology easily in their devices or systems while still taking advantage of the existing knowledge. Furthermore, services such as diagnostics, parameterization, etc. should be identical to the current landscape. The engineering, that is, the configuration of the network, should also be performed in the familiar way. In this way, PI provides an easy transition to the new Ethernet landscape and ensures broad acceptance among users.

Since PI relies on standard Ethernet technology it can both draw on a broad selection of Ethernet chips for the implementation of the PROFINET interface on devices and also benefit from the further developments of IEEE technology such as gigabit bandwidths.

Besides a stack architecture that is easy to integrate and scale, a further crucial goal for the use of the technology is a high degree of determinism and robustness for IP-based traffic that is not real-time capable. The reliability increases, since TSN allows bandwidth to be reserved on the network for individual tasks so they are not disrupted by other traffic. This is especially important, since a variety of protocols will be used side by side in the future in Industrie 4.0 networks. In this way PI incorporates parallel communication with OPC UA between stations on the system level or from devices on the field level to the cloud right from the start.

However, with the introduction of TSN, it is also necessary to simplify the engineering of the network for more complex systems, until they become plug-and-work-capable networks that permit reconfiguration during ongoing operation. In addition, the TSN mechanisms that arise alongside the real-time protocol procedure offer the options that PI is consistently pursuing.

Karsten Schneider, Chairman of PI, summarizes the benefits of this approach thus: "PI will expand PROFINET with the mechanisms of TSN in layer 2, retaining the application layer on the higher levels. This makes it possible to migrate the applications to the new technology simply and incrementally and to take advantage of the benefits of an open, globally standardized IT technology."

New PA Profile - Now for PROFINET Too

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/new-pa-profile-now-for-profinet-too/

In process automation, rapid installation and easy operation of field devices are important user requirements – consistently across manufacturers. The PA Profile for PROFIBUS has already met these requirements for many years, proving itself in practice and gaining broad market acceptance in the area of process automation. As Industrie 4.0 and Industrial Internet of Things continue to advance, Ethernet technology – and with it PROFINET – have become established in process automation. Therefore PI (PROFIBUS & PROFINET International) has developed a profile specification in the form of PA Profile 4.0 that is independent of the communication protocol.

All parameters and functions specified in PA Profile can be used with both PROFINET and PROFIBUS. To simplify the handling of field devices even further, the following options were created: availability of all diagnostics of the NAMUR NE107 specification through the use of Profile GSDs. In addition to the support for standard device parameters from the new version of NAMUR's NE131 that has been announced, the possibility of vendor-neutral device replacement will also be enabled.

The release of PA Profile is anticipated after a successful PI review in the middle of 2017.

Therefore, as part of the path to a fully Ethernet-based solution, PI is implementing another building block in PROFINET. Along with features like Configuration in Run that have already been implemented, or FDI, which was developed in cooperation with the FieldComm Group, PA Profile 4.0 was a missing piece of the puzzle in the Ethernet strategy for the process automation of PI and has now been completed. However, in order to be able to also serve industries like the oil and gas or chemical industries, it is necessary to establish further technical preconditions for Ethernet at the field level. Longer cable distances, 2-wire technology, power supply via the bus, and intrinsic safety cannot yet be implemented in a standardized way with today's Ethernet. PI will address these issues first so manufacturers are able to use PROFINET in all areas of process automation.

PROFI News from Hannover Fair

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/profi-news-from-hannover-fair/

At the PI press conference on the second day of Hannover Fair, PI Chairman Karsten Schneider presented news of PROFINET, PROFIBUS, and IO-Link. In addition to the news articles in this issue of PROFINEWS (Integrating TSN into PROFINET, PROFINET in Process Profile, and IO-Link Safety Specification Released), announcements included news of a PROFINET test tool, data model standardization, and a new Japanese PROFINET controller. PI Germany held its annual member meeting on the first day of the fair.

