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FORUM

Packaging Automation

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INTELLIGENT SERVO MODULES:
Success stories proliferate

PACKAGING WITH ROBOTS:
Once exotic, now mainstream

**Interpack 2008 –
Experience innovation**



Matthias Mahr, Editor-in-chief

Automation's value is on the rise

No doubt – automation's value is on the rise, and also at interpack: In the run-up to the world's leading trade fair for the packaging industry, packaging OEMs are throwing key words such as technology offensive and modularity into the ring. They are supported by suppliers of automation solutions; those automation suppliers provide software solutions, control and drive designs that enable the packaging OEMs to develop even more flexible and fully automatic machine lines. In Düsseldorf, the technology behind all those key words can be experienced again and again. But it will also be about how to reduce the complexity of electronic packaging machines -- for instance, performing motion control and traditional PLC functionalities together on a single automation platform. Some of the benefits: easier startup, better diagnostics and cost reduction.

Back to modularity: Speaking of modularity, you will have to start with control architecture first. Only if you set up an integrated control design you can responsively adapt to individual customer specifications later. And there will be a continuous increase in these specifications with retailing/retailers and the food

and beverage industries responding to changing demographics.

Smaller households and more focused target markets require greater product differentiation. Today, smaller 6-count packs are gaining in popularity over 24-count packs. Moreover, retailers increasingly require rainbow packs with shelf space limited and the customer desiring more product diversity. Therefore standard, inflexible packaging lines and single-purpose machines are reaching the limits of their usefulness. Smaller batch sizes and frequent format changes require flexible solutions and higher packaging machine performance in the same footprint. So far, robots have not been widely employed in primary and secondary packaging processes. The use of robots, however, leads to more flexible packaging processes, and the footprint of a packaging line can be reduced through the elimination of complex transport processes. This explains the trend toward integrating robotic modules in primary and secondary packaging processes. It is a topic featured not only in this supplement, which was written in cooperation with the Elau AG, Marktheidenfeld, but also at the interpack in Düsseldorf.

Kontakt: matthias.mahr@huethig.de



8

Bridging

Harro Höfliger provides modularity in mechanical components and software as a bridge between standard and customized machine design: Modular design, such as for transdermal patch production, enables packaging lines that can be adapted to widely varying materials and product concepts.



12

Control Architecture is the Fundament

OPM is a big fan of modular machine design. Their robot cell is based on a standard frame that can be fitted with different numbers of robots. Key to this concept is a consistent control design based on an open automation platform and on modular software structures.



20

In Line

Automatic infeed of irregular product flows into packaging processes is no longer a fantasy: With the Spacefeeder, Rontech sets new standards for solutions with such a performance profile. The universal line is based on open automation technology with standard servo technology.



22

Short and Flexible

Flexibility and a small footprint are the predominant qualities of the latest Wrap-around-Packer by Somic. The modular machine is based on the principle of the previous standard model, but could be shortened by a full meter through the integration of the sealing station into the packaging station.

- 4 Robotic Island upgraded: Intermittent motion a thing of the past
- 6 Integrated Motion & Logic Reduces Complexity: Farewell to PLCs
- 8 Modular Design for Patch Production: Bridge between standard and customized machine design
- 10 Packaging Chocolate and Chewing Gum: Perfect fold wrapping
- 12 Adaptable, Modular Robotic Cell: Modularity Starts with the Control Architecture

- 14 Fully Modular Blister Machine Designed: Implementing servo technology without technical baggage
- 16 Overwrapping Machine for Premium Packaging: New standards for foil wrapping
- 18 Servo-driven Horizontal Casepacker: High flexibility in a small footprint
- 20 Universal Infeed System: In Line
- 22 Compact Wrap-around-Packer: Short and flexible
- 19 Imprint

New Standards for Film wrapping

Full overwrapping machine for premium packaging | Pester Pac Automation has responded to increased market demand by the cosmetics and pharmaceutical industries with a new overwrapping machine. The high performance line wraps single packs in all common oriented polypropylene (OPP) films at 120 cycles per minute. The results represent new quality standards designed for the perfect packaging of premium products.

