

more@TURCK

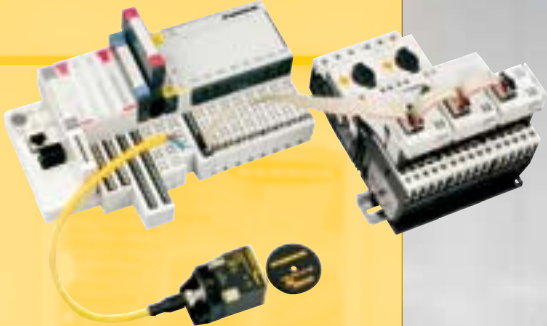
The Magazine for Customers of the Turck Group

Solutions with Added Value

Turck customers benefit from a broad product portfolio,
application know-how and individual consultation

Integration

Expanded I/O system BL20
optimizes factory and pro-
cess automation **Page 32**



Identification

RFID system BL ident
ensures transparency and
traceability **Page 27**



Combination

BL67 routes I/O and HF
signals in ultrasound welding
systems **Page 18**



more@TURCK

Are you familiar with Turck?



Do you primarily view Turck as a sensor provider? I am pleased that in this issue of our customer magazine **more@TURCK**, we are able to more accurately present the company and its positioning. In the cover story, we will show you why Turck has long been much more than a component supplier and how you as a customer benefit from it.

When it comes to “me too” products with which suppliers are only distinguished from one another due to price, neither manufacturer nor customer is happy. Continuously driving the costs down, results in a loss of quality. You do not want that, we do not want that. Turck therefore uses its excellent location advantage and develops and produces in Germany where the majority of our customers also develop and produce. That is how – working in close collaboration with you, our customer – solutions with added value are developed, which originate from the impressive offerings of more than 13,000 products in the areas of sensor, fieldbus, interface and connection technology for factory and process automation, as well as from customized products designed specifically for your application. The problem of understanding the customer means transforming yourself from sales person to consultant and solving the entire application issue.

The fact that Turck is on the right path with its transformation from component supplier to solution supplier is also evident in our growth figures. For the sixth time in a row, the family-owned and operated company recorded double-digit growth. We are expecting a revenue of about 330 million euro at the end of this year. Read more in the coming pages. You can look forward to an interesting mix of current product presentations, exciting trend and application reports and much more from Turck with **more@TURCK**.

I hope you enjoy your reading and that the information provided adds value to your daily work.

Warmest regards,

Christian Wolf, Vice President Marketing



NEWS

Turck Expects Double-Digit Growth 04
 Block I/Os for Profinet Realtime Communication 04
 M12 Quick Plug-In 05
 Factor 1 Sensor with Rotating Housing 05
 New Interface Modules 06
 uprox+-Sensor with Terminal Chamber Connection 06
 First 2 Wire DC Sensors without Reduction Factor 07
 New Magnetic Field Sensors for Pneumatic Cylinder 07

COVER STORY

SOLUTION COMPETENCY: Solutions with Added Value 08
 For the first time, the interplay between a broad product portfolio with practice-oriented application knowledge leads to customer solutions with added value

INSIDE

FOCUS ON PACKAGING: "Partnership with our customers" 12
 IEE Editor-in-Chief Frank Nolte spoke with Dr. Bernhard Grimm about Turck's commitment to the food and packaging industry
ESCHA: Loving Connectors 38
 Whether a standard design or a special production – Escha supplies more than just the Turck Group with innovative connectors and housings

TREND

FDT/DTM: Transparent Production 14
 Standardized FDT/DTM technology guarantees simple integration – from configuration through diagnosis to documentation

APPLICATIONS

FIELDBUS / SENSOR TECHNOLOGY: Routing Station 18
 The Turck I/O System BL67 processes signals on the FRIMO ultrasonic welding systems – including high-frequency
FIELDBUS / SENSOR TECHNOLOGY: Targeted Packaging 22
 Turck BL67 and Banner Pick-to-Light systems ensure error-free boiler production at the Netherlands Bosch subsidiary Nefit
FIELDBUS TECHNOLOGY: Flexibility thanks to the Fieldbus 24
 Turck power conditioners and multibarriers ensure plant operation at the Frankfurt-Hoechst Basell plant
RFID: The Direct Perspective 27
 RFID system ensure transparency and traceability in the manufacture of consumable materials
CONNECTION TECHNOLOGY: Plug & Play Cabling 30
 Turck I/O modules and quick disconnect cables support modular machine concept from Automatic Feed

TECHNOLOGY

I/O SYSTEM BL20: The Integrator 32
 Turck extends its IP20 I/O system BL20 with new modules for use in factory and process automation
BASICS: Functional Principles of Flow Rate Sensors 36
 Part 2 of our basic series: Design, functional principles and mounting options of the most important sensor technologies

SERVICE

CONTACT: The Fast Lane to Turck 42
 Whether on the Internet, at trade fairs or directly on site, we will show you how, when and where Turck is there for you
CONTACT: Imprint 42



FRIMO uses Turck's I/O system BL67 also for transmitting high frequency signals **Page 18**



Our customer Basell places its trust in the all-around galvanic separation of Turck multibarriers **Page 24**



Within the Turck Group, Escha is a specialist for innovative connection technology **Page 38**

Double-Digit Growth



► **Once again** Turck is forecasting double-digit sales growth for the 2007 fiscal year. As Management Board member Christian Wolf announced during a press conference in Düsseldorf, the company is expecting a 12 percent increase in Group revenue totaling 330 million euros by the end of the year. The number of employees at all 25 Turck Group locations rose 5 percent in 2007 to 2,600 worldwide. In Germany, the family-owned and operated company with offices in Mülheim, Halver, and Beierfeld combined has 1,350 employees – among them 65 trainees – almost 5 percent more trainees than last year. According to Wolf, the reasons for success include Germany as a development and production location as well as Switzerland, having numerous independent subsidiaries in the world's top-selling markets and a product and solution portfolio that is developed in close collaboration with customers and users.

► Webcode **more20710e**

Info

You can find more information on the reports or product presentations in **more@TURCK** under www.turck.com. Simply enter the Webcode that you find at the end of each article in the search field. The following article page takes you directly to the product database or you can download or send the article as a PDF.

RFID System Enhanced

► **Turck will introduce additional enhancements** to its high temperature RFID system, BL ident. In addition to a new handheld reader, similar to a PDA, the company is now offering a write-read head which provides an enormous range of up to 500 mm for industrial applications. The PDA Reader is an inexpensive solution and suitable for use in maintenance and service applications. As the only handheld device of its kind on the market, the Turck Reader can process Philips-I-Code-SL2(SLI)- and RAM data carriers.

The new 500 mm write-read head combines an antenna and electronics into one device which makes it particularly insensitive to electromagnetic interference. The compact, flat design (350 x 350 x 25 mm) and IP67 degree of protection allows it to be used in numerous industrial application fields. This means that the write-read head is ideal for any situation where large tolerances emerge in the overrun position or particularly high write-read distances are required.

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Block I/Os for Profinet

► **With the FXEN**, Turck has introduced Block I/Os for Profinet in IP67 degree of protection. Thanks to the integrated Autocrossing Ethernet switches, the modules allow for the set up of a line topology and thus offer greater flexibility with planning and installation.

The FXEN supports Profinet-Real-Time (RT) communication for the cyclical exchange of I/O data. The XSG16 version has 16 digital channels that can be configured as an input, output or inverted input, depending on the application requirements. The new Block I/Os support configuration and parameterizing with the help of the open FDT/DTM standard. A 4-pin, D-coded M12 rounded plug-in connector is used to connect the vibration and shock-tested modules to the Ethernet, eight 5-pin M12 connectors are available for the I/Os. The modules function in the temperature range of 0 to 55 °C.

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Director of Fieldbus/System Technology

► **Norbert Gemmeke** has been appointed Director of the Fieldbus/System Technology and Factory Automation Business Division at Turck. In his new position, the 45-year old is responsible for all development and product management activities in his division. Gemmeke will continue his previous duties as President of MT ElectroniX GmbH, a joint venture between Turck and Micro Innovation. "For Turck, the Fieldbus/System Technology Business Division ensures the connection between the components and the control level," explains Gemmeke in describing his new area of responsibility. "With the new structure, we are perfectly set up to be able to offer our customers optimal solutions for their applications."



Norbert Gemmeke

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Awarded for Excellence



AUTOMATION AWARD

► **For the second time in a row,** Turck was nominated for the Automation Award from the trade publication elektro Automation. Following the success of the RFID-System BL ident last year, Turck's metal sensor impressed the jury of experts in 2007. As the first sensor of this type worldwide, this Turck innovation is not only able to identify the presence of a metal, but also its composition – regardless of the object size and the distance between the sensor and the object.

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M12 Quick Connection

► **Turck will be showing a practical concept** for M12 quick connection technology at the SPS/IPC/DRIVES trade show in Nuremberg. The M12 quick plug-in connector is compatible with all M12 threads, even badly diecast threads are not a problem. The connector is assembled 85 percent faster than a comparable M12x1 plug-in connector and is the fastest connection coupling on the market. The quick plug-in connector developed by Escha Anschlusstechnik – a Turck Group company – meets IP67 degree of protection. The "Key Way Display" gives the user clear acknowledgement concerning interlocking. Together with the high holding forces of the plug-in connector and integrated overmolding, high plug-in reliability for the connection is guaranteed. While the coupling is already available as a 4 or 5-pin model or in a straight or angled type, the plug-in connector versions will follow at the beginning of 2008.

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Factor 1 Sensor for "Turning"

► **Turck is expanding** its factor 1 sensor family, uprox+, by adding the new QV40 model. The 40 mm cube inductive sensor that provides IP 68 degree of protection was developed for rapid, toolless assembly. With a simple "click", the QV40 can be manually locked into its mounting or removed. The innovative housing design also permits a toolless turning of the active surface so that the sensor can be aligned in five directions. Despite this flexibility, the robust QV40 remains firm in its adjusted inserted position. The new magnetic field resistant uprox+ QV40

guarantees major time and cost savings when it comes to assembly and service, above all in areas with high sensor usage, for example in conveyor technology.

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Global Player

► **With the three new** subsidiaries that Turck founded in 2007, the German family-owned and operated company decisively highlighted its claim that it is represented by its own teams in the most important markets of the world. In the last two years, the sensor, fieldbus, connection technology, and interface specialist

has founded a total of seven new subsidiaries. Besides Turck Sweden and Turck Middle East – both founded in summer 2007 – Turck Australia Pty. Ltd., founded in September



Cameron Dwyer

2007, is now the newest addition to the global Turck family. **Cameron Dwyer** is the head of the new Australian subsidiary. The new managing director brings with him a broad range of industry experience. Prior to coming to Turck, Dwyer was most recently the sales and marketing director of the Australian Turck distributor Micromax.



Thomas Winemar heads up the new

Turck office in Sweden, which was founded in summer 2007. He is a mechanical engineer and enjoys support from Ulf Löfqvist, who graduated from the technical university in Linköping, Sweden, with

a degree in control and feedback control systems. **Nabil Nader** is the head of the new Turck subsidiary Turck Middle East SBC with headquarters in Bahrain. Nader will focus on the area of process automation in the



Nabil Nader

Middle East. The office in Manama currently has two employees.

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Terminal Chamber Connection

► **The new uprox+** sensors with an integrated terminal chamber promise great flexibility with regard to assembly. Because this assembly type will be mainly used in the food industry, the first thing Turck did was to equip its uprox+ wash-down series with a terminal chamber. Just like the sensors that are available in the M12, M18, and M30 (all flush and non-flush) designs, the terminal chamber also meets the requirements for food-safe materials that are resistant to cleansing agents and high-pressure cleaning. The FDA-conforming terminal chamber sensors allow for a straight cable output or also a 90° angular one. The cable is inserted into the terminal chamber cover using a standard M16 screw.