PROFINET Test Tool

In order to provide optimal support to the members of

PI (PROFIBUS & PROFINET International) for development of new PROFINET devices, PI offers various software tools. These tools are available to all members to download from the PI webpage free of charge. For the testing of PROFINET devices, PI offers the PROFINET test bundle. This test tool supports a mostly automated and user-friendly validation of a new development for compliance with the PROFINET specification. Read More…

Data Models - Data is the New Gold

The combination of Internet technology and traditional automation can lead to totally new business models. The data that has been gathered is usually the basis for these use cases, such as condition monitoring, or more generally: big data. The cooperation between eCl@ss e.V. and PROFIBUS & PROFINET International (PI) targets a standardized description of the data relevant for industrial automation. Read More…

New PROFINET Controller

The major Japanese manufacturer of auto parts / machine tools JTEKT Corporation has now developed an integrated PROFINET Controller. JTEKT is supporting the traditional PLC market for machine builders and factory automation. For many years, JTEKT is supporting Toyota Production System (TPS) as a line builder, and now also is going to be a solution provider of digitization.

The requirements of the use cases of IoT and Industrie 4.0, which are of course adopted and driven in Japan, enforce the usage of a robust and reliable network solution. The parallel TCP/IP communication in the network, e.g. OPC UA, is a must to solve solutions for a better maintenance and operation based on a simple and secure data access. PROFINET offers these features today and is future proof thanks to the standard Ethernet compliance. Thanks to the proven wireless PROFINET communication, also for safety application, new mobile and wire saving machines are available.

With the integration of a PROFINET Controller in the TOYOPUC Plus system many different PROFINET devices from local and worldwide vendors can be connected not only in new machines but also in existing ones. TOYOPUC Plus system offers also the connectivity from PROFINET to other network systems.

PI Germany Annual Meeting

The election of the Board of Directors and the Advisory Board for the next term of office, which occurs at regular intervals, was on the agenda after the reports on the past and current year.

New Board Members

Karsten Schneider (Siemens AG) was re-elected Chairman, and Prof. Dr. Frithjof Klasen from the Institute for Automation & Industrial IT (AIT) of Technical University of Cologne/Gummersbach were confirmed as members of the Board of Directors. Due to his approaching retirement, long-term Board member Klaus-Peter Lindner (Endress + Hauser Process Solutions) did not seek reappointment. Dr. Jörg Hähniche (Endress + Hauser Process Solutions) was newly elected to the Board of Directors.

Klaus-Peter Lindner

The Board of Directors and the Advisory Board expressly thank Klaus-Peter Lindner for over 20 years of very committed work as a member of Board of PNO and wish him the best for the future.
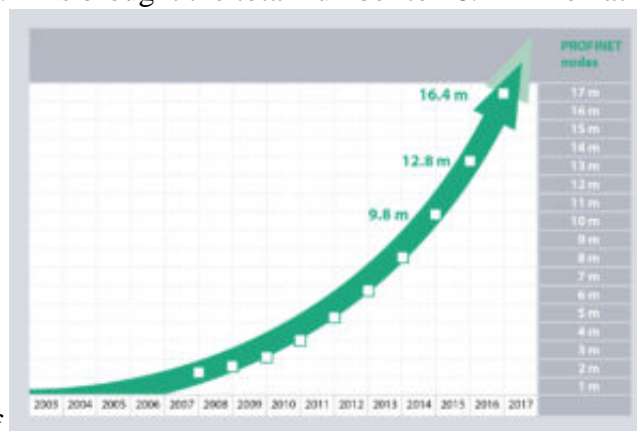
[Read More…](#)

_____

2016, Another Year of PROFI Growth

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/2016-another-year-of-profi-growth/

The installed base of devices with interfaces of the communication technologies of PROFIBUS & PROFINET International (PI) continues its very strong overall market position. Against the background of Industrie 4.0 incorporation into the automation of production systems, this is a clear sign of the acceptance of PI technologies in this innovative domain.

The development of PROFINET is very encouraging. In 2016, a record 3.6 million PROFINET devices were put into the market. This brought the total number to 16.4 million at the end of 2016, which

represents an increase of 28% over the previous year. 2.4 million PROFIBUS devices were produced in 2016, rather fewer than the previous year. However, the total of 56 million devices across all years still represents a record. 10.6 million of these were incorporated into process automation systems. However, if the annual values of the two technologies are compared, PROFINET is significantly ahead of PROFIBUS for the first time. In 2016, 50% more PROFINET devices were produced than PROFIBUS devices.

The development of PROFIsafe is still very encouraging: with 1.55 million nodes put into the market, it has been able to achieve above-average growth again of nearly 30% and can now boast 7 million installed nodes. IO-Link in turn experienced the largest increase of 47% over the year in 2016. This brings the total number of installed IO-Link devices to more than 5.3 million.

