Verpakkingsmanagement - April 2022
IWK about robotization and sustainable machine construction

TUBE FILLING LINES WITH INDUSTRY 4.0 TECHNOLOGY

The German machine builder IWK has been building machines for filling and packaging tubes since it was founded in 1893. By continuously improving and developing, the company supplies modern, high-tech machines. Nowadays cobots, industry 4.0 technology and energy-saving concepts play an important role in this.

Notable clients in Pharma, Cosmetics and other industries all over the world trust in IWK state of the art technology. They fill their products with the IWK tube filling machines and, if necessary, pack them in folding boxes with the IWK cartoning machines.
The company has more than 500 employees and a turnover of around 100 million euros. In addition to the factory in Stutensee in Germany, there is another production centre in Thailand that builds simpler machines with a lower capacity.
"European companies also purchase these low-capacity machines," says area sales manager Jürgen Däuwel. „They are entry-level models with the same quality as the high-end machines."

BATAVIA

"The Netherlands is one of our first customers," says Jürgen Däuwel. 'In 1893, the Dutch government ordered five filling machines for the Indonesian colony of Batavia, where they produced an opium ointment for pain relief. Our company was then known for its filling machines for

bullet casings. A filling technique that is very similar to filling tubes, where you also fill a kind of "tubes". Over the years, IWK further developed the tube filling technology and started building cartoning machines in 1948. By combining the two machines, we are able to provide a complete tube filling line that fills, closes, inspects, codes and then puts the tubes in a folding box. Today there are about 120 IWK machines in the Benelux."
For several years now, the company has also been supplying top-loading machines that pack all kinds of individual parts, such as injection pens, inhalers or bottles, into boxes. Also relatively new are the final packaging machines, such as case packers and wrap around machines, with which IWK is now able to supply a complete packaging line.

COBOTS

IWK has been using cobots to supply its machines for several years now. A large cosmetics manufacturer, for example, uses these so-called collaborative robots for depalletizing the tube feed. The cobot places boxes full of empty tubes on the input line and removes the sealing lid after which they go to the filler. Two other robots provide the cartoning machine and case packer with blanks.
"Cobots save a lot of manual handling and therefore money," says Däuwel. "They are easy to program and increase productivity."
The cobots come from the Danish cobot manufacturer Universal Robots with which IWK has a development cooperation.

LINEAR MOTION MOTORS

Like a kind of separate trays in a fairground attraction, the individual product holders flash through the cartoning machine in an IWK video demo. They transport boxes to filling stations or transport boxes to the final packaging machine. The video shows a recent development within IWK based on the XTS linear drive systems with servo motors. These drives take care of the internal transport of carriers in which boxes, bags or tubes are placed. The intelligent system knows exactly where each carrier is and also prevents errors by eliminating empty spaces in the supply. "This is important when forming multipacks," explains Däuwel. "The machines in the upstream produce continuously and the downstream machine loads the box in a start-stop operation. The system prevents mistakes and makes the right mix."
IWK develops these systems together with the Canadian mother company ATS. The mutual synergy results in high-tech machines.

INDUSTRY 4.0

A current topic within IWK is the implementation of Industry 4.0 technology. The IWK machines are equipped with sensors and intelligent software and communication tools that can exchange data with the digital enterprise. Protective and preventive maintenance ensure that machine parts are maintained or replaced on time, in order to keep production downtime to a minimum.
"Sensors continuously monitor the temperature, energy consumption and vibrations of our mo-

tors and bearings, enabling them to determine whether maintenance is required," says Däuwel. "For example, if a motor suddenly consumes more power, this could indicate a defect. This way you can replace drive parts at a suitable time and prevent unexpected downtime.'

SAVE ENERGY

Another hot topic within IWK is saving energy. A good example of this is the optimized hot air system that ensures the closure of the plastic tubes. This system heats the air around 400 degrees Celsius with a kind of hair dryer and blows it through the open tube, after which sealing bars close the tube. Previously, this warm air disappeared into the environment. IWK prevents this by collecting the hot air and reusing it.
"With this hot air system, the power consumption could be reduced by approx. 30%. In addition, we are working on energy-saving drives in which we split a large drive into several small drives and put them directly to the function so that we can optimize every movement.'

QUICK CHANGEOVER

"Customers today consider changeover times more important than high speeds," says Däuwel. „Instead of a machine that processes 1,000 tubes per minute, customers prefer a slightly slower machine that does not stand still."
An example of this is a recent delivery to a large toothpaste producer in the US. IWK developed a tube filling line that processes 300 tubes per minute. The line fills different toothpastes, from one mono color flavor to a mix of three multi color flavors in one tube. The German machine builder has managed to reduce the changeover time for the tube filler and the cartoning machine to just 15 minutes.

SERVICE

About 40 percent of IWK's turnover comes from service-related products. In addition to providing technical support and spare parts, these include modernizing the control system for old machines or converting machines for other products. In addition, IWK provides customers with advice in its Packaging Competence Center - PAC² in Stutensee and customers can test their materials on the machines.
"We want to help our customers with the best filling and packaging solution," Däuwel concludes. Our slogan is therefore "One team, one target". That applies not only to our people internally, but also to our customers externally."

This article was produced in collaboration with IWK.