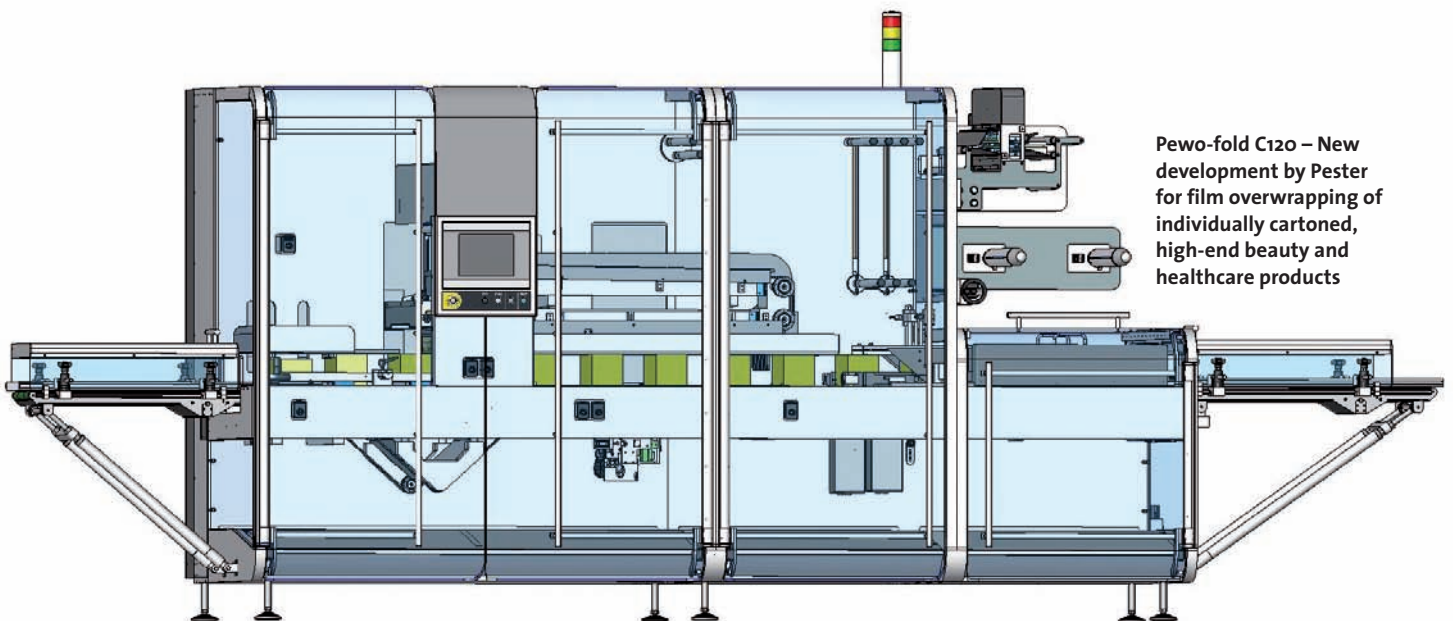
Across the board, consumers have developed an increasingly strong awareness of quality and product value. The package as a marketing tool now needs to support quality and premium strategies, especially for high end health and beauty products. Traditionally, the carton is a preferred concept for so-called premium products. The cosmetics industry in particular often selects preci-

se and high quality full overwrapping to enhance the presentation of premium products packaged in cartons. Apart from esthetics, full overwrapping also fulfills the needs for displaying information, for product and transport protection, and for hygienic and regulatory provisions.

Based in Wolfertschwenden, Germany, Pester, a supplier of end-of-line pa-

ckaging systems for over 30 years, has a long track record in the area of full overwrapping packaging technology. With the new Pewo-fold C120, Pester now covers the premium, high performance packaging segment which has very special requirements for perfect overwrapping and gentle product handling.