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New Interface Modules

► **FDT/DTM-based interface modules** with display and the Interface Module Small IMS 6.2 mm in width are new members of Turck's interface portfolio. The IMS is suitable for galvanic isolation, signal conditioning, and temperature detection in numerous application areas in process and factory automation. The IMS program consists of one and two-channel devices for galvanic isolation without signal conditioning and various models for signal conditioning. After the IM34 temperature measuring transducer was introduced last year, the following models, IM21 and IM21Ex (speed sensing switch), IM33Ex (measuring transducer – feeding isolator) and IM43 (limit value control gauge), have now completed the display series. In addition to a double-spaced transreflective LC display, all modules are equipped with a circular buffer for comfortable process diagnosis. A broad voltage range power supply and the option for HART communication round off the feature profile.



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2-Wire Sensors

► **As the first supplier** of this type of product, Turck has introduced the 2-conductor DC sensors without reduction factor. The inductive uprox+ 2-wire sensors are primarily of interest to machine manufacturers that supply to Japan, France, and the USA because 2-wire sensors are frequently used in these countries. Furthermore, the new sensors are ideal for the quick replacement of mechanical switches on existing machines or systems because the existing wiring – 2-wire as a rule – can continue to be used. The first series of Turck 2-wire DC sensors is available in the M12, M18, M30, and CK40 connector types.

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“Convenient” Solutions for Pneumatic Cylinders



► **Turck is expanding** its BIM-UNT family for the position monitoring of pneumatic cylinders. BIM-UNT sensors can detect all magnets in commercially available pneumatic cylinders without multiple switching points. With the new models, Turck customers can meet their individual target requirements. Besides the standard model with cable output, a Namur version is available for use in the explosion-risk area as well as models with direct M8/M12 plug-in connection on the housing. A dual-solution with two sensors on an M12 plug-in connection considerably reduces the time and cost expenditure for cabling. As an inexpensive alternative to magnetic field sensors with reed contact, Turck is now offering the BIM-UNT-AP7X, which may be primarily of interest to machine manufacturers and OEMs. At a price level comparable to the reed contact, the BIM-UNT is wear- and bounce-free. The maximum operating current of 50 mA is sufficient for most applications.

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Photo Competition



► **-The winning photo** of the photo competition from **more@TURCK 1_07** was taken by Benedikt Knüttel from Elfershausen, Germany. The ambitious photographer was able to impress the jury with his photo impression of a paint line.

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Global Director Oil & Gas



Ragnar Sach

► **Ragnar Sach** is the first Global Director for Oil & Gas at Turck. In this newly created position, Sach, from the Norwegian town of Stavanger, is responsible for Turck's involvement in the petro-chemical industry. Sach has excellent industry knowledge and numerous contacts in international project business.

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Sense it –
Connect it –
Bus it – Solve it:
Turck specialists
find the right solution
for the most
varying customer
requirements

Solutions with Added Value

Turck customers benefit from a broad product portfolio, application know-how and individual consultation



For the Ford plant in Belgium, Turck developed RFID high-temperature data carriers for reliable identification up to 210 °C – even in the furnace



Thousands and thousands of inductive proximity switches from Turck are ensuring order in the reverse vending systems manufactured by Wincor Nixdorf



In the cold pilger rolling mills from SMS Meer, the special Turck eddy current sensor identifies the material and the diameter of a tube or pipe

In the increasingly complex world of automation, optimal solutions have to be increasingly customized to meet the specific application of the customer. This applies to entire systems as well as for individual components. Those who do not want to disappoint their customers will do well to look at their products and solutions in the context of the customer's application.

Whether products with added value such as uprox+, uniform standards such as FDT/DTM and IO-Link or complete solution packages like RFID or Pick-to-Light applications, Turck does not just focus on individual components, but rather on the optimal solution to meet customer requirements. This begins in the company's original product field – sensor technology. Not until we know what kind of task and in which environment a sensor is meant to function can we offer the appropriate solution for the respective customer. Components from the existing package are used as are completely new products that were specially developed for the respective purpose.

For example, a customized sensor solution from Turck is being used in the cold pilger rolling mills from

SMS Meer. Jan Asbeck, project engineer in charge at SMS Meer, is absolutely satisfied with the result of the close collaboration: "At the beginning, the sensor did not offer everything we needed, but then we were able to change that by working together with the Turck developers. Now we have a solution whose flexibility is unbeaten and that gives us clear plus points on the market," confirms Asbeck.

Knowing the environment

It does not always have to be a customized solution, even with "catalog products", process and application know-how is helpful. A good example is temperature sensors: In order to select the right sensor, you have to know in which environment it will be working, which temperatures are prevalent, what medium is supposed to be measured and what kind of features it has. That is why Turck consults its customers in selecting the right sensors. Because even with temperature measurement, involvement in the process is the critical factor. Only in seldom cases is a standard sensor enough.

▶ Quick read

Efficient factory and process automation demands solutions that best meet the respective individual requirements. Turck is therefore offering not only a comprehensive range of automation components, but also application-specific know-how and the corresponding solution-oriented competence.



Whether system solution or individual product – Turck offers innovations for factory...



...and process automation



In order to reduce the multitude of variants for the customer and to simplify operation and maintenance, Turck developed a product that separates the sensor and the electronics. The result is the TS400/TS500 family in which the electronics are housed in a separate casing and varying sensors can be mounted. This means a standard sensor can be directly mounted on the M12 interface or via a standard cable, but an entire range of special cable or sensor solutions is also possible. Even solutions with protective tubing into which the measuring element is simply inserted are part of our product palette. This makes it easy to remove the sensor for replacement or calibration without having to interrupt the process. And especially because with temperature measurement, many errors are made during assembly and installation, Turck offers special training sessions which demonstrate how to correctly

“At the beginning, the sensor did not offer everything we needed, but then we were able to change that by working together with the Turck developers. Now we have a solution whose flexibility is unbeaten and that gives us clear plus points on the market.”

**Jan Asbeck,
SMS Meer**

install temperature sensors. This, too, is a part of the complete solution.

New knowledge from system sales

This competence in the field of components is an important aspect for creating customer benefits. By adding interface and fieldbus technology to the product palette, this know-how was almost inescapably expanded due to system competence because now it means integrating the right sensors into a company's world of automation using the right systems.

To this end, Turck has intensified system sales and further expanded divisions such as pre-sales, application consulting and support. By doing so, Turck also benefited from its long-term activity in the so-called “Emerging Markets” such as in China. Turck



Collaboration with the customer



Compared to other suppliers, Turck understands its task as a solution supplier is not just selling Turck products and systems, but finding the optimal solution for the customer, if necessary, even with customer-specific developments or modifications. In order to highlight this approach, a separate field service team was assembled in Germany especially for “customer-specific solution sales”. Holger Spies (l.) and Udo Branigk (r.) are the first key account managers for OEM sales at Turck. “Our customers now expect more than the product,” says Udo Branigk, who has been with Turck for over 30 years. “Frequently, integration into existing customer applications plays a major role.”



With innovative extrusion coating technology and customized cable and plug-in connector solutions, Turck is the undisputed market leader in the USA

has been doing business there since 1994. Because almost no automation know-how existed there, Turck emerged as a system integrator in China right from the start. A great deal of experience was gained from these activities and it flowed directly into our product developments and solutions. An example of this is the programmable Gateway, or a compact SPS: The development of this fieldbus gateway, which is available in the IP20 and IP67 degrees of protection, was originally initiated in China because that is where a correct control solution had to be developed. Even now users in countries in which a mature automation landscape already exists are benefiting from it. Because when it comes to decentralized automation, Gateway has advantages.

Gateway is programmable in accordance to IEC 61131-3 with CoDeSys and relieves the higher-level control system in RFID applications. The functional component necessary for SPS (Proxy Ident Block) is listed on site in the programmable Gateway. With the higher-level control system, only the user data have to be replaced. The overall RFID communication can now be handled decentrally in Gateway. This gives the customer a simple solution for rapidly and reliably expanding an RFID system.

Tailored to real-life

The RFID system BL ident is a perfect example of how the combination of existing know-how and experience gained from working in applications results in new solutions. During its development, Turck was able to rely on its experience with the contact-free detection of objects from the field of inductive sensors. These sensors work with high-frequency fields just like those in RFID systems. The electronics in the write-read heads were integrated into the sensor's existing housing type. Because no new tools had to be developed to manufacture the housing,

Turck was able to launch the RFID system on the market in record time. The customer benefits from this approach because he can install its RFID heads with identical accessories and assembly tools also used for the sensors.

The fact that the application was always the focus during the development of the RFID system is also evident in other details. For example, an essential requirement from the automobile industry was resistance to high temperatures in order to enable reliable identification even in the furnace. Turck therefore came up with a solution in which data carriers – or tags – are equipped with a special covering. It enables them to resist temperatures of up to 210 °C and to be operated in furnaces without any problems. The tag can be reliably described and read out directly after coming out of the furnace, a cooling down period is not necessary.

Knowing your target industries

Turck's success in the automobile industry shows how important it is to know the requirements and challenges of its target industries and to meet them with the suitable solutions. Turck is currently involved in a new target industry: the food and packaging industry. To be able to provide this new industry with the solution-oriented competence, the company hired a separate industry manager for this market. His task is to analyze and expand our existing product offerings for the new target industry (read more about this in the interview on the next page). Here, too, Turck will rely on existing components and applied applications in order to enhance them and continually create new innovations that will give the customer added value.

Author



Christian Wolf is Vice President Marketing of Hans Turck GmbH & Co. KG

Dr. Bernhard Grimm intends to establish for Turck just as strong a foothold in the food and packaging industry as it has in the automobile industry, manufacturing and process automation



“Technology partnership with our customers”

IEE Editor-in-Chief Frank Nolte spoke with industry manager Dr. Bernhard Grimm about Turck's commitment to the food and packaging market

Why does a sensor and fieldbus specialist such as Turck have an industry manager for the food and packaging industry?

Because this industry uses field components on a large scale. To be able to offer customers the ideal solution, we have to offer the right process know-how. Because the food and packaging industry is a new target industry for Turck, my job is to incorporate, together with product management, the technological requirements and the specific demands of the users into innovative products and solutions, and in a way that is product comprehensive.

What products do you intend to conquer the packaging machine market with?

Turck has numerous components in its product portfolio that are ideal for bottling and packaging machines. A few years ago, we even began to develop products made up of FDA-conforming materials that are hygienic, chemically resistant and that meet the IP69K degree of protection. These include, among others, the uprox+ WD (wash-down) inductive sensors, the F&Bplus plug-in connector as well as the wash-down read-write heads and data carriers for our RFID high

temperature solution BL ident. All these products are especially suited for bottling and packaging machines for beverages and liquid foods because popular cleansing and disinfectant products do not interfere with their operation. This has also been verified for us by Ecolab, one of the leading manufacturers of cleansing agents.

How do you achieve this high resistance?

The active area of the uprox+ wash-down version and the BL ident read-write heads is made from a highly resistant

plastic called Vectra. Vectra is one of the best materials for the food and packaging industry, and it does not have to conceal itself behind stainless steel. At the same time, these sensors have all the advantages of uprox+ technology, such as the very high and, above all, the same switching distance on all metals and flexibility during assembly. With the FBplus (Food and Beverage) plug-in connectors, the sheath and the handle are made of resistant polypropylene and not PUR or PVC as is the case with standard plug-in connectors.

And what about other types of sensors?

Turck has a great deal to offer here too. Our partner Banner, which is already very successful in the packaging industry in the United States, offers a particularly water-resistant series of opto-electrical sensors called EZ Beam as part of its product portfolio. I should also mention our comprehensive line of light guides. Another example is our compact current sensor – the FCI compact – which is used to reliably record small currents. We have adapted it for one customer such that it perfectly matches its bottling machine and is unbeatable in terms of cost for this task.

Are such customized designs the order of the day in the packaging market?

