

Follow the Light

How the digitalization of order picking, assembly and planning processes reduces work for employees and makes it more efficient

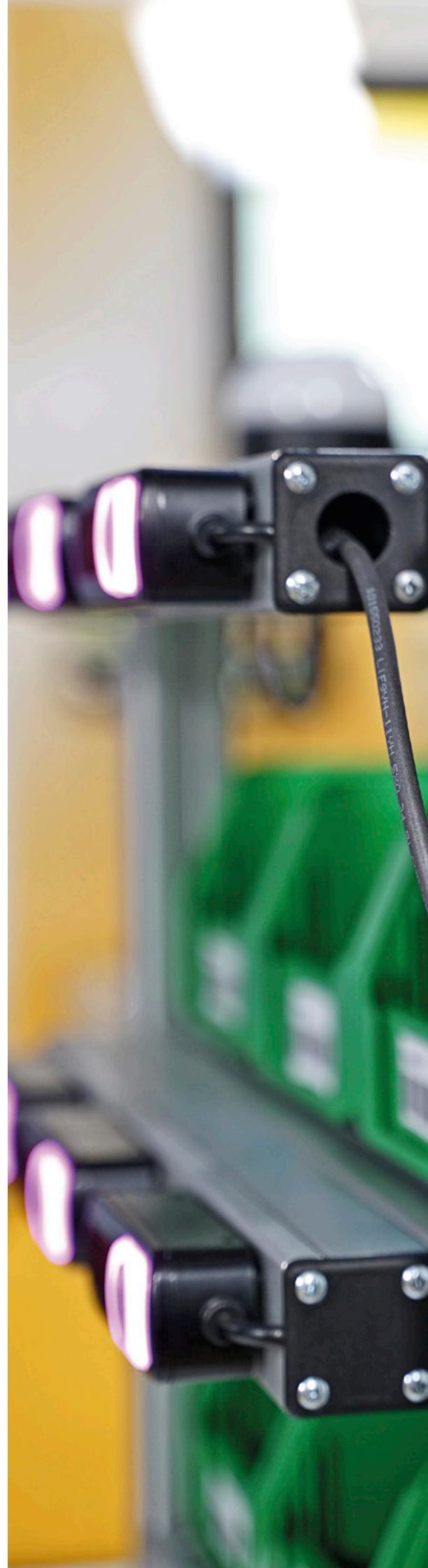
Errors occur wherever people work. In production and assembly processes they happen now and again even to the most conscientious and experienced workers. The wrong component or the wrong number of components may for example be taken from a container. They may possibly also be assembled in the wrong order. This results in the need for rework, recall actions or even image loss. Accuracy is therefore especially important for a quality product. To achieve a maximum throughput, assembly must also be performed as quickly as possible. The solution therefore has to ensure fast assembly at optimum quality.

The worker must be able to identify the next parts container quickly and easily if greater efficiency and accuracy in assembly is to be achieved. A customized system for light-guided worker support clearly indicates the container from which the co-worker is to take the next part. The system also logs the removal and indicates immediately the next container.

As individual solutions are normally very expensive due to the high development costs, the CSAE system house developed a pick-to-light software based on the experience, ideas and customer requirements of the past 25 years. This provides functions to cover most typical requirements as well as the needs of new customers. This controller software is the basis for customer applications and is considerably less expensive than the programming of a tailored solution. Only the customer's interface requirements are implemented for each specific project. "The customization work required continues to be our responsibility," says Oliver Gundlach, team leader for automation technology at CSAE. "It's not the customer who has to adapt to our solution but our solution to the customer. Depending on the customer's system, we adapt our solution so that it works in the particular application."

Easy modular expansion

The controller software is the central component in the "Smart Light Touch" modular system. Another element is the shelf, although the system always operates independently of the shelf type and can be adapted both to new shelf systems as well as to existing shelf systems of the customer. Modbus/TCP-capable components from Turck complete the CSAE pick-by-light solution, which



Besides the processing of the controller software, Turck's robust TBEN-L-PLC IP67 PLC offers many possibilities for interface connection and visual indication – entirely cabinet-free



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Oliver Gundlach | CSAE

primarily includes the PTL110 indicator with a 7-segment display, light buttons and optical sensor, the small K30 Pro LED indicator with a light button as well as the WLS LED work light without a button element.

Other components from the Turck portfolio can be added to the system depending on customer requirements. They have to be Modbus/TCP-capable devices as this protocol offers fast, flexible and effective communication in industrial networks. The specialists at CSAE rely on Modbus/TCP for the lights as this protocol offers a high degree of flexibility, and communication is very reliable and fully developed. A panel PC can be integrated at the shelf to ensure even greater safety and for example to indicate assembly steps. This gives workers an accurate overview of the work process.

QUICK READ

Whether during assembly, order picking or logistics – errors can often occur, costing time and money. To achieve the lowest possible error quota, processes have to be optimized and available resources optimally used. The "Smart Light Touch" pick-to-light solution from system house CSAE GmbH based in Wolfsburg supports this approach. This is a modular and automated complete system for the visual support of workers that is based on Turck components. It uses light signals to reliably guide workers through assembly and order picking processes – and thus significantly reduces the error quota.