In the course of expanding the portfolio, Pester developed the Pewo-fold



Pewo-fold C120 – New development by Pester for film overwrapping of individually cartoned, high-end beauty and healthcare products

The new Pester overwrapping machine with its gentle product handling and perfect film overwrapping addresses the cosmetics and luxury products segments



The facts

Optimized for packaging

Pester uses a wide range of mechatronic concepts. They have created a standardized control structure across their portfolio utilizing an automation technology that integrates PLC, motion and even robotic functionalities in one control hardware – the Elau system meets these requirements. Pester was convinced by the modularity and capabilities of the Elau software concept that provides pre-programmed software function blocks that fulfill basic packaging functionalities and reduce engineering and commissioning times. In addition, details such as the simulation of mechatronic systems for easier drive sizing indicate the efficiency of the Elau automation system.



Format changes are fast and easily selected from the menu-driven touchscreen

C120, a completely new kind of overwrapping machine that operates at speeds of up to 120 single cartons per minute. GMP compliant, the balcony design machine is suitable for individual overwrapping of sensitive pharmaceutical packages such as ampoules, blisters and vials in cartons.

Adaptable to future packaging characteristics

Pester pays keen attention to machine design. Like all of Pester's new developments, the overwrapping machine Pewo-fold C120 is based on the specifications for a new, standardized machine design. One of its characteristics is a modular design adaptable to future packaging characteristics.

High safety standards as well as an innovative operational concept with standardized operational logic are core to the design. The machine profile features short changeover times and allows scheduling a wide range of formats into the daily production plan. The reduction of change parts to a minimum enables changeover times of only 5 to 10 minutes per format. Push-button format changeover is accomplished by means of a menu-driven format on a 10" touch screen. The machine's format area covers a wide range of carton sizes up to 250 x 120 x 125 mm (W x L x H). Whatever the format, the machine wraps 120 cartons per minute in all commonly available transparent and printed OPP films.

Gentle transport at high speed

The attention to overwrapping quality is reflected in several details, to which Wil-

li Rassl, Product Line Manager for Pewo-fold, attaches great importance. The special knife construction allows precise film cutting. Like the sealing tools, a wear-free operation is guaranteed by the tool-less film transport system in which tongs and vacuum belts have been omitted. To further increase machine throughput, a fully-automatic film splicer is available.

Through constant tensioning of the film, the Pewo-fold C 120 creates a perfectly tight and smooth overwrapping of the carton. The precise temperature regulation of the sealing tools ensures consistent seal quality. Product-specific orientation enables longitudinal and transverse wrapping, respectively, to meet the marketing departments' packaging design specifications.

Great importance was attached to gentle product feed. Pester developed a solution to process even premium cartons with delicate surfaces without any damage. Altogether, twelve servo drives ensure continuous, gentle product flow on a single level.

The machine design is based on the Elau automation system's synchronized, multi-axis solution used by Pester for creating a standardized control concept across their portfolio. An Elau C400 automation controller handles all servo axes as well as all the other functional

units of the machine. The servo drives are clearly structured and easily accessible at the rear side of the machine.

Willi Rassl is particularly satisfied with the Elau servo drives: "Hardly any other control offers such dynamic drives with such a small footprint."

Engineering times and processes optimized

The machine software is based on programming templates. Lorenz Fleschutz, Head of Electrical and Software Engineering, gives the reasons: "We also follow the programming recommendations by the control supplier for program compilation, which results in highest possible compatibility and in user-friendliness down to the customer. The consistent use of template structures cuts programming and commissioning times as well as the opportunity for errors to a minimum. Pre-programmed software function blocks for basic functionalities of packaging machines are as relevant as the modular concept overall. Even specialized drives such as crank drives can easily be embedded in the axis structure."

Pester leveraged all the capabilities in the Elau toolkit from the start of the project to determine important key parameters and the basic operation of the ma-

"12 synchronized servo drives ensure a continuous operation for continuous, gentle product handling on one level."

Willi Rassl, Production Line Manager Pewo-fold, Pester



chine. This, in turn, yielded a simulation module for realistic testing of the structural specifications that significantly simplified tasks such as drive sizing.

"The result was a clearly structured, very customer-oriented machine design which was implemented within only six months," says Torsten Gietenbruch, in charge of the software engineering for this machine.

Hall 6, Stand D61-D73