No, the majority of our products for the food and packaging industry is available ex works as is the standard. This example illustrates our ability to attract customers with our solution-oriented competence. We often sit with our customers and intensively discuss how a certain task can be optimally achieved. A classic win-win situation: Turck always knows what the market demands, and Turck customers can depend on getting what is currently feasible – from the catalog or as a customized application – in the areas of sensor, fieldbus, interface and connection technology.

In addition to sensor technology, fieldbus technology is an important inherent part of the Turck portfolio. Do you also have appropriate solutions for the packaging industry in this field?

Naturally, in addition to its sensors, Turck also offers solutions for new target markets in the area of fieldbus technology. With piconet, we have a modular and a fully encapsulated IP67 I/O system which

is ideal for packaging machines thanks to its very small housing dimensions. And more recently we made enhancements to our IP20 fieldbus line BL20: From programmable gateway to economy disks, plant and machine builders find the right module for their applications.

Which sensor trends, in your opinion, will become important in the packaging market?

That is difficult to say. In addition to innovative technologies, such as RFID, that are quickly spreading into this market, established sensor models also have development potential. An example of this is the topic of “ultrasound”. These sensors are becoming faster, better and, above all, less expensive. They will soon be suitable for tasks that so far have only been able to be implemented using optos. For example, an ultrasonic sensor can be used as a reflex barrier in clear object recording.

Is IO-Link a possibility for the packaging industry?

Naturally. Through an increasingly large diversity of packaging systems and associated product changes, the machine must be as flexible as possible. If used smartly, the I/O-Link can be a huge aid in retrofitting. For example, with batch changes, the controller could write the new parameters into the sensors and therefore easily adapt to the new packaging. As one of the few suppliers, Turck is able to operate both the sensor side as well as the fieldbus side of the IO-Link using the corresponding products.

What are your next goals?

As in our traditional industries, we also intend to establish ourselves as a field specialist with solution-oriented competencies in the packaging machine industry. One advantage for customers, for example, is that we are a one-stop shop for sensors, plug-in connectors and fieldbus technology. This is extremely significant in the food industry because of the importance of compactness. We want to enter into technological partnerships with our customers by asking the following questions: “What should the machine look like? What are your problems? How can we solve them?” We can answer the above questions with our existing product portfolio, by modifying existing products or developing customized solutions.



“Turck has numerous components in its product portfolio that are ideal for bottling and packaging machines. We intend to further expand this program.”

Dr. Bernhard Grimm



“We want to impress our customers with our competence and solutions in the sensor, fieldbus and connection technology fields.”

Dr. Bernhard Grimm



Author

Frank Nolte is Editor-in-Chief of the trade publication IEE www.iee-online.de

The benefits of FDT/DTM are not only used in process automation, but increasingly also in factory automation



In process technology systems, a large number of sensors and actuators which can be parameterized are traditionally used. The same is increasingly also true of factory automation. Manufacturers often supply their own proprietary software for parameterization and diagnosis of each of these field devices. This is a considerable obstacle if the system is to be controlled in an SPC environment or managed in an asset management system. This is because central management, diagnosis and parameterization is possible only if the system has access to the full functional scope of each individual device program. This colorful world of proprietary device programs is also a problem when servicing is due: a service engineer would have to be familiar with a variety of different parameterization tools and use the right software from each device manufacturer.

Manufacturer independence

FDT/DTM (Field Device Tool/Device Type Manager) technology provides a solution here by standardizing the communications interface between field devices and control systems while operating independently of the communications protocol used and of the higher-level SPC environment or management/asset management system. FDT technology thus makes it possible to address any devices with a DTM via any systems using any protocols.

For this purpose, each device manufacturer develops a DTM for each of its devices or groups of devices. In principle, this is a driver, like that required for connecting a printer to a PC. The DTM contains all the device-specific data, functions and operating rules like device structure, existing communication facilities, parameters, internal dependencies and graphical user interfaces. A DTM accordingly provides functions for calling up device parameters, for configuration, for diagnosis and for documentation of the device.

While DTMs are used for configuring field devices like valves, position controllers or motors, communication DTMs are required for communicating with a field device over a point-to-point link or a network structure. Communication DTMs are obtainable for various systems like Ethernet, Profibus and RS232 and are also available for communications components like fieldbus I/O systems, gateways, interface components or remote I/Os. If DTMs are available for the gateways between different bus protocols, a field device can also be addressed and configured

Transparent Production

Standardized FDT/DTM technology guarantees simple, manufacturer-independent device integration – from configuration through diagnosis to documentation

▶ Quick read

Modern systems, whether in the process or production industries, are more and more frequently being equipped with complex, intelligent field devices and decentralized peripherals. In order to integrate these devices perfectly in a system, it must be possible to operate and use them centrally. FDT/DTM technology does just this, especially for complex components. Although it originated in the process industry, it is increasingly also found in factory automation.

beyond the confines of a network. This makes FDT technology simultaneously an open and fieldbus-independent configuration tool.

A DTM is no more a piece of executable software than is a driver. Access to the DTM can be obtained only via an FDT container, a framework application such as project management device or system management tools, for example. The FDT container ensures general connection of the device to the engineering and operating environment of the system. For the different DTMs from the various manufacturers to function correctly in every framework, the interfaces with the surrounding system and with other DTMs need to be clearly defined. This interface definition is called FDT.

Systems in competition

In 2003, various manufacturers got together in the FDT Joint Interest Group to establish an international standard based on FDT technology with broad support from within the industry. The FDT Group now comprises 59 members including Turck. The definition of binding standards means that FDT makes it possible to integrate field devices from different manufacturers, such as fieldbus I/O systems, process measuring devices, remote I/Os or motor controls to any kind of engineering and SPC environments and any kind of management systems. This allows configuration, parameterization and diagnosis of field devices to be improved significantly. System operators no longer have to worry about the compatibility of field devices and can concentrate on selecting the devices best suited to the task in question.

The EDDL system which now exists in parallel to FDT technology was developed as long ago as the early 1990's. In contrast to FDT, EDDL has its own language defined for device manufacturers to create text-based descriptions of their devices. This "electronic device description" (EDD) is then processed by an interpreter, allowing an individual software tool to operate and parameterize a wide variety of device types through interpreting the device description.

Both systems have benefits and drawbacks: EDDL has the advantage that it is not dependent on any particular operating system. The specified extent of the language allows a simple application, but restricts the scope of potential function.

This makes EDDL more suitable for straightforward parameterization tasks and for transmitting simple device functions to control programs. With FDT technology, device manufacturers have every freedom with regard to the functional scope of operating programs/DTMs, therefore FDT provides a high degree of flexibility and is particularly suitable for complex devices like fieldbus I/O systems. Another important argument in favor of FDT is its independence from certain bus systems.

FDT growing in factory automation

Turck always supports the technology the user requires, but there is one overriding argument in favor of using FDT technology: it is already known in factory automation. EDDL, on the other hand, has only been used in process automation. Production automation will be an interesting area of use for FDT in the future, as the sensors and actuators used here are becoming more and more intelligent. A great many components like fieldbus I/O systems, drive controllers and intelligent sensors, for example, now have the option of processing programs decentrally like classic SPC and the industry PC. The decentralized peripherals, in particular, now more and more frequently cover computing functions in addition to their actual tasks.

Relocating software components to programmable gateways of decentral fieldbus I/O systems reduces bus load, for example, and increases SPC performance – benefiting the entire system.

FDT/DTM: In a framework application like PACTware, for example, the device-specific DTM allows access to the device, in this case Turck's I/O system BL67



Turck supplies DTMs to allow FDT technology to be used for numerous products, for example the fieldbus I/O systems BL67 (photo) and BL20



The consequence is that not only are the devices becoming more and more complex, the number of different parameters is also continuously increasing and the number of software tools for the automation devices from different manufacturers is rising in tandem. Every manufacturer pursues its own operating philosophy with data retention specific to each device, and data is usually deployed only locally on the device itself and not beyond the confines of the fieldbus. This is making the engineering more and more time and labor-intensive.

Simple system engineering

FDT/DTM technology provides a solution here too. The fact that the DTM is supplying the field device with all its information, such as parameters, dialogs and communication drivers for subsidiary fieldbuses, simplifies the entire procedure. Devices can be exchanged effortlessly as the parameters are filed centrally in the FDT framework application. Parameterization and consequently the whole of system engineering can be realized from within a single tool. Furthermore, central filing of device data provides the opportunity of assigning user rights selectively through the framework application.

Turck used the recently-introduced I/O-ASSISTANT 3.0 to make its project management, commissioning and servicing tool for fieldbus I/O systems fit with FDT technology. In contrast to its predecessor, Version 3.0 uses all the benefits of the open standard. It is made of DTM software components for the fieldbus I/O systems BL20 and BL67, as well as the framework application (frame – preferably PACTware). The modular software concept also provides the option of using the DTMs in other FDT-based

frames, for example those with which the user is already involved and familiar.

Turck continues to meet the requirements of factory automation with DTMs for its fieldbus I/O systems BL20 and BL67, though now on the basis of the open FDT standard. The software concept reduces system complexity and makes the overall solutions lean and manageable. All the relevant device properties are represented transparently and visualized with a user-friendly, uniform look and feel. Existing data can thus be used efficiently in the ideal, specific way as the system operator would like.

Author



Raphael Scholzen is a product specialist in fieldbus technology at Hans Turck GmbH & Co. KG

Two worlds – one solution?

Based on the new OPC “unified architecture” (UA) which achieves independence from software platforms by using standardized web technologies, the Lehrstuhl für Informationstechnik im Maschinenwesen [Chair of Machine Information Technology] at the Technical University in Munich supervised by Prof. Dr.-Ing. Klaus Bender developed a client/server architecture that merges FDT and EDDL so that the benefits of the respective technologies are retained, but the drawbacks should be avoided. A prototype demonstrating the feasibility of this “Future Device Integration” (FDI) has already been shown at the Hannover Messe in 2007. The EDDL Cooperation Team (ECT) and the FDT Group have now launched a joint project to work out a standardized solution to future device integration, though it will probably be some time until a concrete solution for the customer is found.

“I don't see a competition”

With 17 years experience in automation, Meinrad Happacher is something of a founding father in the relevant trade journal sector. We asked him for his view of EDDL versus FDT/DTM.

Mr Happacher, a dispute broke out in mid-2004 about which technology would be best suited to incorporating field devices into engineering and management systems – EDDL or FDT/DTM. Is this dispute justified?

Yes and no. Yes, in the sense that neither of the two technologies is perfect: EDDL has its advantages when simple field devices need to be linked, but it has severe restrictions to its functional scope. FDT/DTM wins when complex devices need linking, but has the drawback that it is closely linked to Windows as its operating system. Nevertheless, I do not really view this situation as a competition between these two solutions, as neither EDDL nor FDT/DTM perfectly covers the broad range of applications from simple to highly complex field devices. The solutions complement one another, really.

At the Hannover Messe in 2007, the EDDL Cooperation Team and the FDT Group announced that they were going to specify a joint solution for device integration. Does this mean an end to the wrangling is in sight?

The two parties are moving closer. A significant contribution towards this rapprochement was made by Prof. Dr. Klaus Bender from the Institut für Informationstechnologien im Maschinenbau [Institute for Information Technologies in Engineering] from the Technical University in Munich. The concept he proposed envisages using OPC UA to merge the two technologies, EDDL and FDT, and to eliminate their drawbacks – high complexity in the case of FDT and limited functionality in the case of EDDL.

A proposal which met with approval?

After a certain amount of consideration, yes. At the Hannover Messe in April the EDDL team and the FDT Group agreed to start work on a joint solution based on this

concept and called Future Device Integration or FDI for short.

How do you assess the likelihood of this concept being realized?

Initial approaches are very promising; the extent to which the plans can be realized in a workable solution is yet to be seen. At the moment, activities are still at the concept stage, so people should not expect results especially quickly. The plan is for the specification and initial prototypes to be in existence by the end of 2008, but it is bound to be another four or five years at least before the first management systems with implemented FDI are actually available on the market. Of course, we can't rule out FDI failing, either!

