



The decentralized signal processing by the TBPEN hybrid safety I/O module for Profinet/ProfiSafe allows a higher conveying rate of the plant

Manufacturers of conveying and sorting systems for large logistics centers are faced with the challenge of constructing plants that meet increasingly faster speed requirements and maximum availability since the key requirement of their customers is the optimum throughput of goods. To guarantee this after their receipt has been recorded, articles have to be picked for the order, sorted and presented in a precise sequence so that they can be shipped as quickly as possible.

The optimization of these processes is the core competence of EAE Solutions in Ahrensburg. The company develops innovative control solutions for different applications in the intralogistics industry. The modular EAE Flow software platform for controlling conveying and sorting systems makes it possible to utilize the full potential of existing, new or retrofitted intralogistics systems. The design of the system is based on the latest developments in automation and the highest industrial standards.

EAE Flow consists of the EAE Flow.Master module, which imports sorting and transport parameters and optimally controls the entire material flow. The EAE Flow.Control module handles the real-time control of the electromechanical equipment. It transports goods efficiently and reliably on the basis of the WCS information, I/O signals and scan and image data. The EAE Flow.Commander visualizes the operating status of the systems, statistics and reports. The SCADA-compatible user interface is web-based and can be called up on several authorized (mobile) devices.

EAE Solutions also takes care of the installation and commissioning as well as the engineering and the development of software and hardware. The company relies on Turck's decentralized automation technology, especially Ethernet I/O and safety modules with decentralized controller logic and IO-Link, in order to keep the installation effort to a minimum and make the systems flexible and cost efficient at the same time.

I/O modules with high-speed counter input ideal for logistics requirements

Different sorting systems are used depending on the sorting task, which EAE Solutions implements with specifically optimized control systems: These solutions are for pocket sorters and crossbelt sorters as well as for the conveying technology, in addition to the tray sorter. In EAE's pocket sorter, for example, pinpoint detection of the sorted material is a fundamental requirement for precision timed processes. Progress along the transport section is measured by the teeth of the wheels that transport the pocket holders. These teeth have to be counted quickly in order to determine the exact positions, such as for the guiding of transport pockets.

However, the high speed of the teeth means that the cycle times of standard controllers do not allow them to read in the data. This is where Turck's TBEN-S1 IP67 module comes into its element: the compact multiprotocol I/O module for Ethernet features eight digital inputs. The first input is a high-speed counter – a genuine USP and ideal for use in the pocket sorter. The

Efficient and Safe: Flexible I/O and Safety Modules

EAE Solutions optimizes intralogistics solutions with an efficient control system – flexibly configurable block I/O and safety modules from Turck transfer a countless number of sensor and actuator signals



To ensure efficient operation in spite of the large number of sensor and actuator signals in intralogistics systems, Turck has developed a block module with universal channels that can be used as inputs or outputs as required

fast rotating teeth are captured as pulses generated by a proximity switch and counted directly by a decentralized TBEN-S, from which the controller calls the values to thus determine the precise position.

New development and customer request

The control technology for conveying and sorting systems requires the fast reading of signals at many different locations in the system. The large quantity of sensor signals involved requires the fitting of a large number of block I/O modules so that their price is a bigger factor than in other sectors and applications. This means with the pocket sorter that a module with eight inputs would not be an economical solution in an actual application where only three or four signals have to be read. Modules with four inputs and four outputs may also not always cover the actual number of signals required.

On the suggestion of EAE Solutions, Turck therefore developed a module with four universal channels that can be used as required as inputs or outputs. In all, up to four 3-wire PNP sensors or four PNP DC actuators can

be connected. "The new development from Turck suits us very well," Stefan Püttmann, product and project manager at EAE, talks about the flexible module. "With the several hundreds of modules we require, this enables us to offer really cost efficient solutions."

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System solution supplier EAE Solutions also relies on Turck's decentralized I/O and safety modules for shortening commissioning times and increasing the throughput in intralogistics plants. Together, both companies have developed optimum solutions to meet the requirements of EAE Solutions. These include, for example, a flexibly configurable block I/O module or the TBPN hybrid safety I/O module, which combines standard and safety-related inputs/outputs in a single device and controls safety in direct proximity of the hazardous area.



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Stefan Püttmann | EAE Solutions

The TBEN-S1 module performs the high speed counting of the teeth and ensures the smooth operation of the pocket sorter



Turck's I/O components with decentralized control logic move the required intelligence to the direct environment of the conveying line



proximity to the hazardous area. This decentralized signal processing enables shorter cycle times and therefore a faster conveying rate for the plant. In the event of an unexpected event such as a cable break, the safety functions are also retained, thanks to the consistent decentralized solution in unaffected areas. As the first Profinet/Profisafe block I/O module on the market, Turck's TBPN combines safety and standard I/Os as well as IO-Link. "No-one else offered a safety block I/O module that combines both standard and safety inputs/outputs in a single device," Püttmann recalls. "We recognized that we can also use the standard inputs of the module as well as IO-Link inputs for traffic light indication, signals or normal sensors. With all the features that it has we are thus able to achieve a module utilization of up to 90 percent."

Joint development of individual solutions

"At Turck we can also access ready to use components that are ideal for our applications," project manager Püttmann explains, "starting with the small TBEN module with the high-speed counter on the first input, to the safety module, the RFID readers and the pick-to-light components right through to the service."

Turck's practical solutions developed jointly with EAE Solutions ensure today the optimum throughput and availability of modular plants for the customer. Particular emphasis is placed here on consistent decentralized concepts that have been developed out of the close cooperation between the partners. "Good advisory support and reliable service are essential for us in addition to high product quality," Stefan Püttmann emphasizes. "In this respect, we consider Turck to be way ahead. The great thing about our partnership is that we work out solutions together in workshops. There is always someone there who listens and finds solutions for our needs and the requirements of our customers. An extensive service package – for us an important feature."

Cabinet-free safety controller in direct proximity to the hazardous area

Turck's decentralized IP67 safety solution also impressed EAE: The core consists of the hybrid TBPN safety I/O module, with which cabinet-free safety functions can be implemented and controlled in direct

Author | Kai Krüger is a Sales Specialist at Turck
Customer | www.eaesolutions.com
Webcode | more12250e