Inline foiling

Glass decoration with metallic effect

Isimat – printing specialist for glass and plastic containers – has added a new machine to its portfolio. The new series of rotary printers also offers inline foiling for glass and plastic bottles. With the new series, Ismat is also introducing a new drive and control architecture based on B&R technology. The combination of POWERLINK and distributed components such as the ACOPOSmotor has introduced whole new levels of modularity, flexibility and availability.

With its recently introduced R-series, Isimat offers its customers – for the first time – the ability to combine familiar screen printing with flexo printing and its patent-pending inline foiling process. The inline foiling process makes it possible to apply metallic coatings to glass or plastic containers without excessive pressure or heat. This makes it considerably easier to use than conventional hot stamping, and even suitable for thin-walled glass. The inline foiling system can create virtually any metallic tone by overprinting a single type of foil – making the process not only reliable but also extremely cost-effective.

Product changeover in under 90 minutes

The RF-8 is the first of Isimat's new R-series to hit the market. Its eight printing stations allow for a custom constellation of screen printing, flexo and inline foiling modules to meet the needs of any print job. Exchanging the printing modules is easy enough to be handled by semiskilled workers. "You can exchange a printing module on the R-series in a matter of minutes without any tools," explains area sales manager Robert Kovačević. "Even changing over to a whole new product with different design generally takes less than 90 minutes."

Photo © Isimat

The new R-series printers from Isimat combine screen printing, flexography and foiling to beautifully decorate glass surfaces with graphics and metallic effects.

The RF-8 features a fully modular construction based on B&R technology, accommodating up to eight exchangeable printing units on a very small footprint.

These fast setup times are only possible thanks to the machine's complete modularity and automation of the setup process in the control software. The foundation for this was laid by a complete revamp of the drive and control architecture based on B&R technology.

Compact performance: ACOPOSmotor

A key element of the new architecture is the ACOPOSmotor. This servo motor with an integrated inverter is designed specifically for applications that demand distributed drive solutions in limited space. On the RF-8, these conditions apply to nearly every machine component, including the printing units and the rotary table – which is why some configurations feature more than 60 ACOPOSmotor modules. The printing modules alone are each equipped with up to three ACOPOSmotor modules, which allow the screen printing module, for example, to print even non-cylindrical items with Isimat's preferred straight screen. The outgoing POWERLINK bus connection on the ACOPOSmotor can be used to connect additional components, such as B&R's IP67-rated I/O modules or a stepper motor to give the printing modules an additional axis for adjustment. "This feature allows us to build and test the RF-8 as an autonomous production unit," says Isimat's chief electrical engineer, Norbert Fuchsloch. "That simplifies diagnostics and drastically accelerates installation and commissioning."

Minimal cabling

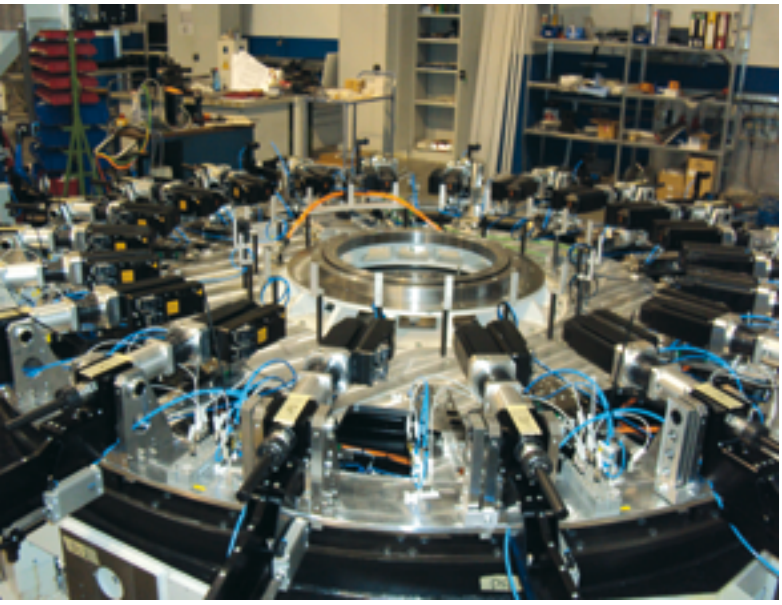
The printing modules are connected to the drive system using a single hybrid cable that includes all the power (DC bus) and signal lines, as well as the POWERLINK communication network. While the power modules are located in the control cabinet, the DC bus and POWERLINK can be distributed via remote IP67 connection boxes outside the cabinet. This approach further simplifies installation and commissioning, facilitates the modular design and accelerates product changeover. It's more than just the flexible cabling that makes POWERLINK so helpful during commissioning, however. "Prior to the B&R solution, we had to set the addresses of networked components using jumpers on each of the connectors – a tedious job that was prone to errors," explains Fuchsloch. "On top of that, we had to implement the evaluation logic in the program ourselves. In a POWERLINK line topology, node number assignment occurs automatically without any help from the control application."