Should a user put off investing in EDDL or FDT and wait for an FDI solution?

To look at this question we can take the parallel of the history of the fieldbus: fieldbuses had scarcely begun to become established and yet by 2000, we were talking about them being displaced by industrial Ethernet. But automation technology is not as fast-moving as the consumer world. Fieldbus technology is still experiencing incredible growth rates today. But to return to the subject: FDT in particular is only just becoming established in the market. The FDI solution we were discussing, on the other hand, is still a pure scenario for the future. So if a company is about to start on modern asset management, it would be inept to make the decision on investment dependent on the potential development of FDI, especially as investment made now should not represent a poor investment even if there is a subsequent switch to FDI. Those involved have made it very clear that they will be incorporating in the FDI solution a clear migratory path to existing EDDL and FDT solutions.



Meinrad Happacher has been active as a trade press journalist since 1990. From 1993, he was responsible for the Automation Technology section of the trade journal *Elektronik*. Five years later, Meinrad Happacher became Editor-in-Chief when Weka Fachmedien set up “Computer & AUTOMATION”, now considered one of the leading trade journals for automation in Germany.

www.elektroniknet.de

The modular BL67 I/O fieldbus system can optimally process numerous signals in the welding systems



Routing Station

The Turck I/O System BL67 processes signals on the FRIMO ultrasonic welding systems – including high-frequency

Whether gluing, riveting, screwing or welding – when it comes to joining materials together, the right joining technique is playing an increasingly important role – for the design of a product as well as its efficient manufacture. Even if it involves “just” joining two plastic parts, the user is spoiled for choice between numerous technologies, including heated-tool welding, hot-air riveting, heat contact riveting, infrared welding, laser welding or ultrasonic weld-

ing/riveting. The latter is primarily used for interiors in the automobile industry because it is particularly well suited for surface welding and riveting with cold tools.

Ultrasonic welding

Ultrasonic welding involves using high-frequency oscillations (ultrasound between 20 and 40 kHz) beyond the human hearing range to join plastics



together. Ultrasound is produced using a generator that converts the low-frequency energy in the AC power supply into higher-frequency ultrasonic oscillations. The mechanical resonance unit combined with the generator (consisting of a converter, amplitude transformation unit and sonotrode) is mounted on a pneumatic cylinder. Using the sonotrode, the mechanical oscillations generated in the converter under pressure are forwarded to the thermoplastic adherends. In the joining areas, the

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Typical of ultrasonic welding systems is the multitude of signals that have to be processed in these plants. In addition to the information on position and penetration depth of the sonotrodes, it is primarily the high-frequency signals that stimulate the numerous weld heads to oscillate. In the new ultrasonic welding systems from FRIMO, Turck's IP67 I/O system BL67 ensures that all signals are processed, including the welding process.

**“All inclusive”:
Even the high
frequency signals
for actuating the
sonotrodes
(orange cables) are
routed via the Turck
I/O system BL67**



“With his competence in the area of fieldbus-oriented signal processing and the sensor technology, Turck was able to offer us a solution that met our high requirements for this project”

**Detlev Böhl,
FRIMO Technology**

ultrasonic energy produces molecular and boundary friction, which heats up and softens the plastic parts. The sonotrode’s penetration depth into the plastic is a yardstick for the quality of the joined area in which case each material has its specific optimal value.

Demand for strong I/O system

The enormous number of input and output signals to be processed in an ultrasonic welding system makes a powerful I/O fieldbus system essential. After an intensive market analysis, FRIMO, one of the leading suppliers of ultrasonic welding systems, decided to place its trust in the Turck BL67 solution. “After comparing traditional market I/O fieldbus systems, we came to the conclusion that the Turck system was the best suited due to its high transmission speed that met our requirements,” is how Thorsten Geldmacher, technical project manager responsible for introducing the I/O systems, explains FRIMO’s decision in favor of the BL67. This system combines all the benefits of modern IP20 bus terminal systems for the switchgear cabinet and consequently transfers them into the raw IP67 world.

The benefits of such a solution are obvious. The BL67 system can be brought directly to the sensor without a switchgear cabinet. This saves on materials and assembly time and with a multitude of signals contributes to cost reduction. Furthermore, the BL67 system is enormously flexible and can thus be adapted to meet future needs. If further I/O channels should be required in the future, the additional modules can be simply added to the existing installation without further expense. The BL67 system is connected to the FRIMO system

via a profibus, but it is also available for other fieldbus systems. Besides the high speed, the FRIMO decision-makers were impressed by the complete separation of electronics and connection level in the BL67. In case of a service call, the “hot swap” functionality developed ensures smooth plant operation while the defective module is replaced by the new one in the blink of an eye.

High frequency through the I/O system

Anyone who takes a quick glance at such a system will immediately appreciate the value of each cubic centimeter of space saved by an ultrasonic welding system. For FRIMO, a decisive factor was being



**Turck produces analog magnet field sensors
“FRIMO by Turck” especially for this application**

able to do without an additional switchgear cabinet by routing the high frequency signals necessary for welding via the I/O system. In close cooperation with Turck, this concept could finally be implemented. While 19” racks with relay printed circuit boards

The user

With around 1,200 employees at 17 locations worldwide, the FRIMO Group is a leading specialist for turnkey machine tool and plant technology for the manufacture of high quality plastic components in the automobile industry and other plastic processing industries. These include, for example, manufacturing facilities for laminating, backfoaming or thermoforming instrument panels or door paneling. At FRIMO Technology GmbH PlasticJoining in Hamburg, the company focuses its competence in the area of plastic joining technologies. FRIMO gives customers process-neutral advice when selecting the appropriate technology and supplies the corresponding systems. Its product lines range from heated-tool welding, to hot-air riveting, thermal contact riveting, infrared welding, laser welding to ultrasonic welding/riveting.



were used to distribute the high-frequency signals, FRIMO now uses the I/O system BL67 for high-frequency transmission in its current serial systems. The sonotrodes can therefore be comfortably controlled by software. With its competence in the area of fieldbus-oriented signal processing and sensor technology, Turck was able to offer us a solution that met our high requirements for this project,” explained Detlev Böl, technical director of FRIMO Technology GmbH PlasticJoining in Hamburg.

The BL67 has meanwhile proven itself during comprehensive field tests in FRIMO ultrasonic welding systems. One of the many companies to purchase FRIMO welding systems with the Turck I/O system is automobile supplier Johnson Controls Interiors in Lüneburg, Germany. At its Lüneburg plant, Johnson Controls produces door panels for the new Volkswagen Tiguan which was launched in September at the International Motor Show.

Sensors and connection technology

As a specialist for sensor, fieldbus, interface and connection technology, Turck has not only equipped the FRIMO ultrasonic welding systems with fieldbus technology, but has also supplied special sensors for detecting the pneumatic cylinder, as well as the associated connection technology. In order to make a material change possible – from art leather to plastic – without manual intervention – a sensor was required that can detect contact-free the penetration depth of the sonotrodes during the welding process regardless of the materials used. “Turck was even able to deliver a solution for this task that not only met the technical specifications, but also the high FRIMO quality standards,” says Böl.

The analog FRIMO magnet field sensor that was a result of this cooperation now makes it possible to change over to new materials during ongoing operation without retrofitting the system. Thanks to its compact design, the sensor can be mounted directly on the T or dovetail joint pneumatic cylinders; a standard plug-in connector is used for connection.

The sensors from the FRIMO series have a current or a voltage output. The measured length of the analog path sensor is about 40 mm, with an average accuracy of 0.1 mm, in which case the repeating accuracy comes to 0.3%. Due to the analog measuring process, the actual reproducibility is even better with brief movements. The very brief blind zones (only 8 mm on both sides) further ensure an exact recording of the end positions of the pneumatic cylinder. Additionally, the sensor has a measurement range display, called the “in-range” function with LED display. Thanks to this functionality, it is immediately obvious whether the actuation magnet on the pneumatic cylinder is in the measurement range or not.

Successful together

Using the example of ultrasonic welding systems, it becomes clear how the close cooperation between manufacturer and supplier is mutually beneficial. With competency and innovative solutions, Turck supports the distinctive know-how of its clients and thereby does its part to allow FRIMO customers to manufacture goods faster, more safely and at lower cost using the company's systems.

Author



Jörn Stoevesandt is team manager of the North sales region at Hans Turck GmbH & Co. KG

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The green light shows the operator exactly which bin he has to remove the appropriate part from



Targeted Packaging

Turck BL67 and Banner Pick-to-Light systems ensure error-free boiler production in the Netherlands

With more than 1.5 million high performance boilers sold in the past 25 years, the Bosch subsidiary NeFit is the market leader in the Netherlands. “We are currently producing about 400 boilers per day,” says Jos Plasschaert, technical manager at NeFit in Deventer. “The center of a high performance boiler has about 30 components from which the majority are available in various dimensions and capacities. Theoretically, we are able to offer about 250 different boiler models.” Just like in automobile production,

each boiler is individually produced. The boilers are moved along the assembly line in groups of four. A central SPS and a pick-to-light application signalize which components should be integrated into the boiler at what time.

“With the previous pick-to-light system, the engineers had to turn off the light themselves after removing a component from the container. This creates errors, such as the removal of an incorrect component or incorrectly turning off the light,” says Plasschaert. There was an incident in



The Pick-to-Light modules from each picking station are controlled by a separate SPS – the Turck I/O System BL67 ensures reliable signal transmission



which an incorrect switching operation caused the outage of the entire production line. On top of that, the engineers were using only one central picking station. The entire process had to become efficient and trouble-free.

“In the Bosch Group, a zero-error philosophy applies to manufacturing and assembly processes which we intend to follow to achieve the required quality of the end product as early as possible,” says Plasschaert. During numerous workshops, we determined how this philosophy could be implemented at the Deventer plant as well. Instead of one central picking location, there are now six picking stations and each one is optimized for a certain assembly phase. Because this meant a drastic redesign and construction of the existing production line, Nefit brought the system integrator Hollander Techniek into the project.

Fundamental changes

“This project means more than just setting up extra shelves with new pick-to-light modules,” explains André Simonse, project manager at Hollander Techniek. “The infrastructure had to be adapted and expanded. The innovative aspect of the new system lies in the fact that the pick-to-light modules are controlled by several SPS (stored program controllers) and no longer from one PC. We decided in favor of the Turck BL67-I/O fieldbus modules that are connected to one another via Profinet, because both the input signal as well as the output signal can be coupled via an M12 plug-in connector.” Using the modular remote I/O system BL67, Nefit is currently able to change the allocation of the picking stations retroactively as well. The system can be mounted quickly, takes up little space, is maintenance free and can be quickly reconfigured.

The pick-to-light system itself is also supplied by Turck. For integrated upgrading, a sensor cable ranges from the picking station to the Profinet I/O, which heavily reduces the installation time. This is a considerable benefit compared to the previous system which still worked with individual sensors and picking LEDs. Manually turning off the lights is no longer an issue, because an infrared beam records the hand of the operator automatically so that the green LED turns off and signalizes that the right part was removed. If the operator removes the wrong part from a different container, then the light turns red immediately. This is how the pick-to-light system developed



“We work with several suppliers, but Turck has set itself apart. The customer-oriented attitude of Turck employees contributes heavily to the success of a project such as the one with Nefit.”

André Simonse,
Hollander Techniek

Quick read

In order to implement a “zero error philosophy” the Dutch Bosch subsidiary Nefit has redesigned and rebuilt its existing assembly line. System integrator Hollander Techniek was commissioned for this project and relied on components from Turck and Banner to complete it.

by Banner saves not only time, but it also drastically reduces the error possibilities.