Karsten Schneider, Chairman of PROFIBUS & PROFINET International (PI), views the figures from the most recent assessment as clear confirmation of the users' great trust in PI technologies: "Especially against the background of the trends that have become visible through Industrie 4.0, the figures demonstrate impressively that the PI technologies have developed in the right direction. This is motivation for us to continue the work with the same intensity and advance it even further to meet the requirements from the Industrie 4.0 domain. The I40@PI working group founded a year and a half ago has picked up speed. The fundamental requirements stand, and the solutions are taking form in coordination with end users."

PROFINET Certification

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/profinet-certification/

Practical and high-quality certification tests for communication interfaces are among the key factors for acceptance of an open communication standard. PI (PROFIBUS & PROFINET International) has maintained a certification system for PROFIBUS and PROFINET products since the beginning. The tests are performed in accredited test laboratories, which are located in all important economic regions. Certificates based on test reports of the accredited test laboratories are issued centrally by the certification body in Karlsruhe. The continual increase in the number of certifications shows that the measures taken are meeting the market demand.

Continual monitoring ensures a globally uniform quality standard for the certification test. This includes creating and releasing test specifications, implementing test tools, setting rules for establishing and operating accredited test laboratories and monitoring them, and issuing certificates.

End-users from many sectors, such as the automobile or process industry, are increasingly recognizing the advantages of certified products in automation systems and consistently demanding products from their suppliers whose PROFIBUS/PROFINET interfaces have been tested and certified. The statistics on certified products demonstrate this. While the number of certificates for PROFIBUS devices has been relatively constant in recent years, with about 150 certificates issued annually, the numbers for PROFINET are continually increasing. For example, the record value in 2015, which already represented a significant jump, was surpassed the following year. Furthermore, the threshold of 500 certificates issued within one calendar year was passed for the first time in 2016. It should be emphasized in particular that certificates are increasingly being issued to international manufacturers.

The rising numbers for PROFINET are not only an indication of a growing number of products; the test laboratories are also seeing an increase in the scope of the PROFINET functions implemented. PI is continually updating a test tool that makes it possible to conduct tests and evaluate the test results largely automatically. Members of PI can download this tool at no charge from the PI website and use it in-house during development to get new products on the market all the more quickly.

IO-Link Safety Specification Released

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/io-link-safety-specification-released/

With the release and publication of the IO-Link Safety specification by the IO-Link Community and the successful concept assessment by the TÜV SÜD, nothing else stands in the way of implementation in systems and devices.

Like IO-Link, IO-Link Safety is also fieldbus and system-independent. This is achieved through conversion of the many safety protocols available on the market to IO-Link Safety in the master. Thus the IO-Link Safety Devices remain available worldwide. As there are considerably more device types (already more than 4,000) than IO-Link masters, the advantages are obvious. To open a new market or a new system for IO-Link Safety, all that is necessary is to develop a corresponding IO-Link Safety master. All existing IO-Link Safety devices can then be used without modification.

The time and effort for configuring IO-Link Safety is minimal. The authentication is derived from the assignment to the master port, and the monitoring time is set automatically for each device. As with IO-Link, devices can be replaced without using an engineering tool. A replaced device is automatically assigned the stored parameters of its predecessor after startup. Furthermore, the authentication rules out both confusion and manipulation.

A significant challenge is open and secure parameterization of safety devices. IO-Link Safety devices always have an IODD device description, which contains the complete communication properties, identification, parameterization, and diagnostics. However, the applicable standards require a "dedicated safety tool" to rule out manipulation. Therefore, a software interface exists for integrating the dedicated tools associated with the devices into the IO-Link engineering tools. The Device Tool Interface (DTI) has been kept very simple and ensures that integration into the existing IO-Link engineering tools does not pose a problem and that safety-related device software can be easily adapted and used further on the device side.

In the process, it is important that the package consisting of the IO-Link Safety device, IODD, and the "dedicated tool" can be used globally in all system environments without modification. Thus, users can access a broad range of devices – regardless of what automation system they use or in what industry and region they work.

On the basis of the existing specification, manufacturers can now begin to integrate IO-Link Safety into their systems. The test specification, the test system, and the certification are being developed in parallel. Therefore, although products are not yet expected in 2017, a rapid rollout is anticipated.

