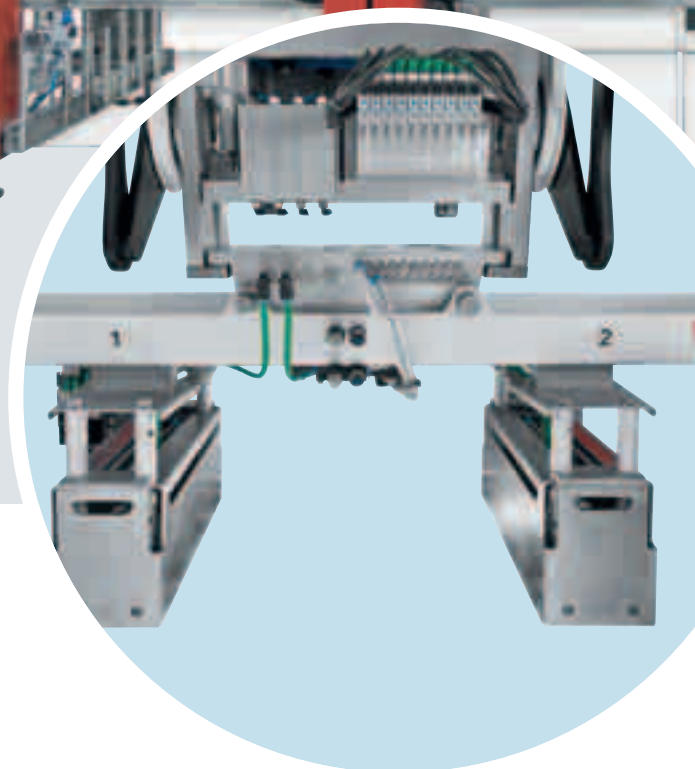




**Modular design, fast handling:** The first fully automatic TLM packaging system in the world adapts itself to any task, such as packing yogurt pots.

**Short retooling times:** The new fully automatic tool changer changes the format in about 4 minutes.



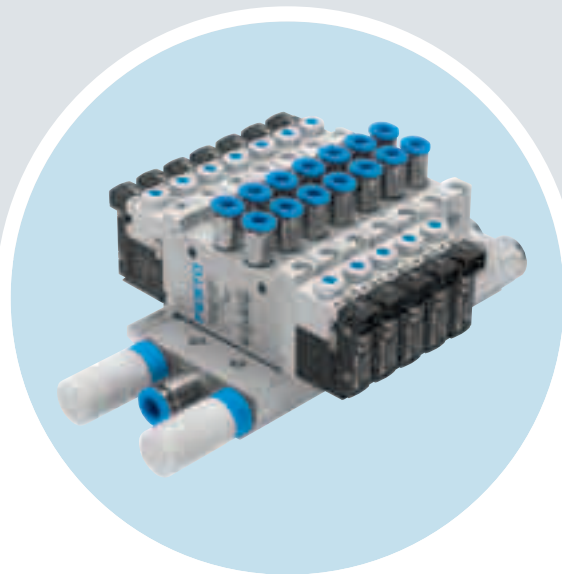
Fully automatic tool changer in packaging machines

# Automatic tool changer

**The first machine of its kind** changes robot tools for packaging machines fully automatically at Gerhard Schubert GmbH. With Festo's valve range VUVG as one of their central components the TLM packaging machines, made in Crailsheim, southern Germany, achieve a hitherto unattained level of efficiency.



**Compact centrepiece:** The modular design of the valve range VUVG was a great advantage to Gerhard Schubert's designers.



**S**mall, large, round, square, aluminium, plastics, cardboard and composites – food packaging has never been as diverse as it is today. This is not just because of the increase in hygiene requirements but also because packaging is used as the brand identity for products and companies. This development also has an impact on the manufacturers of high quality packaging machines. They must be ever faster, increasingly flexible, more and more compact. And so the “hand” of Schubert's TLM P3 robot has become more and more complex over the years.