Eliminating error sources

“We started reconstruction in December 2006,” explains Plasschaert. “On a hardware level, everything functioned immediately, on the software level, we were able to quickly eliminate a few small bugs. Once all the new picking stations are in operation, this will further improve our efficiency.” Hollander-Techniek project manager André Simonse emphasizes Turck’s support: “We work with several suppliers, but Turck has set itself apart. The customer-oriented attitude of Turck employees contributes heavily to the success of a project such as the one with Nefit.”

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Author



Marcel Vennemann is the director of field sales at Turck BV in the Netherlands

In the Frankfurt plant, Basell was able to install the first Foundation fieldbus lines with Turck multibarriers in record time



Flexibility Thanks to the Fieldbus

Turck power conditioners and multibarriers ensure plant operation at the Frankfurt-Hoechst Basell plant

The polyethylene production plants at the Hoechst Industrial Park in Frankfurt have been in operation for more than 50 years. What started under the management of Hoechst AG is now operated by Basell Polyolefine GmbH. The Basell Group was founded six years ago by a joint venture between BASF and Shell, and is one of the leading suppliers of polyethylene, polypropylene, high-performance polyolefins and polyolefin catalysts. Basell supplies customers in over 120 countries and has production facilities in 21 countries on five continents. Its headquarters are based in Hoofddorp, near Amsterdam, in Holland. The company employs more than 6,500 employees from 35 countries.

Basell has three production facilities in Germany: one in Wesseling near Cologne, Münchsmünster near Ingolstadt and in Frankfurt. At the Frankfurt facility, about 160 employees produce raw materials for plastic film, small and large containers such as

tablet packaging or drums, special pipes or netting. Basell has also concentrated its research activities in Frankfurt where just 300 employees work to ensure the company's future.

Plant rebuilt in record time

Production at the Frankfurt plant was actually meant to be ramped down at the beginning 2006 by moving sections of the plant to Poland. However, an explosion at the Münchsmünster plant in December 2005 put an end to this plan. The plant was completely destroyed, so instead of dismantling line 2 at the Frankfurt plant as originally planned, the line was modernized and operations from Münchsmünster were transferred there. The highly flexible production facility in Frankfurt is now in operation, producing more than 30 different products, including all the products from Münchsmünster.



The full galvanic isolation of the Turck multibarriers impressed the Basell decision makers immediately



Because the integrated power conditioners of the Rosemount interfaces (top left) were not powerful enough, external Turck power conditioners now feed the FF lines

For Harald Liebisch, team leader for automation at Basell in Frankfurt, an exciting phase started in December 2005 when the polymerization plant had to be rebuilt in record time: "Once the initial decisions regarding the new plant had been made at the end of the year, things moved very quickly", Liebisch summarizes. "We were able to update the plant within three months and equip it with Foundation fieldbus lines."

Liebisch had already had some initial experience with multibarriers, though he was not entirely satisfied with the results. When the Turck solution was presented, the decision was made very quickly: "We were immediately impressed by the full galvanic isolation of the Turck multibarriers," the automation manager explained, "it was exactly this feature that was missing before."

Multibarriers with full galvanic isolation

The Turck MBD-49-T415/Ex multibarrier allows for the installation of Ex-i drop lines up to 120 m in length. The full galvanic isolation is provided both between the trunk line and the output circuits as well as between the four output circuits. This prevents compensation currents from developing due to potential differences. The integrated short-circuit protection is activated if a short-circuit occurs at a fieldbus node. Only the output affected

is disconnected – the trunk line and the other outputs of the affected fieldbus segment remain in operation.

Actual planning was able to be completed just as quickly as the decision process, thanks to the configuration tool from Turck. "We used the tool to make a preliminary plan of the segments. The length of the fieldbus lines, the division of the fieldbus barriers, the assignment of inputs to multibarriers – the configuration tool allowed us to define all these points very quickly," Liebisch explained.

Broad base

A total of nine fieldbus lines are currently in operation at the Basell polymerization plant. Power conditioners connected upstream from each one are provided for supplying the fieldbus segments. The scope of this project also includes plans for expanding the Foun-

Quick read

In order to take over the production of another site at short notice, Basell Polyolefine GmbH was able to upgrade its Frankfurt-Hoechst plant within three months by installing the Foundation fieldbus system. Central elements of the new installation are the Turck power conditioners and multibarriers which offered more impressive features than just their channel-specific galvanic isolation.



“We are very happy with the Turck products. In addition to the galvanic isolation, their reliability and simple operation are outstanding.”

Harald Liebisch,
Basell

New Power Conditioner with FF Diagnostics Tool

The Foundation Fieldbus Diagnostic Power Conditioner system (DPC) is a brand new item in the Turck product portfolio. The power conditioner features an integrated diagnostics unit that supports the user in commissioning a fieldbus installation, and also detects faults and even inconspicuous changes within individual fieldbus segments. A suitable alarm function enables fieldbus-related installation faults to be prevented completely. The DPC system primarily provides a redundant supply of up to 16 segments with a max. 800mA output current and max. 30 VDC output voltage for each segment. In practical applications, this also enables the installation of long-distance segments up to 1900 m in length, along with the connection of stations with a high power consumption. Turck has also implemented full galvanic isolation on the new DPC system. In order to make complex fieldbus diagnostics transparent for the operator, the individual values and parameters are displayed graphically via a DTM (Device Type Manager) in the asset management system, which can be integrated in any FDT frame application as required.



The new diagnostic power conditioner system with integrated diagnosis tool immediately detects even subtle changes in FF segments

dition Fieldbus network to 15 segments. “We are very happy with the Turck products,” Harald Liebisch says. “In addition to the galvanic isolation, their reliability and simple operation are outstanding. Since we have completely migrated to Turck, we have not had any more difficulties. We therefore also intend to implement the next expansion stage using Turck products.”

Despite the time pressure under which the project was completed and the absence of a test phase, installation of the new technology was largely trouble-free. Rapid support was only required once in the initial phase when the first line could not be put into operation. This problem was caused by an insufficient power supply for the three multibarriers due to the internal power conditioners of the Rosemount interfaces used in Frankfurt. These interfaces connect the FF segments to the ABB Symphony control system.

We were able to rectify the problem within a few days. “Turck was a big help in solving it. The short communication routes within the company were very helpful,” reflects Liebisch on his experience. “Our problem was taken seriously and dealt with immediately. With the short implementation time available for the project, it was very important that we found a solution quickly.”

The multibarriers are now supplied with external Turck power conditioners that not only provide enough power, but also allow a clean separation between the interface converter and the fieldbus.

Conclusion

The changeover to fieldbus technology has enabled the installation planners at Basell in Frankfurt to create the basis for a flexible response to market requirements. The speed at which the installations can be adapted has already been put to the test with the first FF project. The installation in the polymerization plant had to be made operational as quickly as possible without a test phase.

With its high-performance power conditioners and multibarriers with channel-specific galvanic isolation, Turck has provided the most suitable technology for the demanding Basell application. However, it was also the “soft facts” – from the configuration tool to easy handling to prompt availability – which enabled the Mülheim fieldbus, sensor and interface specialists to make such an impression that Turck has also remained supplier of choice for the planned expansions.

Author



Markus Haller is key account manager for process automation at Hans Turck GmbH & Co KG



In total, 250 read-write heads in the BL ident system detect the workpiece carriers during the entire manufacturing process

The Direct Perspective

RFID systems ensure transparency and traceability in the manufacture of consumable materials

A renowned manufacturer of consumable materials manufactures about 20 million units for process engineering every year at its German plant. A large portion of the goods produced there are currently exported to the USA. By building its own plant in the USA, the manufacturer intends to reduce the capacity problems at its German manufacturing facility and, in the future, manufacture on location for one of its largest markets. The U.S. facility is being planned by the company's own plant con-

▶ Quick read

A renowned manufacturer of consumable materials for process engineering is currently building a new factory in the USA in order to relieve its German production facility. It will begin production in just a few months and is scheduled to manufacture about ten million products on its production lines each year. The RFID system BL ident from Turck will provide transparency on these new production lines and ensure FDA-compliant traceability of each product.



Same high switching distances to all metals: even the inductive Factor 1 sensor uprox+ is used in the system

struction department in Germany. Around 40 employees are involved in mechanical construction, process engineering, special tasks and automation. The team was able to gain experience in RFID technology with the last production line. Using radio-based identification technology, the high traceability requirements will be fulfilled and the production flows optimized.

Cost-effective alternative

However, the company was not happy with the RFID system being used that was supplied by a large automation manufacturer. "We were forced to look for an alternative because of the high data carrier costs," commented the construction engineer who selected the RFID supplier for the U.S. plant. "We quickly turned to Turck which had previously supplied us with data carriers when the original manufacturer was unable to supply them."

The attractive data carrier cost was only one of the reasons why the final decision was made in favor of Turck. "The BL ident system by itself was also a very convincing factor. Another important one was that all the read-write heads were available as standardized sensor housings. This significantly simplifies installation and eliminates the need for inconvenient mounting



The RFID data carriers are mounted on the lower end of the workpiece carriers

brackets." What also clinched it for Turck's BL ident system was the ability to mount the read-write heads at very small distances from each other. There are areas in the system where several read-write heads are installed in confined spaces. The minimum clearances required by the Turck heads are ideal here.

Intelligent workpiece carriers

The RFID system consists of about 70 gateways, 250 read-write heads and around 1,000 data carriers.

The RFID package BL ident

With its high-temperature RFID solution BL ident, Turck, the sensor, fieldbus, interface and connection technology specialist, offers a complete package for non-contact identification in an industrial environment. The BL ident product line is based on the modular BL67 I/O system (on-site assembly) and BL20 (switchgear cabinet mounting), and consists of data carriers, read-write heads, connection technology and gateways. The RFID system can be easily integrated into existing BL67 and BL20 I/O systems.

Gateways are programmable with CoDeSys and comply with IEC 61131. They communicate with the read-write heads and are available for simple installation and for reducing the burden on higher-level controls. In addition to the standard data carriers, which are rated for temperatures up to 120 °C, BL ident also operates with high temperature tags up to 210 °C. For example, when burning in paint layers in car manufacturing, this means that the data carriers can pass through the oven on the vehicle skids.

The tags are available with EEPROM and FRAM memory where the latter allows almost an unlimited number of read and write operations. BL ident can be modularly adapted to the respective application with two, four, six or eight channels. Fieldbus interfaces are available for Profibus DP, DeviceNet, Ethernet/IP, Profinet IO and Modbus-TCP.

It is used for monitoring the workpiece carriers. For this purpose, each workpiece carrier is provided with an RFID data carrier on its base, the so-called tag. Information on the workpieces is stored on these data carriers which are incorporated into the workpiece carriers. This means it is possible to trace the production line that the workpiece came from at any time, the injection molding machine and cutting machines it used, the shift during which it was manufactured and many other details. All this information is stored on the data carrier until it is exported to a transfer point and then transferred to the databases. Some stored data even move along the entire production line – from start to finish because it is needed by certain processing centers. If a line is changed or the workpiece carrier is replaced, this data can be reimported onto the data carrier.

An important criteria for the Turck solution according to the customer was the high read-write speed: "We performed precise speed comparisons with the competitor's device. With the RFID system previously used, we sometimes had problems with data transfer to another workpiece carrier. Sometimes it appeared that only half the information had been written to the tag even though the write process had been indicated as complete and the workpiece carrier had already



Simple mounting: All read-write heads in the Turck RFID system BL ident are fitted to standard sensor housings



Up to four I/O modules can be connected to the BL ident gateway (left) for up to a maximum of eight read-write heads

moved on. We no longer have these problems with the speed offered by BL ident."

"Very good support"

When an important project such as the installation of an RFID system is completed without any major problems, it should not go without praise. The Turck concept of user-friendly technology combined with equally user-friendly support was a complete success as confirmed by the customer: "The system was easy to install in our system, previous projects required more time and expense. Close contact to the manufacturer is helpful, particularly in the test and training phase. We were always able to rely on the excellent support provided by Turck product managers."