Plug-and-play printing modules

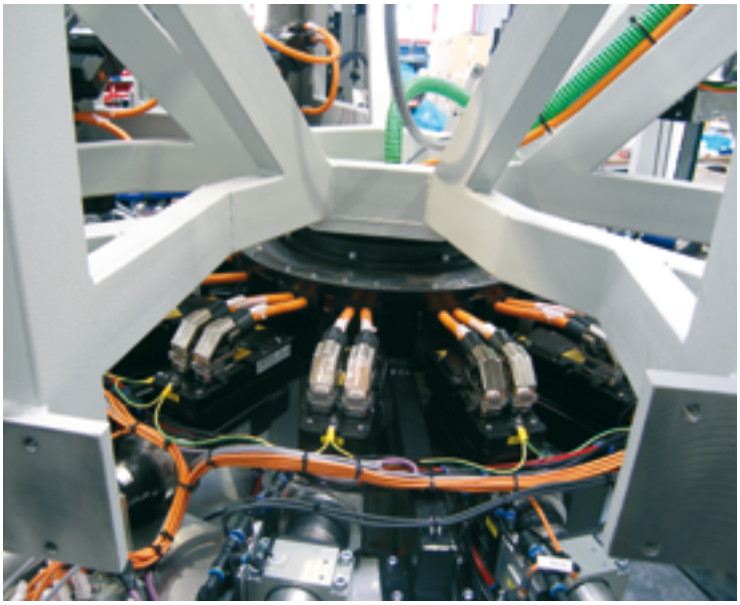
With Isimat's new drive and control solution, it's not just POWERLINK bus nodes that are detected automatically. The control application also identifies newly added printing modules and handles all the necessary configurations automatically. This makes it significantly faster to train new operators. "What made this possible was the openness and flexibility of B&R's software," says Fuchsloch. "In face, that was one of the main reasons we chose B&R." Of particular value to Isimat is that the B&R software solution allows them to encapsulate the software in components that mirror the modular design of the machine. As Fuchsloch explains: "The Automation Studio development environment allows us to program in a high-level language. Object-orientated programming is ideal for modular machinery and makes the software more readable."

One software project – many machines

No less important for Isimat: the software is also easier to create



The rotary table on the RF-8 20 is equipped with 20 compact ACOPOSmotor modules that rotate the printed item in sync with the printing units.



The outgoing POWERLINK connection on the ACOPOSmotor can be used to connect I/O modules from B&R's X67 system. This allows Isimat to build and test its printers as autonomous production units.

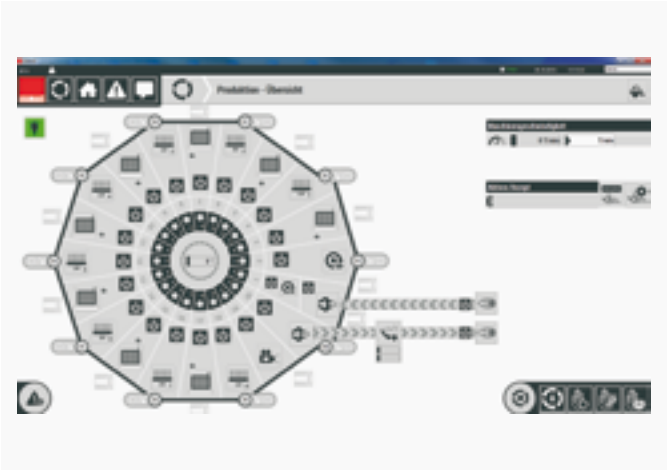
Norbert Fuchsloch
Chief Electrical Engineer, Isimat GmbH

"The countless tool and configuration options offered by the RF-8 need to be represented in the software, which we then have to maintain. That's why it was so crucial for us that the B&R system allows us to manage all of these variants in a single software project."

and maintain. "The countless tool and configuration options offered by the RF-8 need to be represented in the software, which we then have to maintain," explains Fuchsloch. The modular printing stations alone result in thousands of possible combinations. "That's why it was so crucial for us that the B&R system allows us to manage all of these variants in a single software project, so that any maintenance only has to be done in one place." This approach has proven itself so reliable and flexible that Isimat is already working together with B&R experts to expand the control application for the company's T-series printers, which are used for plastic tubes.

A safe investment in the future

Fuchsloch already has his sights on new developments that will bring additional savings. "Our next project will be to revamp our safety solution with B&R's integrated safety technology." The ACOPOSmotor is sure to play a key role here, too, with its integrated STO (Safe Torque Off) and SLS (Safely Limited Speed) functions. "We found that B&R offers a total package that just performs flawlessly and harmoniously across the board," concludes Fuchsloch. ←



The control application automatically recognizes which printing module is installed at each of the eight stations on the RF-8. This makes it significantly faster to train new operators.