Regional News - May 2017

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/regional-news-may-2017/

Recent events in the UK and the Netherlands featured PROFINET, PROFIBUS, and IO-Link. The UK had two events, one focusing on factory automation and one on process automation. In the Netherlands, the Industrial Ethernet event was themed "Linking people, companies, and machinery."

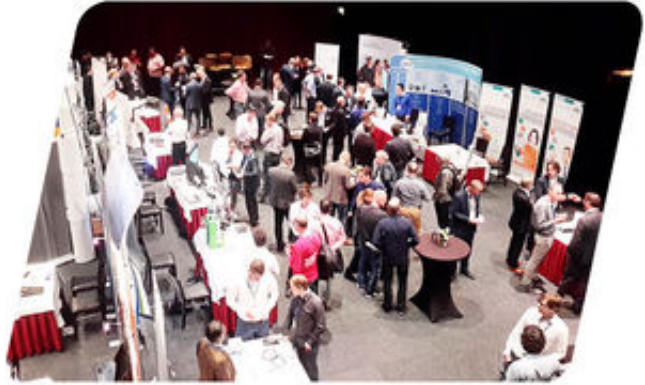## PROFIBUS, PROFINET and IO-Link seminars in UK

PI UK held two "Practical Aspects of PROFIBUS, PROFINET and IO-Link" seminars with accompanying mini fairs in Manchester, which between them attracted over 50 people who listened to presentations covering design, installation, commissioning, fault-finding, safety, and security, plus EMC and Industrie 4.0.

An analysis of the feedback received indicated that of the attendees at the Factory Automation seminar, 40% indicated that as a result of attending the seminar, they would now be more likely to use, or make greater use of PROFIBUS, while 50% indicated they would be using IO-Link and 70% would be using PROFINET. A similar analysis of the Process Automation seminar delegates indicated 78.6% would be using or making greater use of PROFIBUS and 71.4% would be using PROFINET in their projects.

Industrial Ethernet 2017 Event in the Netherlands

Linking people, companies, and machinery

On March 16, the members of FHI and PI Netherlands

together with more than 170 visitors, discussed the possibilities of Industrial Ethernet. The high attendance confirms that the integration of Industrial Ethernet and digital communication is being widely adopted on the factory floor. More than 20 companies presented their solutions and topics in the middle of the Netherlands.

Mike Balm working for Thales highlighted the relations between different devices at home and at work. Thales is building a platform where everything comes together, so that you do not need to be running different applications on your devices, but only one. They are also busy decentralizing security to ensure safety as much as possible in a flexible environment. Thales handle security not as a big shell, but as individual files, secured separately, also called Content Based Security.

Henk Capoen of Catael discussed important elements in the digital revolution. He began with the change of the PLC, the workhorse of the industrial world, the controller in heavy industrial environments. Over the last few years the PLC has become more and more a communications system. Regarding the question have embedded PC's conquered the PLC, there is no answer yet. What we have today is that there are more and more features added to both devices. The PLC nowadays can directly communicate with databases, MES, and ERP applications. The choice between a PLC or an embedded PC is still difficult. If you ask this question to an ethical hacker, then maybe you get this surprisingly answer; many hackers often do not understand the language / protocols of a PLC and that makes it less attractive for the 'standard' hacker.

In the total program topics addressed included cyber security, the use of fiber, the use of wireless, and IoT and Industrie 4.0. Also we see a major adoption of sensors and automation in the agricultural sector. Two speakers Henk Mesken from the company Mesken with Marcel Tuit from the member company Weidmüller Benelux, presented a large network of redundant machine supply lines, pressing, and packing robots. They were followed by Lely, who finished the day, with a view in the future, which is actually already a reality.

Industrial Ethernet 2017 was very appreciated by the visitors. Behind the scenes, we are already working on the 2018 edition. We hope to see you next year.

_____

Product News - May 2017

by Carl Henning - Tuesday, May 02, 2017

http://profinews.com/2017/05/product-news-may-2017/

There were multiple product announcements leading up to Hannover Fair. PROCENTEC announced a new diagnostic tool for PROFIBUS and PROFINET. Comtrol presented one new product; PROVERTHA, two; Siemens, two; and Turck, four new products. *Click the headline for details.*

Comtrol IO-Link to OPC UA

Comtrol Corporation announced the availability of OPC-UA support with its MultiLink technology on its IO-Link Master family of products.