In contrast to other manufacturers, Turck puts a lot of effort into documenting its solutions. The results speak for themselves said the design engineer: "We quickly found all the information in the documentation. This may sound very mundane, but this is not standard when it comes to documentation. In my opinion, Turck's documentation was comprehensive and of high quality, just like the cooperation and support we received."

► Webcode

more20753e

Author



Walter Hein is the RFID product manager at Hans Turck GmbH & Co. KG

Decentralized machine concept instead of the switchgear cabinet: All components are in individual modules and mounted directly onto the machine



Plug & Play Cabling

Turck I/O modules and quick disconnect cables support modular machine concept from Automatic Feed

Automatic Feed Co. located in Napoleon, Ohio is a premier designer and manufacturer of coil handling and press feeding automation systems. Its management has long recognized the importance of streamlining processes by simplifying design and embracing lean manufacturing. The company has been actively developing programs to accomplish this since the 1980's.

One of its more recent initiatives is to convert operations to a "one-day build cycle" that targets one person and one process in one day. By standardizing equipment and distributing control devices through-

out the machine, Automatic Feed has moved point of control to the physical application reducing setup time and decreasing the entire production cycle. This process, coined Distributed Device Architecture or DDA, has allowed the company to drastically improve its productivity, reliability and quality.

DDA's basic approach is modularity. This is accomplished by incorporating control devices onto a sub-system, each with self-contained, modular mechanics, control devices and logic. Control devices are removed from traditional enclosures and built to a standard on the sub-system. Adhering to standard control devices allows Automatic Feed's customers to specify components at a lower cost and dramatically improved the company's reliability and efficiency. The coiling and press feeding machines are now designed to fit virtually any OEM requirement, as machine components, like motors, cylinders or valves, are interchangeable commodities on the sub-system. This design ensures applications are specified to customer's particular standards and allows them to

▶ Quick read

With a modular machine concept, the American Automatic Feed Co. was able to increase its efficiency and reliability and reduce its assembly time and costs at the same time. The I/O modules and cables come exclusively from Turck.



be implemented more efficiently. This often results in a cost savings to the customer.

Schematics, measurement, testing and wiring are all part of the modular solution provided by the DDA, and industrial controls and hardware devices are located next to the machine. Prior to the DDA program, a device had eight connection points before reaching the PLC. Devices now have only two connection points before reaching the PLC. According to



With the DDA package, Automatic Feed can now offer its customers efficient and high quality solutions that are fast and easy to install

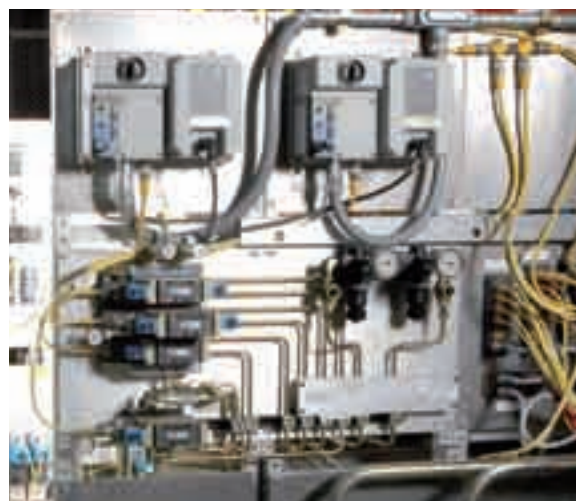
Mike Wolfrum with Automatic Feed, “we saved 25% on the cost of electrical components by using the AIM blocks (junction boxes) and Turck plug-ins (quick disconnects).”

By using Turck devices for part of the DDA program, Automatic Feed was able to reduce the number of junction boxes required on the press feed line by 97 percent and on the coil line by 90 percent. The DDA program also reduced enclosures, connection points and potential failure points. Before the implementation of the DDA program, a device had eight connections with nineteen potential failure points. Now the same device has only two connections with six points. This reduction was achieved with the implementation of the stand-alone sub-systems, and by using Turck DeviceNet AIM stations and cordsets.

Wolfrum notes that “we used plug and play technology to eliminate almost all wire reconnections requiring a screwdriver except the 480 Volt. The E-connect plug and play on all safety circuits has eliminated wiring errors reconnecting the safety circuits. Even the cables to each gate are molded from the factory to the correct length to reduce wiring errors. The connections to the panels are also plug-ins, except the 480 Volt, to speed installation time and reduce wiring errors,” adds Wolfrum.

Dramatic savings

Automatic Feed reduced communication and power cable by 70 percent, with a 50 percent reduction in wiring man-hours. This is a direct result of implementing quick-disconnect cordsets in place of hard wired terminations. Hard-wired machine terminal points were reduced by 87 percent, and hard-wired panel termination points were reduced by 38 percent. Implementing the DDA program has helped ensure Automatic Feed can provide their customers with efficient, timely and high quality service. The company constantly seeks ways to improve their operations to continue providing their superior products and services.



Only easily installable quick disconnect cables from Turck are in use on the machines

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Author



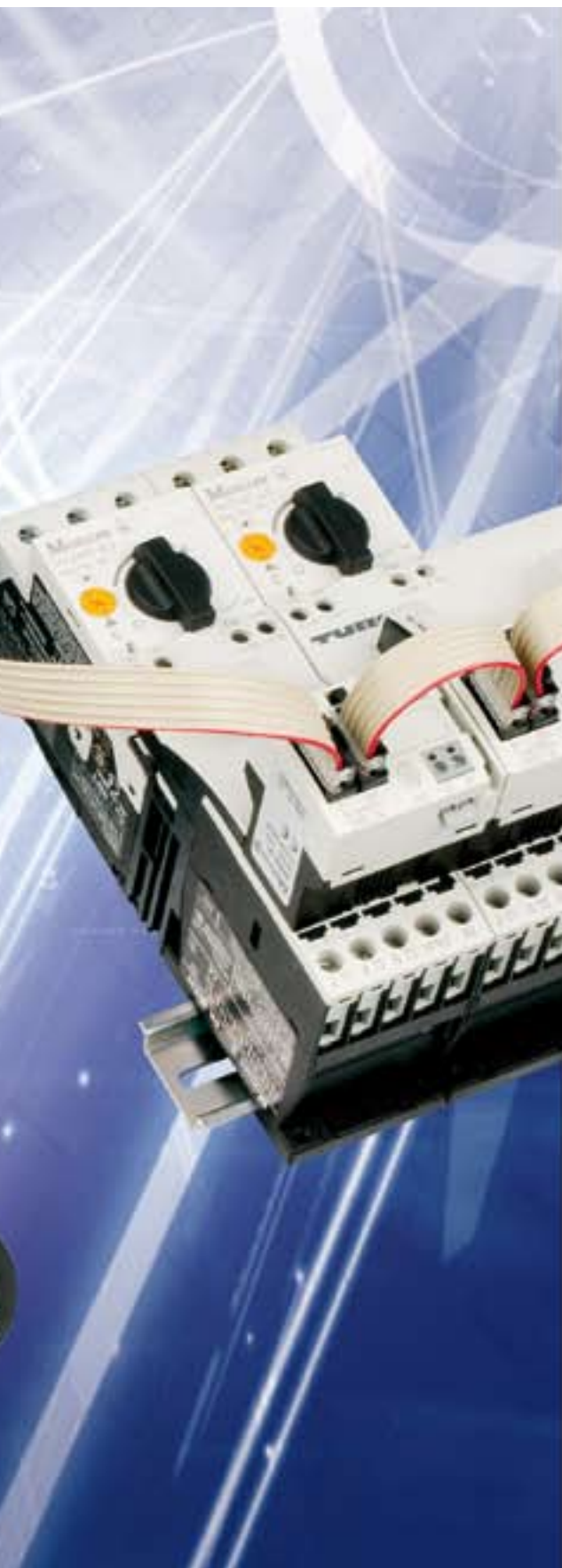
Bob Gardner is senior product manager for I/O systems at Turck Inc. in Minneapolis, USA

Free choice:
Turck supplies
numerous
modules for
BL20, from
RFID to motor
starter to
Economy or
classic I/O
modules



The Integrator

Turck extends its IP20 I/O system BL20 with new modules for use in factory and process automation



With the numerous extensions Turck has now introduced for its I/O system BL20, the sensor, fieldbus, connection and interface specialist has brought a fresh approach to the fieldbus market. Whether we consider compact control systems, RFID integration, motor starters or Economy modules, the new product portfolio means the system more than justifies its title of “Integrator”.

The core of the BL20 system is the gateway for communication with the fieldbus. The Standard gateway is available in different versions, for Profibus DP, DeviceNet, CANopen, Ethernet/IP and Modbus TCP. If up to 16 modules need to be connected and the system has to be integrated in a Profibus or CANopen network, the Economy gateway can be used as an alternative.

Programmable gateway

The programmable gateway is especially suitable for the RFID system, BL ident, but also for other small control tasks. This compact PCS can be programmed with CoDeSys to IEC 61131-3 and supports the growing demand for decentralized automation technology.

The user can choose between the standard programming languages LD (Ladder Diagram), CFC (Continuous Function Chart), STL (Statement List), ST (Structured Text) and SFC (Sequential Function Chart).

The core of the new gateway is a 32-bit RISC processor with a 512 kB program memory which is able to process 1000 STL commands in less than a millisecond. Two programmable interfaces are available, 10/100-Mbit Ethernet and RS232.

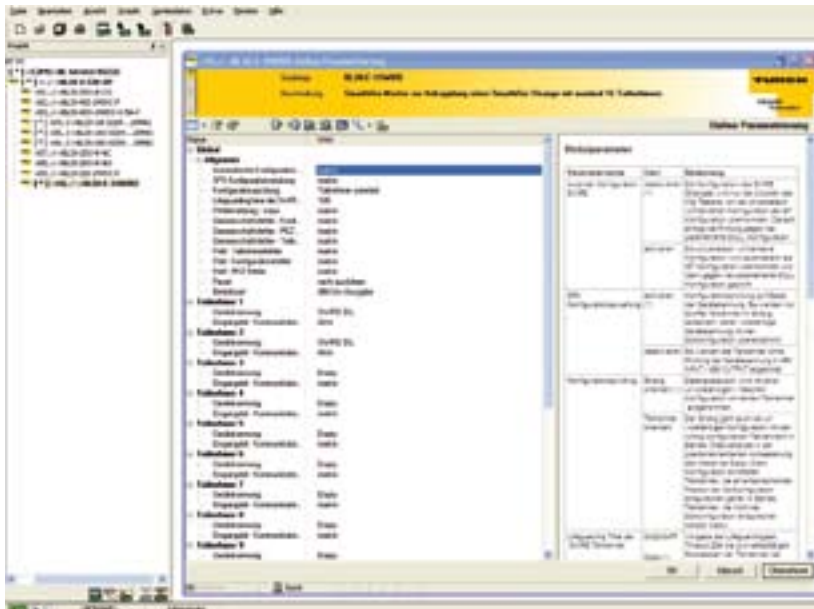
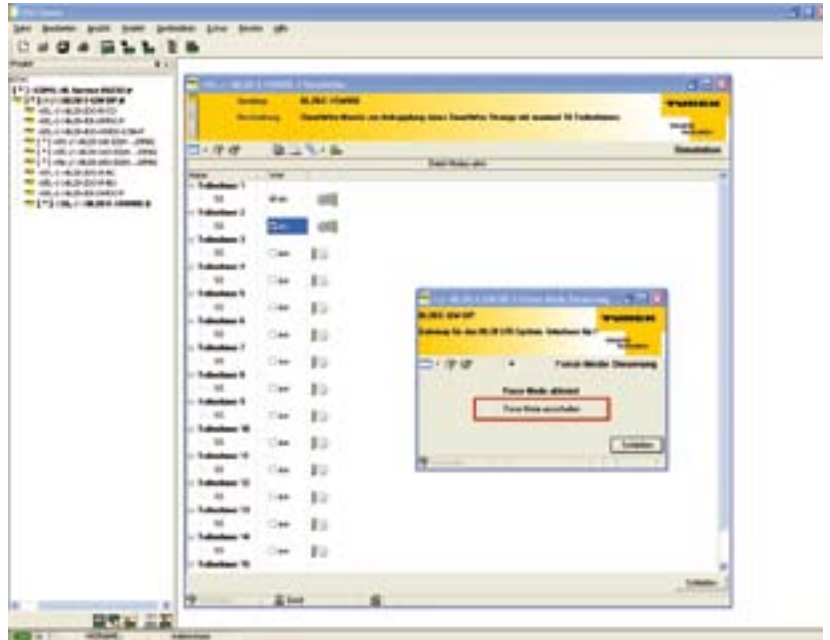
▶ Quick read

Fieldbus systems are already a well-established technology in production automation. Whether the remote I/Os are used in a control cabinet with IP20 degree of protection, or directly in the field, i. e. on machines with IP67 degree of protection, the decision in favor of one or the other solution is often a question of personal taste or the application in question. Turck customers always get the right product family for any situation and application, from the intrinsically-safe remote I/O excom developed specifically for the process industry, to the BL67 system with IP67 degree of protection, to control cabinet solution BL20 with its numerous extension modules.



