Press information

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Flexible, adaptable tube filler:

Modern technology for a wide range of applications

OYSTAR IWK presents the FP 18-1, an attractively priced tube filler that can be supplemented with options for a wide range of applications. This machine represents the company's first use of PacDrive 3, the latest generation of the proven PacDrive automation technology from Schneider Electric.

OYSTAR IWK of Stutensee, Germany, is a well-known global manufacturer of packaging machinery. Within the OYSTAR Group, whose **portfolio** covers virtually every area of application for packaging machines, OYSTAR IWK produces tube fillers and cartoners, while also offering complete, single-source packaging solutions.

Fastest single lane tube filler on the market

OYSTAR IWK has consistently attracted industry-wide attention with its machines. Last year, for example, the trade press ran a report on the TFS 80-8, the fastest tube filler on the market. The company has set records in the medium performance range as well: According to a company publication, the FP 18-1 has an output of up to 122 tubes per minute, making it the fastest adjustable single lane tube filler currently on the market. It delivers the performance level of many double-lane tube fillers with similar space requirements, while offering greater flexibility and freedom when integrating additional stations: The system

requires the integration of only one station instead of two, a feature which increases the normally limited space around the tube transport system and provides greater flexibility for additional options.

The FP 18-1 can process plastic tubes as well as metal and laminate tubes, in content sizes ranging from 1.5 mL to 400 mL. This volume is due to the machine’s ability to handle tube lengths of 60 to 250 mm and tube diameters of 10 to 60 mm (for metal tubes, the maximum is 50 mm). It is the first model in a completely new generation of machines, and displays many of the design elements found in the high-performance range. With this machine type, OYSTAR IWK plans to offer the market a powerful machine that can be adapted to demanding requirements through a number of additional options, while maintaining an affordable base model. OYSTAR IWK promises "a powerful and ergonomic tube filler at an attractive price."

This first thing to catch an observer's eye is the extremely high level of accessibility. The machine can be accessed from three sides, thanks to wide doors that open onto an uncluttered, GMP-compliant work envelope. The doors also provide access to the collection container for cutting residues generated by cutting the sealing seam. The wet parts of the filling/dosing apparatus can be changed out without tools (block exchange of wet parts is also available as an option), and the dosing cylinder is fully accessible. The design also allows for tool-less format changeover in the hot air sealing station and the press. The sealing station works with a preheating process (cool air return), whose energy-efficient process is in line with the current trend for reduced energy consumption.

The machine’s highly flexible design and modern, motion control-based automation system have allowed the OYSTAR IWK to achieve its goal of an economically priced basic machine with a comprehensive range of options. For example, the technology makes it possible to position a total of 13 workstations around the tube transport system, which is designed in the shape of an oval conveyor. This is an impressive number for such a compact machine, and one that would be hard to achieve with a double-lane design.

Less space required in control cabinet and lower installation expenses

The logic motion control-based automatic solution permits short changeover times and fewer format-specific parts. OYSTAR IWK, which has been using Schneider Electric's PacDrive

technology for many years, is using PacDrive 3 for the first time in this machine. The new generation of this proven automation system continues to combine PLC, motion control, and robotic control functionality in a scalable hardware platform. New features include implementation of the Ethernet-based Sercos III automation bus, the integrated safety design, and the improved Tool design as part of the SoMachine Motion software workbench. A central database allows multiple users to work in parallel on the same project, enabling even shortener project times. The CoDeSys V3-based programming tool has been further expanded with additional functionalities not available in the CoDeSys basic software currently on the market.

The servo drive solution uses the single and double drives of the Lexium LXM62 multiaxis solution, which are driven by a shared power supply. In the standard version, the servo drive design consists of five servo motors and three double drives. This can be expanded to nine servomotors and five double drives by integrating all of the additional options. The new multiaxis solution reduces space requirements in the control cabinet by about 50% compared to the current technology on the market. The connection design, which utilizes slides and plugs, as well as the largely automatic parameterization using electronic name plates, also help to reduce installation and setup costs.

