System in assembly process: SF102 filling and sealing system for Doypack® pouches with screw cap.
Filling and packaging with IO-Link

In good stead

The Doypack® brand has been synonymous with practical stand-up pouches for over 50 years. The patent is held by French company Thimonnier, which is increasingly moving towards mechatronics and ultimately Industry 4.0 for the development of its filling and packaging machines. Pneumatic and electric automation technology from Festo provides a solid foundation for this development.

The French machine builder has already won numerous awards for its commitment to mechatronics and digitalisation and is one of the great hopes for the French government's Industry 4.0 initiative “Industrie du futur”. Thimonnier’s ability to innovate is in no small part due to the company investing 15% of its revenue in R&D; this helps the global market leader in packaging technology to continuously achieve an average revenue growth of 10% per year.

From stitching to sealing
The company, which is based in the Lyon region, has a long and proud history. The story of the company began when Barthélemy Thimonnier became the world’s first sewing machine manufacturer. In 1830, he developed his patented basic sewing machine model, the Couseuse. In the 1950s, the company was asked by a fashion designer to produce a waterproof raincoat made from PVC.

“My grandfather, Louis Doyen, who was the company’s Managing Director at the time, quickly realised that this could not be done using conventional sewing machines. He added a high-frequency generator to the sewing machines and sealed the PVC film,” explains Sylvie Guinard, the current CEO. Around 10 years later, the sealing of these flexible materials laid the foundation for the Doypack®. Doyen patented the stand-up pouch in 1963 and the company went on to become a specialist in filling and packaging technology for flexible materials. “Doypack® pouches are the future of packaging. The many benefits of these high-quality stand-up pouches make them extremely popular with manufacturers and consumers,” says Guinard, adding: “The stand-up pouch is an effective marketing tool for brand advertising. It is lightweight and has many great features. For example, it can be resealed, is efficient in terms of logistics, easy to handle and visually appealing.”

Filling and closing
One of the machines from Thimonnier that has been eagerly awaited by the market is the SF102. This filling and sealing machine for Doypack® pouches with screw cap is easy and flexible to operate, easy to clean and access and has a small footprint. It is popular with manufacturers of compotes, baby food, dairy products, fruit juices, soups and sauces as well as liquid detergents and cleaning products, liquid soaps, creams and shampoos, and even engine oil.

After the stand-up pouch has been fed in, a compact cylinder ADNGF from Festo forwards it to the filling station. The correct filling quantity is determined using electromagnetic or mass flow measurement, or a dosing pump depending on the product.

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Small but beautiful: the controller CMMO controls the electric cylinder EPCO, connected via IO-Link.

Quick to install and safe: valve terminal VTUG with IO-Link and MS series compressed air preparation with fine, ultrafine and activated carbon food filters in a control cabinet.

Accurate positioning of the filling unit with the electric cylinder EPCO and its guide unit EAGF.

customer’s requirements. At the next station, the screw caps are screwed onto the stand-up pouches. The Festo swivel module DSM-B transports the filled and sealed pouches to a conveyor.

IO-Link in action
All the pneumatic functions of the SF102 are controlled by the valve terminal VTUG. It is compact, has a high flow rate and has IO-Link on board. The uncomplicated wiring of the sensor-actuator combinations with standardised, unscreened cables using IO-Link reduces material costs, simplifies logistics and saves time. This connection technology therefore makes installation much easier.

“With this modern connection technology, Festo is giving our packaging machines a major upgrade that will enable us to move closer towards Industry 4.0,” says Pierre Gualino, Assistant to the Head of Development. For compressed air preparation, the installed MS series service units from Festo are equipped with fine, ultrafine and activated carbon food filters for direct contact with food. The machines from Thimonnier are thus well equipped to guarantee optimum food quality.

Different pouch sizes
The THD400 machine is used for larger pouches of up to 5 litres. It fills and seals Doypack® and other pre-formed pouches on the carousel using sealing technology in a four-step process. At the loading station, Festo grippers type HGPL take the pouches from the workpiece carriers and transport them to the opening station where they are opened using compressed air. Filling takes place at the next station.

For accurate positioning of the dosing needles, the EPCO, an electric cylinder from Festo, is used. At the last station,
“State-of-the-art technologies such as IO-Link, which the experts at Festo have made accessible to us, help us to perfect our machines.”

Sylvie Guinard, CEO of Thimonnier

Intelligent sensors and actuators
As an intelligent connection, IO-Link is a perfect match for sensors and actuators for Industry 4.0: complex diagnostics can be transferred rapidly using standardised protocols, and condition monitoring concepts can be implemented. Festo also offers many IO-Link devices, from different sensor series right up to valve terminals, electric drives and stepper motor controllers. “With the support of automation partners like Festo, we can be sure that we are always up to date with the latest developments in mechatronics and Industry 4.0,” says CEO Sylvie Guinard, adding: “Our versatile machines have intuitive human-machine interfaces, consume less energy, require less maintenance and reduce process costs.”

www.festo.com/epco
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Area of business:
Development and manufacture of filling and packaging machines for Doypack® and other plastic pouches