

Training Factory Industry 4.0 for the desk

fischertechnik simulates the future

fischertechnik is introducing its one-of-a-kind Training Factory Industry 4.0 at the Hannover trade fair. The Training Factory's size allows it to fit on a desk. The miniature factory consists of various processes that can be found in a real assembly, such as a kiln, a sorting line with colour detection and a high bay warehouse. The dashboard connected via cloud visualises various process steps from the perspective of the customer, supplier or head of production. The factory simulation therefore displays all the processes of an online order in a digital and networked manner – from placing the order online all the way to dispatch.

“The fischertechnik Training Factory Industry 4.0 depicts a digitalised factory's crucial processes on a miniature scale. It is therefore the only method of choice to convey digitalisation through haptic comprehension and to simulate applications in such a compact and economic manner”, says Guido Schubert, Head of Industrial Sales at fischertechnik.

The fischertechnik Training Factory Industry 4.0 allows the future to be simulated in a highly realistic manner. This begins with a process which many will be familiar with: A product is ordered online and placed in a shopping cart. Another click of the mouse triggers the order.

fischertechnik GmbH

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The online shopping platform on the dashboard of the fischertechnik Teaching Factory is called the “customer view” because it shows the ordering process from the customer’s point of view.

The respective order details are transferred via cloud to the factory in miniature format, where the order is immediately processed: a work piece in the form of a module passes through various processing stations sorted by order. This simulates mass production in batch size 1: the product is manufactured according to individual customer specifications. Each work piece is assigned a unique identification number (ID). The processing status can be traced via NFC (Near Field Communication).

The “production view” perspective provides information on all data relating to product manufacturing. The temperature sensor indicates if the temperature and humidity levels of the small assembly line are too high, while the pivoting camera provides an overview of the entire production hall, enabling web-based remote monitoring. An additional safety loop has been integrated in case of any malfunctions. Once a problem has been rectified, it must first be confirmed through an additional button before production can continue. Green and red lights indicate whether the respective process step is currently being processed or whether an error has occurred. The current inventory including minimum and maximum stock levels is also displayed.

The “supplier view” perspective visualises the process of ordering raw materials. Customers, manufacturers and suppliers therefore have a constant and complete overview of the current order status from any location.

The fischertechnik Training Factory is controlled by six 9V-based TXT controllers that operate on the C/C++ programming language. The controllers are connected to one another within the factory and communicate via MQTT (Message Queuing Telemetry Transport). MQTT is an open message protocol that allows data to be transmitted between devices in the form of messages.

fischertechnik has high demands in terms of quality and sustainability. The “Made in Germany” manufacturer of construction kits therefore places immense value on data security. This ensures that the data is stored in accordance with the EU General Data Protection Regulation. Personal information is stored in a password-protected account that uses the high-security “OAuth2” industry standard. Emphasis is also placed on data security when transmitting data to the cloud: all transferred data is sent via certificate-based encryption.

Image caption:



Image 1: The compact fischertechnik Training Factory Industry 4.0 illustrates the processes of a digitalised factory.



Image 2: The platform is connected to the factory and offers three different perspectives: customer view, supplier view and production view.

The fischer Group of Companies

The fischer Group of Companies, headquartered in Waldachtal in Germany's Northern Black Forest, generated sales of 864 million Euros in 2018 with a worldwide staff of 5,200 employees. The family-owned enterprise operates 47 of its companies in 35 countries and exports to more than 100 countries. It includes the five divisions: fischer fixing systems, fischer automotive systems, fischertechnik, fischer consulting and LNT Automation.

fischer fixing systems is the technological market leader in important areas of fixing technology. fischer offers products that deliver technical perfection to a wide range of customers, from do-it-yourselfers to craftsmen to key account partners.

fischer automotive systems manufactures high-quality parts for car interiors. The company is highly competent in the plastics processing segment and is an important partner for the automotive industry. fischer automotive systems produces air vents, cup holders, trays and multi-function components.

fischertechnik is active both in the construction kit and in the educational toy sector. As one of the last toy makers, fischertechnik develops and produces exclusively in Germany.

fischer consulting evolved from the competence and skills developed in the company itself, among these the fischer ProcessSystem with its central aim of permanent and continuous improvement for the ultimate benefit of the customer. fischer consulting advises small and medium-sized businesses, government agencies and major companies on their way towards lean and efficient processes.

LNT Automation develops and manufactures custom electronic solutions. The company also develops, produces and distributes custom and capacitive touch systems such as multi-touch solutions made of glass and the corresponding controller units. All electronics are manufactured in-house.

www.fischer.group

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