Comtrol's MultiLink technology allows IO-Link Masters to simultaneously provide sensors Process data to PLC platforms, while also sending the sensors ISDU Service and Process data via OPC-UA upstream to IIoT/Industry 4.0 Cloud solutions or factory SCADA systems. Comtrol's IO-Link Masters are available with PROFINET, which is capable of running OPC UA with MultiLink.

PROCENTEC PROFINET Diagnostic Tool

Atlas is a compact device within a robust housing that can be plugged in to your

network. An easy to use web application will allow you to see and reach all information inside your network, which makes monitoring easier. Atlas features a graphical and hierarchical Topology, showing all devices in the network, and a display of your network's health.

PROVERTHA 90-degree Adapter

PROVERTHA announces a new M12 90° adapter within the scope of its extensive M12 connector range. The new adapter is available in versions for Profinet and Profibus. Its extremely compact dimensions make it ideal for tight installation situations with minimal installation depth.

PROVERTHA Gender Changer

PROVERTHA presents a new M12 gender changer within the scope of its extensive M12 connector range. Gender changers make it possible to connect cables with the same type of connectors (female/female or male/male). The new M12 gender changer is available in versions for Profinet and Profibus. It is available as B, D and A-coded versions (5 and 8 poles).

Siemens PROFINET Switches for Process Automation

Siemens offers Scalance XF-200BA, a new line of compact switches. The flexible use of various bus adapters allows users to set up electrical and optical line, star, and ring structures. Bus adapters are available with RJ45, SCRJ, and LC connection systems. Two types of switches are available: Scalance XF204-2BA, a standard switch for universal, cross-industry use, and the Scalance XF204-2BA DNA Y-switch for special tasks in process automation. An extended temperature range from -40 to +70° C together with approval for use in hazardous areas (ATEX Zone 2, IECEx) allow reliable use, even in harsh environments.

Siemens HMI with PROFIenergy

The new Simatic HMI Comfort Panels PRO with total IP65 degree of protection have brilliant, continuously dimmable widescreen displays with 16 million colors and up to 170 degree angle of vision. The nonreflecting glass front has a modern design with a scratchproof, chemical resistant surface that allows operation with gloves. The Comfort Panels PRO are equipped with an integrated system card for automatic backups, and are also suitable for energy management directly on the machine, for example with PROFIenergy.

Turck PROFINET Camera

Besides five optically isolated and programmable inputs and outputs for unlimited configuration options, and also a trigger input, the camera also comes with a lighting connection for controlling external light sources. The camera can be used in industrial Ethernet networks with Profinet or other protocols.

Cabinet Guard

Turck is showcasing the IM12-CCM cabinet guard at the Hannover Messe. The device detects incorrectly closed doors as well as the exceeding of moisture and temperature limits. It also detects unauthorized access to switch cabinets, thus providing protection against manipulation in compliance with IT security regulations. The slim 12.5 mm DIN-rail device can also be installed easily in existing switch cabinets. Parameters can be set via IO-Link or an FDT framework such as PACTware.

Turck Ultrasonic Sensor

Turck has added a variant with an IO-Link output to its basic "Compact"

series of ultrasonic sensors. Users can use IO-Link for the process values or continue to use the switching output of the sensor. The switch point is taught via IO-Link or via a teach adapter as before. Besides the known benefits of IO-Link, such as inexpensive wiring, intelligent data retention or predictive maintenance, the sensor offers a special mute function feature. This enables the selective switching on or off of the sonic transducer via the IO-Link master. This simplifies the synchronized or staggered operation (multiplex) of several sensors via the controller. Synchronous or multiplex operation were previously only possible by using complex wiring solutions.

Turck Encoder

A variant with an IO-Link interface completes Turck's portfolio of wear-free

stainless steel encoders. The robust stainless steel variants of the contactless QR24 inductive encoder series are specially designed for operation in applications with particular requirements for cleaning or for extreme environmental conditions, such as in the food and beverage or heavy industry. The EQR24 series consists of models with SSI, incremental, analog, and IO-Link outputs.

_____

PROFINEWS

PROFIBUS & PROFINET news from around the world