Alternative: Economy gateways for Profibus DP or CANopen supplement the BL20 portfolio

I/O-ASSISTANT 3.0 supports the planning, commissioning, testing and operation of the I/O system



linked to any control system, no matter which manufacturer, without complicated alignment and programming effort, even if no function block is available for the control system.

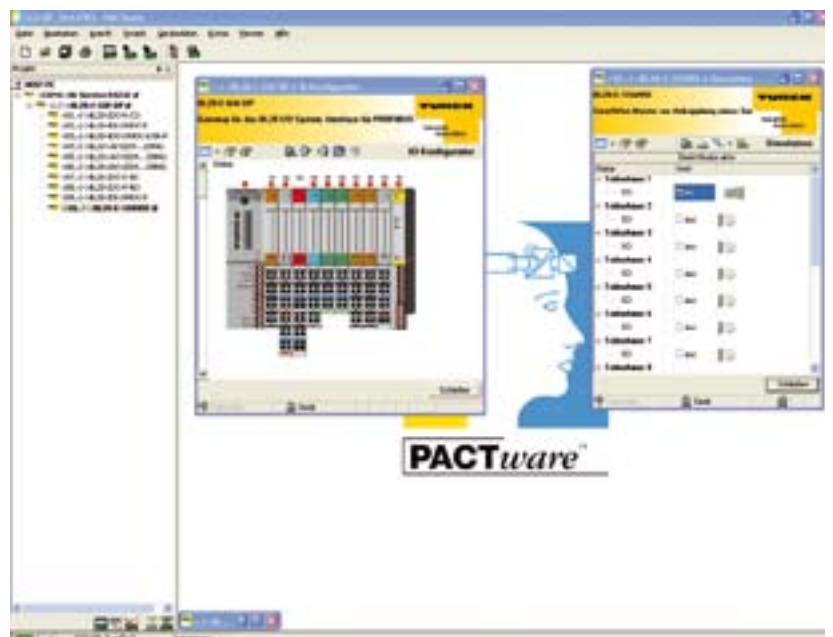
Separation of connection level and electronics

Up to 72 expansion modules can be aligned on the right-hand side of the gateway. The base/connection modules are passive components which are simply snapped into the system. This creates a compact and mechanically stable unit that can be flexibly extended at any time. The electronic modules are slid into the base modules and then firmly engaged in position. The compact design of the BL20 components means that the fieldbus node can be mounted in the control cabinet to save space. Separation of connection level and electronics means that up to

The FDT/DTM standard makes configuration and parameterization simple for the user

The programmable gateway perfectly rounds off Turck's RFID complete package, BL Ident, which can be integrated in the BL20 I/O system with the RFID modules now available. The "intelligence" gained in this way allows the gateway to relieve the higher-level control system, as the occasionally complex RFID communication is now handled entirely by the gateway on a direct, decentralized basis.

The function block (Proxy Ident Block) required for the PCS is locally run in the programmable gateway. This enables specifically only effective data to be exchanged with the higher-level control system. The RFID system can now be



The BL20 DTM can be operated in any FDT frame – such as PACTware, the free-of-charge industry standard



Maximum I/O density: The new BL20 Economy modules have up to 16 digital inputs/outputs per 13 mm slice

two adjacent electronic modules can be replaced during operation without provoking any malfunctions or having to disconnect the wiring. Depending on the individual application, the customer can choose between single or block modules, each available with screw or cage clamp terminals.

In its new Economy modules, Turck is providing very compact and cost-saving I/O modules that can host either 8 or 16 digital inputs/outputs in a width of only 12.5 mm. The Economy slices can, of course, be combined with the standard modules. The integrated connection level allows the Economy modules to be fitted without tools thanks to 'push-in' cage clamp technology. The "Integrator" highlights its flexible application options with its new motor starter modules, available as direct or reversing starters to switch up to 15 kW. Each gateway can take up to three modules, and up to 16 motor starters can be connected to each module.

Comprehensive software support

Turck provides support for BL20 users with regard to configuration, commissioning and maintenance in the form of its I/O-Assistant 3.0 software which is free of charge. In contrast to the previous versions, I/O-Assistant 3.0 is based on standardized FDT/DTM technology which also supports all other Turck products. The modular software concept allows the DTM (Device Type Manager) of I/O-Assistant 3.0 to be used for various frames, reducing the complexity of many systems and making the overall solution manageable. All the relevant device functions become

transparent and are visualized in a user-friendly manner. This provides optimum, efficient and selective use of data together with a pleasant look and feel.

I/O-Assistant 3.0 supports the user through all the phases of a system. Starting with configuration of a modular fieldbus node, it provides useful information such as the type, type designation and part number of the components required. The user can save an enormous amount of money, time and effort by assembling a node graphically, as the related documentation (order and parameter lists, technical and dimensional drawings) is generated automatically. At the same time, incorrect configuration is prevented because the software only displays logically meaningful base modules for the electronic module in question and calculates the maximum total currents of the digital inputs and outputs for this. What is more, the quantity of data permitted for the fieldbus in question is checked and errors are displayed.

During commissioning, the user can read in, set or assign values to all digital and analog outputs using the I/O-Assistant, allowing all the wiring and all sensors and actuators to be checked at the click of a mouse. The BL20 gateway is connected to the service PC via the RS232 serial interface, while Ethernet-based gateways can also be actuated via Ethernet. Each fieldbus node can be tested as a local unit using the I/O-Assistant beforehand, reducing commissioning time considerably. If problems do occur, the software also provides valuable diagnostics support.

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Flow rate sensors from Turck are mainly used in manufacturing



Functional Principles of... ...Flow Rate Sensors

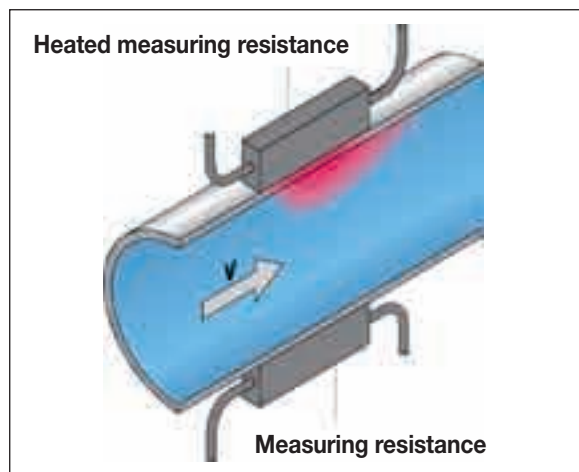
Part 2 of our basic series: Design, functional principles and mounting options of the most important sensor technologies

In order to ensure trouble-free operation and identical results in manufacturing, a uniform inflow and outflow of liquid or gas-formed media is required for numerous processes. In addition to pressure and temperature, current plays a vital role in automated production processes. Depending on whether a continual measurement or the monitoring of a limit value is desired, the output signal from the current or flow rate sensors can be an analog or binary value according to the current velocities. Every application has its specific requirements for flow sensors.

Various principles

For electronic current or flow-through monitoring, various measurement methods exist according to numerous physical principles that have specific advantages and disadvantages. Using the **Thermodynamic Principle**, the sensor is heated to a certain temperature. Depending on the medium's flow rate, the heat energy is diverted, allowing the flow rate to be measured.

Inline sensors are used to determine the flow rate based on the known pipe cross section. The



sensors first detect the current velocity and from it are able to calculate the flow rate. The FTCI sensors from Turck show the flow rate in the display. Such sensors are reasonable and reliable, but due to the different heat conductive features of the respective media, they are usually only suitable for water and water/glycol blends.

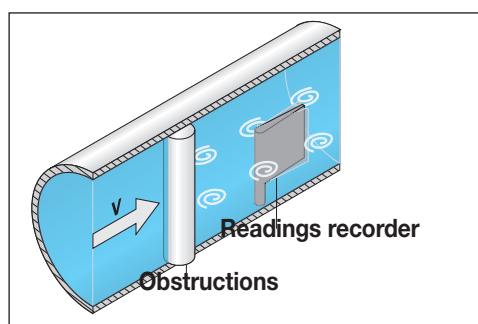
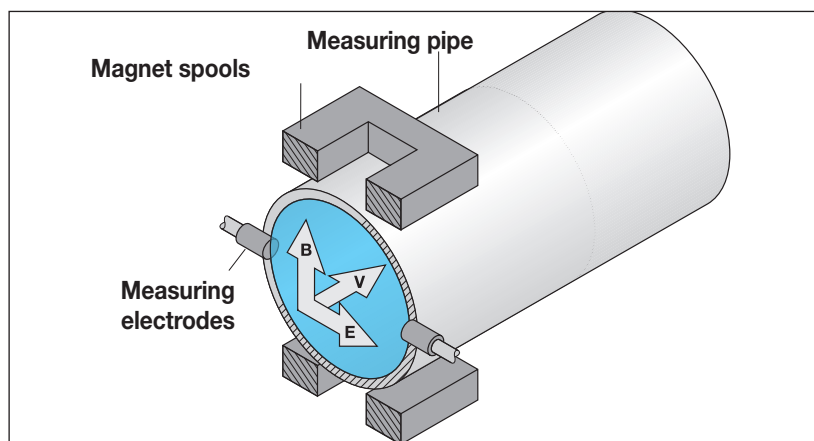
Considerably more expensive is a mass flow meter that functions according to the **Coriolis Principle**, which measures liquids and gas flow rates. A medium flowing through a pipe elbow causes it to oscillate and the resulting Coriolis force is measured. The advantages of the mass flow meter are a very high measurement accuracy and measurement range dynamics, as well as the low pressure loss. Furthermore, it is also suitable for both gases and liquids.

For ultrasonic flow measurements, there are two reliable processes. The **Doppler Process** uses an ultrasonic wave's change in frequency reflected from the medium and occurs when the sender and recipient move relative to one another. With the **Run-Time Process** the sound speed superimposes the current velocity of the medium. If the ultrasonic impulse runs with the current, this lowers the run-time while the run-time in the opposite running direction increases it. The current velocity can be calculated from the measurement of the run-time difference.

An additional important principle is the vortex frequency process, also called the **Vortex Principle**. Behind an obstruction that is integrated in the cur-

Quick read

Flow rate sensors are often used in manufacturing automation for monitoring in order to detect critical deviations from the flow velocity or the flow rate. While the current sensors detect the velocity of a medium, the flow rate sensors measure the flow-through volumes per time unit for a defined pipe cross section.