Apart from the core task, holding the tool, the robot hand must also fulfil many additional requirements. These include,

for example, transferring energy and data for the sensors and valves on the tool. It also transfers the relevant codes to the tool. But the more complex robots and tools become the more difficult the tool change turns out to be. Gerhard Schubert GmbH realised it was time for a fully automatic format conversion process using an automatic tool changer.

#### **Transport in seconds**

The principle of the automatic changing process is simple. With the new tool changer the TLM P3 robot takes the suitable format tool for the relevant product from a tool cupboard specifically designed to basic europallet dimensions and transfers it to a TLM transmodule. As the first transrobot in the world the

transmodule can move freely on the track system of a packaging machine. It is driven by a servo motor that engages into a gear rack by means of a toothed pinion. The energy and data are transferred inductively. The transmodule delivers the tools to their destination with a positioning accuracy of up to  $\pm 0.1$  mm. Acceleration of up to 0.5 g ensures it gets there fast. The tool is removed and transported in about 40 seconds. Immediately after that the packaging machine starts the new format.

#### **Progress with a tiny footprint**

The central interface of the automatic tool changer is the valve range VUVG. It transfers energy and control pulses →

## Interview



**Reiner Weidmann**, Sales Director  
at Gerhard Schubert GmbH

► **trends in automation:**

As a manufacturer of packaging machines how do you deal with the trend towards always having to supply them more cheaply?

**Reiner Weidmann:** With highly flexible packaging machines that customers can also use for other products. With easy expansion and conversion options. That is one of the fundamental differences between low-cost and high-end machines.

► In the food industry how long do people expect packaging machines to last?

**Weidmann:** Our machines can be operated for 10, 15 and 20 years. The problem is, however, that companies only want to spread the risk over two, perhaps three or, at the most, four years.

► What part does the purchase price of a machine play?

**Weidmann:** It's not only the low purchase price of a packaging machine that is critical for a company's success. It's also its availability, quality and service life, i.e. what is called the life cycle-cost, that need to be considered.

► Do components also play a critical role?

**Weidmann:** Definitely. In principle we can use any product, any valve on the market. However, if you want to achieve sustainability with appropriate life cycle costs, you must use high quality components. Factors such as the technical quality of the product, the market leadership of the manufacturer and the reliability of the supplier also carry weight.

► How important is the size of a packaging machine today and how can the dimensions be reduced still further?

**Weidmann:** The size of a packaging machine is very important. Space is money. The more space a machine takes up the more expensive it is for the customer. Dimensions can be reduced by using standardised components that are designed to be small. Add to this the important role played by state-of-the-art technologies. Machines that were once rigidly synchronised using chains are now being replaced with intelligent machines that move products flexibly.

## Gerhard Schubert GmbH

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Area of activity:  
Flexible packaging solutions,  
TLM packaging machines,  
systems and robots





→ quickly and reliably. And its design is extremely compact. Its tiny footprint fits in well with the compact design of the automatic tool changer and means it can be fitted directly on the cylinder. A flow of up to twice that of traditional valves ensures high energy density with a pressure power of up to 10 bar.

The high level of modularity of the valve range was also advantageous for the development of Schubert's automatic tool changer. By moving the packing glands, the base plate can be easily converted and adapted to the required functions. On the front individual valves can be replaced by dummy plates by undoing two screws and doing them

up again. This is how Schubert makes up to 30 variations based on three components.

**Low consumption, high availability**

In this simple but intelligent way, the world market leader in top loading packaging machines is constantly increasing the flexibility of its equipment. Short tool changeover times, low energy consumption and continuous availability of the high-end machines gives this company with its 40-year old success story a decisive competitive edge on the world market for food packaging machines. ■

[www.festo.com/catalog/vuvg](http://www.festo.com/catalog/vuvg)

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Solenoid valves VUVG