The PacDrive controller uses Sercos III to communicate with the drives and the modular TM5 I/O system. An Altivar ATV 32 variable frequency drive and a Lexium ILE series electronically commutated motor with integrated drive are connected with the logic motion controller via CANopen.

Greater flexibility and increased process safety thanks to servo technology

All of the machine's core functions are driven electrically or by servo motors, which provides greater flexibility and a high level of process safety. The servo drive allows extremely precise positioning of the tube image, for example, and also controls the transport system with automatic height adjustment. Thanks to a durable construction that incorporates chains instead of belt drives, the system can position tubes at a precise height within the stations without any need for re-adjustment.

In the filling process, the tubes are very carefully lifted up to the filling pipe by the servo motor-driven movement profile to ensure an even, bubble-free filling process. With this

design, the filling reservoir can be permanently mounted, which eliminates the need for hoses and increases precision. The servo-motor in the volumetric dosing station allows an operator at the control panel to adjust the parameters of the piston inside the filling pipe and thus precisely adjust the filling quantities. The hot-air welding station for plastic tubes is also servo-driven.

The standard 5.7” Magelis display communicates with the controller via Ethernet TCP/IP. It can also be replaced by an industrial PC if needed for more demanding data processing requirements. It is fully sufficient for normal operation, however, and as an economical solution it offers all of the operational and visualization functions expected from a modern machine: machine operation, format management, visualization of format specifications and machine data, settings for different user rights, message display, online language changeover, and good and bad tube counters.

Basis for a standardized, company-wide software library

OYSTAR IWK has not only broken new ground in design with the FP 18-1, it also plans to use the machine as the basis for creating a company-wide software library: Most of the companies within the OYSTAR Group use PacDrive, and could therefore benefit from access to mechatronic machine functions in the form of preprogrammed, standardized software functions. By increasing reusability and facilitating software certification, this approach offers a well-proven method to effectively reduce engineering costs.

The PacDrive template, which serves as a basis for the FP 18-1’s machine program, creates the ideal conditions for this, thanks to its modularity and the many IEC 61131-compliant software functions available in libraries. By implementing the OMAC PackML state model in the template, as well as functions for implementation of the Weihenstephan Standard, the PacDrive programming model has also achieved broad acceptance among machine operators, who have long advocated a transition to standardized programming in order to improve software transparency and ease of maintenance.

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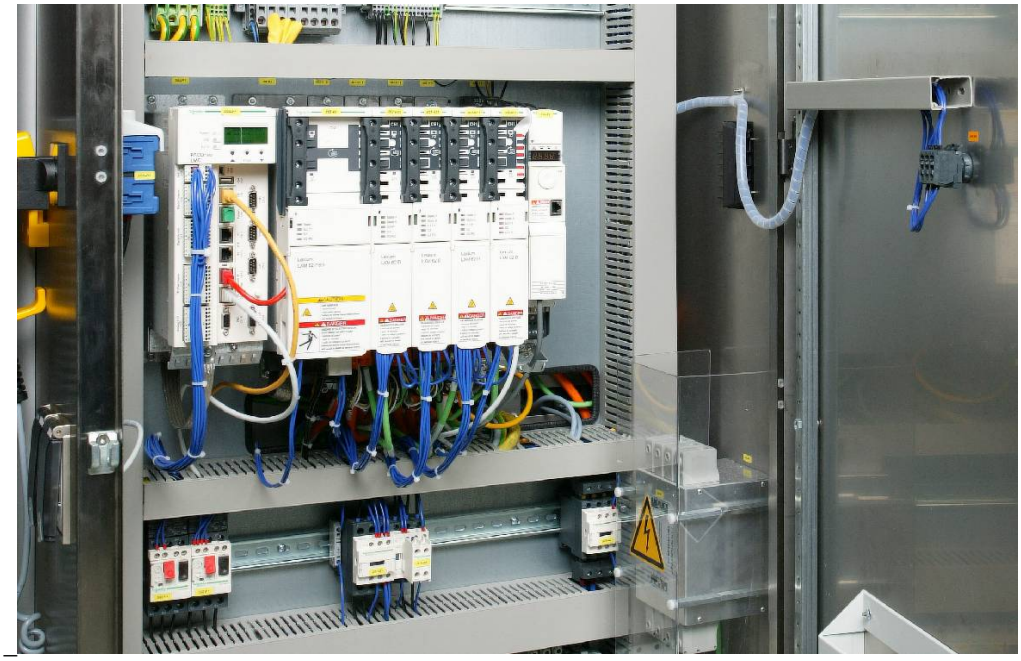
Picture 1