Turck's pick-to-light devices and brackets of the Banner PTL110 series can be used easily without the need for additional tools or reprogramming

TBEN-L-PLC eliminates the disadvantages of PC-based controllers

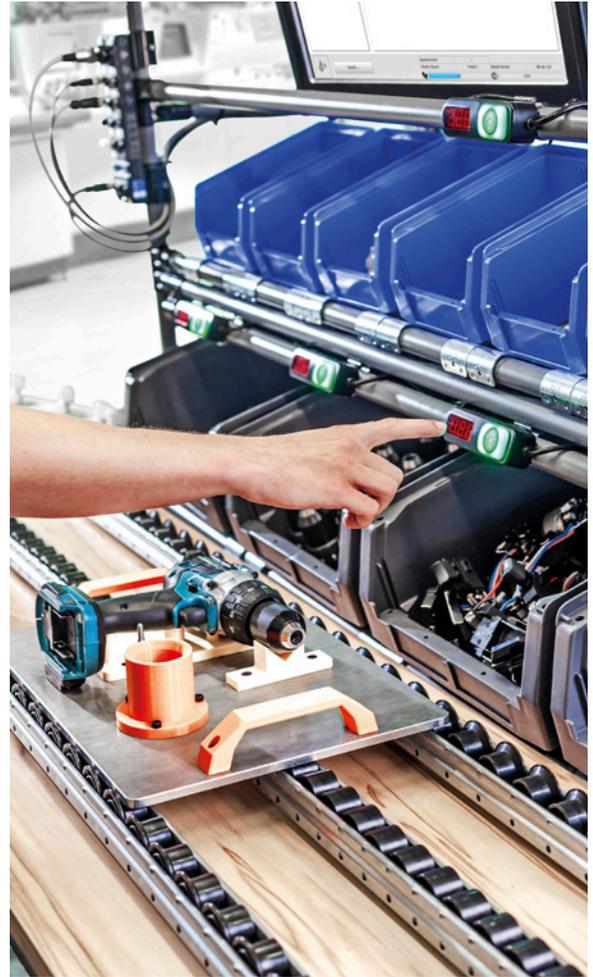
CSAE looked for a PLC for the controller software of Smart Light Touch that has capacity for SAP and other interface connections as well as options for visual indication. The company decided to use Turck's robust TBEN-L-PLC compact PLC. The IP67 controller is designed for industrial use and, as a block IO module, enables the design of cabinet-free modular machine concepts for Industry 4.0 and IIoT. It not only comes with a Codesys PLC on board but also allows a direct cloud connection. Thanks to its multiprotocol technology, it can also communicate via different Ethernet protocols at the same time.

By using the Turck controller, the disadvantages of PC-based controllers can be excluded from the start. These include difficulties with the later implementation of system changes and the frequent absence of long-term support, which depends in PC-based systems on the specific Windows version. "For us it was important to connect to the network. The TBEN-L-PLC is robust and can be used directly in the production environment. An ultracompact device that can do a lot and offers a lot, particularly in terms of the range of interfaces," says Oliver Gundlach. "The straightforward collaboration between Turck support and our programmers also offered an important basis for the implementation of custom interface requirements. Technical modifications such as firmware adaptations are also completed at short notice."

Easy installation and commissioning

The easy installation of the CSAE system is unique on the market – from the setup of the shelf right through to commissioning: "Not even a screwdriver is needed for the setup," says Gundlach. "And the commissioning is simply carried out via a web page – nothing more. A USP that is yet to find its equal."

The system is designed so that any customer can plug together the hardware components of Smart



The simple installation of the automated and modular "Smart Light Touch" pick-by-light system is unique on the market – not even a screwdriver is required for the setup



User-friendly: the entire system is commissioned easily via a web page

Light Touch on their shelf on their own – without any technical instruction. The individual components are fitted to the shelf with click and screw mechanisms. Commissioning does not require any IT specialists so that each customer can do it themselves. The CSAE customer portal provides here permanent support



CSAE sales manager Sarah Wedekind wants to particularly support small and medium-sized companies in the digitalization of their logistics: "We therefore offer an intuitive and simple system that customers can configure on their own."

with operating manuals, video tutorials and support contacts. "We also take into account the needs of small to medium-sized businesses that cannot afford a programmer," says sales manager Sarah Wedekind. "We also want to address these companies effectively and support them in the digitalization of their logistics. We therefore offer an intuitive and simple system that customers can configure on their own."

Personalization through individual color settings

Smart Light Touch detects at any time via a higher-level system or a transponder which worker is currently working. After logging into the system, workers can set the colors to their individual preferences or needs. A worker with red-green color blindness, for example, can select alternative colors to red and green in order to carry out the work without any difficulty. Corporate colors can also be set or the favorite colors with the worker. The colors can naturally also be set to indicate to workers immediately the tool they are to use with the currently taken part. This enables each worker to design their workstation as they like.

High worker satisfaction

Smart Light Touch supports assembly workers and significantly reduces their error quota, thus keeping rework and recall actions to a minimum. A major benefit of light-guided worker support at the shelf, as well as the visualization of the work steps is a considerably faster assembly speed and the resulting increase in worker productivity. Time is not lost by workers having to think about what the next work step is or which is the right tool for the currently taken part.

New workers or vacation cover can already work on their own and reach full output after a short training period. As work with the pick-by-light system is based on light signals, workers could also be employed who were previously excluded from working life for example due to a lack of language skills or minor disabilities.

Conclusion

The easy installation of the automatic and modular Smart Light Touch pick-by-light solution from CSAE is unique on the market. Customers are able to assemble and commission the system on their own – without the need for a programmer or any technical instruction. A direct cost benefit for the customer is the proven controller software, which was developed on the basis of customer requirements of the past decades and covers a majority of market requirements. Custom interface requirements are implemented individually. The technical possibilities of Turck's TBEN-L-PLC compact controller as well as the close collaboration between Turck and CSAE experts enable these to be implemented very quickly.

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