Measuring principles of the Turck flow rate sensors:
Thermodynamic, FTCI (above left); magnetic inductive, FCMI (above); Vortex, FCVI (left)

rent, the so-called Karmann Vortex Street is formed. Starting as of a certain flow rate, vortices are released periodically on both sides of the obstruction. The flow rate results from the frequency of the vortices that occur. Vortex flow rate meters, such as the FCVI from Turck, are insensitive to pressure and temperature changes of the medium. They are therefore perfect for controlling process and cooling water circuits, especially as the FCVI is exclusively suitable for water.

The **Differential Pressure Process** is based exclusively on the Bernoulli Principle. The pipe cross-section is narrowed into the form of an orifice plate or nozzle. Because the volume and flow current is the same in all areas of the piping system, there results a pressure drop from which the flow rate can be calculated according to the Bernoulli's Principle.

Flow rate meters that measure according to the **Magnetic Inductive Principle** are suitable for all conductive media that indicate a minimum conductive capacity of 15 $\mu\text{S}/\text{cm}$. When creating a magnetic field, the moved charge carriers induce an electrical voltage in the current whose size is proportional to the average flow rate of the medium. The FCMI magnetic inductive flow rate meter from Turck has a high measurement accuracy of two percent of the measured value and requires no mechanically moved parts in the volume flow. In addition, a reduction in the pipe cross-section is not necessary so that in this process practically no pressure loss occurs.

Author



André Overländer is product specialist for process sensors at Hans Turck GmbH & Co. KG

Escha is now considered one of the leading manufacturers in connection technology for automation components



Loving Connectors

Whether a standard design or a special production – Escha supplies more than just the Turck Group with innovative connectors and housings



Hand-made in Germany: Escha makes customer-specific cable and connector solutions – in small batch sizes, too – at its Halver site in Sauerland, Germany

Whether requiring M12x1 round connectors, 7/8" valve connectors, actuator/sensor boxes or connectors which can be assembled freely – anyone needing to connect devices in automation technology will find the right solution at Escha, a Turck Group company. What is more, that solution can not only be picked from the extensive catalog of standard products, as Dietrich Turck, Managing Director of Escha Bauelemente GmbH, emphasizes: "We stand out from the competition by some margin because we supply not only classic standard connectors from the catalog, but also any number of variants of these standard products – manufactured entirely to suit individual customer requirements."

Beginnings in toolmaking

The origins and name of the company go back to Halver toolmakers Eugen Schmidt. Escha was founded from this company with the idea of being able to develop and manufacture plastic parts and connectors within the Turck Group. Escha's toolmaking expertise was to effect an entry into injection molding technology. With success – in no time, the

Halver site was being used to produce the first plastic housings for Turck.

Toolmaking also created a bridge to connectors, as Escha built the tools Turck initially used to make its first connectors in the USA. Later, Escha started producing the connectors itself – now the focus of the company's activities. For many years, Escha manufactured essentially for just one customer: Turck.

When Dietrich Turck, son of one of the founders of Turck, assumed directorship of the company seven years ago, one of his primary objectives was to make the company more independent and to develop its own product strategy and sales & marketing. Escha is now one of the leading manufacturers in

▶ Quick read

Modern automation technology would not work without connectors. Although standard catalog products are often sufficient, it is becoming more and more common to need specific solutions tailored to suit the customer's requirements. Escha in Halver supplies both kinds of product and has consequently developed into a successful company within the Turck Group.



Escha customers benefit from the company's high-performance toolmaking



“In an ideal situation, Escha can realize a new customer-specific product within one to two weeks.”

Marco Heck, Escha

connection technology for automation components. Its broad range of standard products includes ready-assembled, molded-on round connectors, valve connectors, 2-way distribution systems, actuator/sensor boxes with up to eight connection locations for decentralized wiring at field level and connectors for free assembly.

Tailoring the standard to suit the individual

The ability to adapt standard connectors to suit the individual customer application is a special feature of Escha. “We have a separate department for this – and by the way, it's our most successful”, says Dietrich Turck. So if a customer needs standard connector X, but with crossed wires, he can get it

from Escha. Variants in color, with individual cable lengths or extra connectors fitted are also possible. One reason for Escha's success is the fact that these variants can even be made in small batches. “Escha entered the market for industrial automation technology connectors pretty late”, explains Turck. “In order to distinguish ourselves from the established competition, we simply concentrated on the things that no-one else wanted to make, including the manufacture of individual products in small batches.” A frequent batch size for connectors without too much variance is 20. Possible changes to standard connectors can be equipment with different connectors on the ends; individual flange connectors assembled to form chains of flanges are also possible, as are cables printed specifically for customers or customer logos embossed on the connector.

Successful subsidiary Escha TSL

Escha TSL GmbH is a former division of Escha Bauelemente GmbH. It started life as Escha Schalttechnik in 1986, making and selling door-opening buttons for road and rail vehicles. Patented buttons for inside and outside, reliable switching under harsh conditions of use and – typically Escha – rapid implementation of customer requirements made the division the leading manufacturer in the sector. In developing the buttons, particular attention is paid to the needs of people with restricted mobility. The business was so successful that in 2006, the decision was made to take the division out of Escha GmbH and set it up on its own as an independent company. For more information, go to: www.escha-tsl.de



Highly flexible production

This is made possible by a highly flexible production process in which a great deal is still done by hand – all at the Halver site in Germany. This is a perfectly conscious decision, as Dietrich Turck underlines: “If numbers are small and constantly changing, you not only need competent staff and the right technical equipment; it also has to be possible for engineers from Development to work closely with staff in Production. This would be very hard using staff in China or Hungary.”

A product or project manager at Escha now has direct access to Production. “This means that on a Monday he can approve a drawing amendment for a new variant and by Friday be accompanying the pilot run to approve the component”, says Marco Heck, Marketing Manager/Product Management. “In the ideal situation - in other words if the customer is well prepared and has a design specification for the new product, Escha really can realize a new product within one or two weeks.”

Escha likes to satisfy special requirements

“Of course that only works with an outstandingly well-equipped toolmaking department which builds all our tools itself”, says Turck. “Toolmaking was the company’s core business before my father took over. Now this expertise is the prerequisite for rapidly adapting tools to suit the customer’s requirements.” Only high-performance toolmaking enables special products to be developed, the kind you can’t just find in the market. “We combine our expertise in toolmaking with experience in plastic forming and connection technology”, is Heck’s comment on their recipe for success. “For us, inquiries of this kind are not a nuisance as can be the case for some of our competitors, frequently resulting in “brush-off” quotations with high prices and long delivery times. These are precisely the inquiries we want.”

This is why the experts at Escha work in close collaboration with their customers, often on board at the project management stage. This then results in in-house developments – like distribution components into which electronics will subsequently be fitted for their customer Turck, for example. Or a connecting block for light curtains for another well-known customer from the automation sector, for example, equipped with all the necessary contacts and which simply has to be inserted in the appropriate diecast housing. “The customer initially wanted to use a closed box, drill holes in it and then fit flanges from behind. We developed a solution for them that resulted in considerably less handling and assembly effort”, explains Turck.

“We now deal with some 600 project inquiries of this nature every year”, adds Heck. “Of course they aren’t always as extensive as that, but in our business, two worlds very often collide. For example, the



industrial environment has to be linked to the office world. Connector suppliers usually come from either one sector or the other, but if the customers want a finished product, a cable to connect those two worlds, they need a supplier who deals with unfamiliar subjects and technologies. We are that kind of supplier.”

Innovative approach to standard products, too

Its high degree of problem-solving competence in special products does not mean that Escha is neglecting standard products. The company provides innovative solutions here, too. “Some eight percent of our staff are involved in developing new products,” emphasizes Turck. “We want to be leading-edge suppliers in standard products – and we’re very successful at that, too.”

As a result, Escha has often succeeded in launching completely new product families with properties previously non-existent in the market. An example is the complete family of connectors for high temperatures. New materials mean that they can still operate with absolute reliability at temperatures up to 150° Celsius. Escha also supplies a completely newly-developed product portfolio to suit the food industry – one of the highlights of SPS/IPC/DRIVES 2007 (see Page 4) – the innovative connector-maker in Halver is once again making sure it causes a stir in the market.

Flexibility as a factor for success: Dietrich Turck loves the orders which leave the competition cold, “especially the production of individual products, even in small batches”

Author



Olaf Meier is a freelance journalist in Mönchengladbach

Turck at trade fairs

Turck presents current product innovations and tried and tested solutions for factory and process automation at numerous national and international trade fairs. Be our guest – come and be convinced!

Trade fairs in Germany

Date	Name of fair	Location
21.04. - 25.04.2008	Hannover Messe	Hanover
24.04. - 30.04.2008	Interpack	Düsseldorf
22.09. - 25.09.2008	MOTEK	Stuttgart
25.11. - 27.11.2008	SPS/IPC/DRIVES	Nuremberg

International trade fairs

Date	Name of fair	Location, country
04.12. - 06.12.2007	PTA Ural	Ekaterinburg, Russia
04.12. - 07.12.2007	Industrial Automation India	Bangalore, India
11.12. - 13.12.2007	Elektro Vakbeurs	Hardenberg, Netherlands
19.02. - 22.02.2008	Magyarregula	Budapest, Hungary
11.03. - 14.03.2008	Smagua	Saragossa, Spain
12.03. - 14.03.2008	Automaatika	Tallinn, Estonia
01.04. - 04.04.2008	Amper	Prague, Czech Republic
01.04. - 04.04.2008	Automaticon	Warsaw, Poland
01.04. - 04.04.2008	Minskexpo Automation	Minsk, White Russia
21.04. - 24.04.2008	Romcontrola	Bucharest, Romania
15.04. - 18.04.2008	Elcom	Kiev, Ukraine
14.05. - 16.05.2008	PTA	St. Petersburg, Russia
20.05. - 23.05.2008	Het Instrument	Utrecht, Netherlands
20.05. - 23.05.2008	Agrokomplex	Nitra, Slovakia
26.05. - 29.05.2008	Eliaden	Lillestrøm, Norway
04.06. - 06.06.2008	ISA Expo Control	Mexico City, Mexico
17.06. - 19.06.2008	RAX	Tel Aviv, Israel
23.06. - 27.06.2008	Oil & Gas Show	Moscow, Russia
24.07. - 27.07.2008	Expo Pack	Mexico City, Mexico
15.09. - 19.09.2008	MSV	Brno, Czech Republic
25.09. - 28.09.2008	Automation	Mumbai, India
30.09. - 03.10.2008	Aandrijftechniek	Utrecht, Netherlands
01.10. - 03.10.2008	PTA Ural	Moscow, Russia
07.10. - 10.10.2008	Vienna-Tec	Vienna, Austria
07.10. - 11.10.2008	TIB	Bucharest, Romania
20.10. - 24.10.2008	Expoquimia	Barcelona, Spain
28.10. - 01.11.2008	Matelec	Madrid, Spain
30.10. - 31.10.2008	Sibpolitech	Novosibirsk, Russia
09.12. - 12.12.2008	Automatisation	St. Petersburg, Russia

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Turck on the In

Whether you are looking for sensor, fieldbus, find the right solution for your application at the search functions will help you in the process.

Visit Turck at several trade fairs all around the world. Experience the "Full Range" for factory and process automation in a unique environment. Under the motto "Living Yellow", we offer you a perfect view into the Turck topics "Sense it! Connect it! Bus it! Solve it!" 3D visualizations on touch panels open new paths into interactive communication



► **Full text search** Are you looking for a product name, a known ID number or a particular feature? Just enter it in the search field top left.

► **Tree structure** Are you looking for products in a particular group, like cylindrical inductive sensors, for example? Then click through the menu structure on the left.

► **Power Search** Are you looking for a product to meet quite specific technical parameters? Then use the feature search to take you to your specific solution.

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Internet

interface or connection technology – you can touch of a button on www.turck.com. Three

Turck on site

With 25 subsidiaries and numerous branch offices, Turck is always close by, wherever you are in the world, guaranteeing that you can get hold of your Turck contacts quickly and obtain direct local support.

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Page 12



Page 14



Page 18



Page 22



Page 24



Page 30



Page 36



Page 38