The FP 18-1 tube filler from OYSTAR IWK – shown with tube magazine and cartoner – is the company's first machine to be equipped with a PacDrive 3-based automation solution

Picture 2

The GMP-compliant work envelope of the FP 18-1 tube filler is accessible from three sides, here showing the following stations (clockwise from left): Front left, the tube feeder (patent pending), followed by tube image orientation, filler, hot air sealing station, press, good tube discharge, and at lower right, bad tube ejection with slide

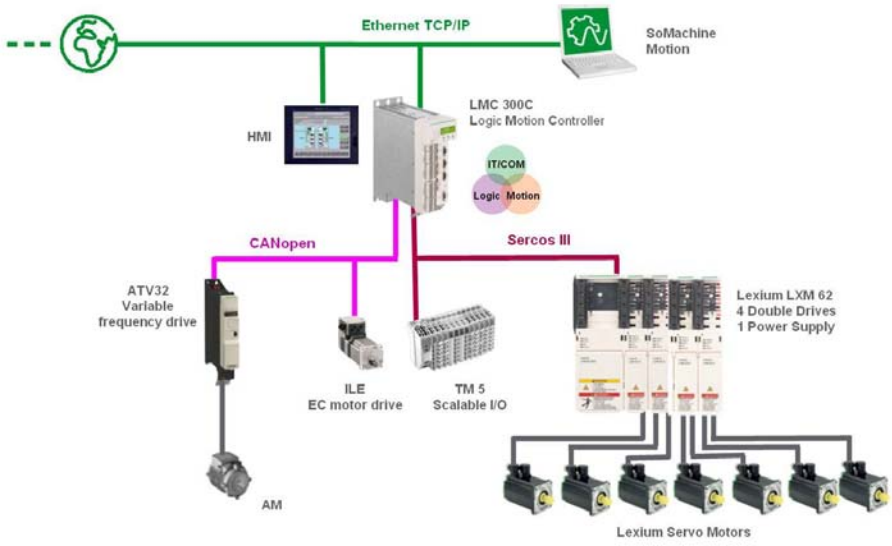


Picture 3

View of the machine's rear-mounted control cabinet: The PacDrive 3-based automation solution with the new Lexium LXM 62 multiaxis servo system

Picture 4

As a cost-effective basic version, the 5.7" Magelis display offers ease-of-use and all typical display and operation functionalities. An optional industrial PC provides flexibility for more demanding data processing requirements



Picture 5

The architecture of the automation solution, shown here in a version with four Lexium LXM 62 servodrives for seven servomotors; in a full configuration, five servo drives control a total of nine servomotors units

Picture 6 (optional)

The tube transport system: For a machine of this size, the single-lane design provides above-average space for additional options

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About Schneider Electric Automation

The Schneider Electric Automation GmbH with its main offices Marktheidenfeld and Seligenstadt is part of the Schneider Electric Group. The company develops and manufactures in its activities Machine Solutions and System Consistency particular hardware and software products for automation solutions in machine and plant construction. Machine Solutions manages from Marktheidenfeld its international activities within the group.

About Schneider Electric

As a global specialist in energy management with operations in more than 100 countries, Schneider Electric offers integrated solutions across multiple market segments, including leadership positions in energy and infrastructure, industrial processes, building automation, and data centres/networks, as well as a broad presence in residential applications. Focused on making energy safe, reliable, and efficient, the company's 130,000 plus employees achieved sales of 22.4 billion euros in 2011, through an active commitment to help individuals and organizations “Make the most of their energy.”