

Productivity Master points the way to digitalization

Seamless connectivity of handling and software solutions developed by Festo

The Productivity Master, a modular demonstration system for personalised USB memory sticks from Festo, is showing how automation technology will evolve along the value chain when combined with digitalisation. Thanks to seamless connectivity, everything fits perfectly, from the mechanical and electric systems to the intelligence. The Festo automation platform provides an integrated and practical system to link all Festo engineering tools, components and solutions in hardware and software.

The plant achieves the automation balancing act between mass production and individualization of a finished product. The electrical products, the axis mechanics, the electrics and the software are planned as a complete automation platform with seamless connectivity. With this consistency, users save a lot of time in their machines and systems – from planning to commissioning – and gain process reliability because everything fits together. Industry 4.0 included.

Cloud-based concept

For example, the Productivity Master uses a cloud-based concept for registering and storing customer data complying with data protection regulations. This allows USB sticks to be produced with a personalized design as well as personalized data content. Customers could do this from home via the Internet without having to enter further data from other people on the supplier side.

Customers can use the same concept to reduce labour costs and coordinate the process from the home office. Festo's IoT gateway securely connects the machine to the cloud so that operators cannot only retrieve production data from the cloud, but also have access to the machine's diagnostic data, even if they are sitting hundreds of kilometres away in their home office.

Mask production and vaccines

The pandemic year 2020 revealed just such a contrast between mass production and individualization or small series production in the examples of mask production and vaccine research. The latter is more focused on precise data collection. For mass production, however, it is crucial to be able to use remote diagnostics and maintenance tools to maintain machine uptime as long as possible while protecting operator health. These are just about ideal conditions for cloud-based diagnostic tools.

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"It doesn't matter if the product weighs a few grams or 100 kg – being a technology-neutral company, Festo has the product range to do this," explains Nigel Dawson, Head of Business Development Electric Automation at Festo. While the Productivity Master features a mix of pneumatic and electric automation, from flow sensors to servo drives, from pneumatic slide units to electric Cartesian robots, it is the way these products are connected that enables true digitalization.

Seamless connectivity

By leveraging industry-standard networks such as EtherCAT, OPC-UA, IO Link and MQTT, Festo can create a seamless data stream from individual sensors to remote IO, servo drives, controllers and the cloud. "This technology-neutral approach has a major impact on energy efficiency and sustainability. We call this 'seamless connectivity,'" adds Dawson.

The machine was designed in record time. Useful here: Festo's state-of-the-art and unified engineering environment – project planning and management of the digital twins included. This allows designers and developers to work collaboratively worldwide. With the Festo Handling Guide Online HGO, users select and dimension 1D/2D or 3D gantries in just three steps. For quick and easy programming, configuration and commissioning in a shared virtual environment, they use the Festo Automation Suite.

Digital Customer Journey

"Along the Digital Customer Journey, we enable customers to correctly and efficiently select and size their products online, add them to a shopping cart in a seamless process, view their pricing and delivery in real time, and track their products throughout the supply chain," says Dawson, describing this digital value chain. With developments in artificial intelligence (AI), Festo is expanding concepts such as digital nameplates, digital twinning and, of course, AI-driven predictions of machine conditions for remote maintenance.

Box text:

Four fully connected stations

Customers create the production order at the first station by registering with their name and perhaps a picture. A QR code identifies the visitors at the machine. A vision sensor SBSI from Festo registers the visitors and starts the production order. This is followed by stock management. This mechatronic complete solution, made up among other things of a planar surface gantry EXCM in size 40 for fast picking and placing of the USB memory stick, offers all the options from stock management and workpiece handling to the cloud.

The USB memory stick is then transported, printed, turned over and then passed on. The work steps at the second station involved are holding, moving, handling, rotating and positioning and identifying the workpiece position as well as identifying, separating, gripping and applying labels. Fast transfer to a label printer is carried out at station 3 by a highly dynamic linear gantry EXCT with dynamic servo motors EMMT-AS and servo drives CMMT-AS. The rotation

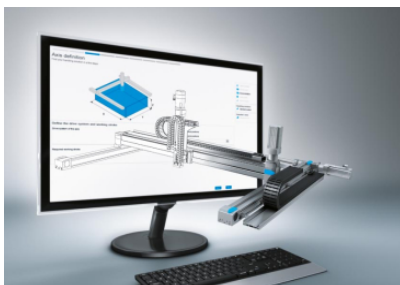
functions are carried out by electric rotary drives ERMH.

The process is completed in station 4 where files are uploaded to the USB memory stick. This involves holding the workpiece, turning and carefully positioning the cap and press-fitting delicate parts. This is done using the attractively priced electric cylinders EPCO and rotary drives ERMO. The personalised USB memory sticks are then handed out to the visitors.



Productivity Master

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Handling Guide Online Monitor 2

With the Handling Guide Online, machine and equipment manufacturers could reduce their time-to-market for integrated handling systems by up to 70%.



Nigel Dawson

Nigel Dawson, Head of Business Development Electric Automation at Festo.