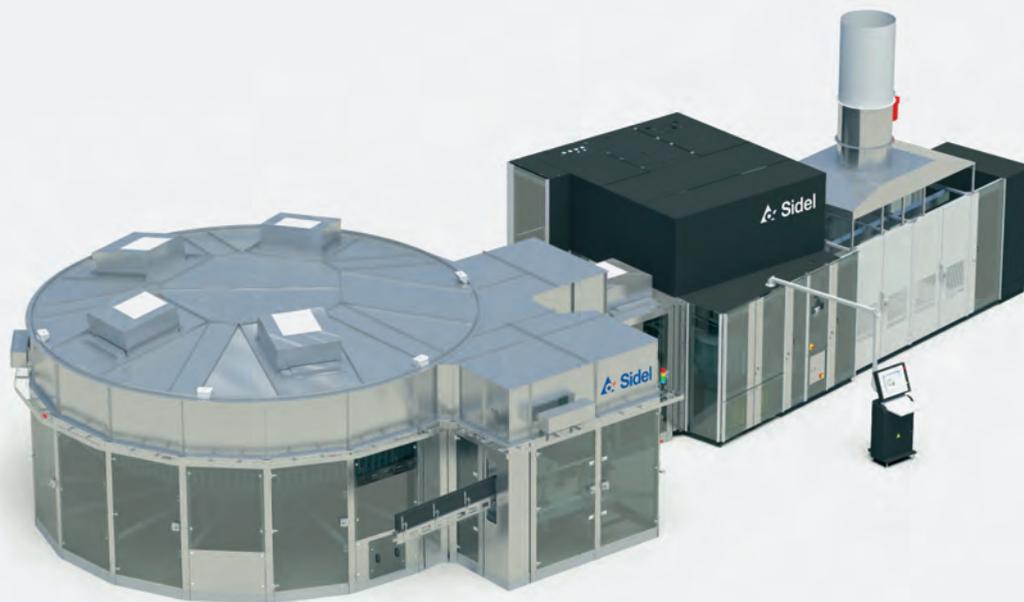




PET bottle production

A great leap forward in bottling line performance

In 2013, Sidel celebrated its 30th year of PET bottle production by introducing an innovative new range of blowing, filling, capping and labeling equipment – the Sidel Matrix™. To optimize the performance of this new modular system design, Sidel spent a year evaluating some of the biggest automation suppliers on the market in search of a partner who could help bring the parts together into an integrated whole with the advanced features and performance Sidel customers expect. What they found was "Perfection in Automation".



The Sidel Matrix Combi brings together all the benefits of Sidel's blowing and filling innovations in an integrated blow-fill-cap solution which delivers outstanding hygiene performance while simultaneously cutting costs.

Thierry Deau

Manager of Automation Innovation at Sidel

"The cooperation between the Sidel and B&R technical teams was a key factor in the success of the Matrix project. With the help of the local B&R teams, we have made the B&R technology our own. This way, we can take full advantage of its distinctive features and pass on all the added value to our customers."



With each of its high-speed lines producing 108,000 bottles of water every hour, Niagara Bottling's new plant in Ohio is able to supply small format bottled water to consumers across the Midwest region of the United States. One of the fastest and most technologically advanced production facilities for bottled water in the world, it features a groundbreaking new generation of PET bottling lines released in early 2013 – the Sidel Matrix, a versatile modular solution with fully integrated automation from B&R.

2013 has been a milestone year for Sidel, also marking the 30th anniversary of PET bottle production for the global leader in liquid

packaging solutions. Based on years of intensive research, development and validation, Sidel Matrix machines employ the latest proven technologies and versatile configuration possibilities to more closely match customers' individual production needs. Spanning the entire bandwidth of bottling line equipment from blowers and fillers to labelers, these new machines offer unprecedented levels of performance and flexibility.

New automation for new production challenges

Sidel has always been developing innovations to satisfy the ever increasing requirements of its customers. The Sidel Matrix system was launched to optimize each part of the PET bottling lines, which led to major innovations like using electric drives and linear motors instead of pneumatics to control the stretch rods in the blowing wheels. A key goal of this new modular system was also to optimize the way the line operates as a whole. Sidel recognized that this called for a single, fully integrated automation solution, which meant finding a global automation supplier able to offer versatile solutions that accommodated all machine types in addition to any planned future innovations. The biggest automation players in the market took part in a one-year Early Supplier Involvement (ESI) evaluation.

"The technical requirements for the new automation solution were very high," explains Isabelle Maillot, vice president of product innovation at Sidel. "During the ESI evaluation, B&R offered the most



The new Combi Matrix is ideal for handling light-weight PET containers.



With the Sidel Matrix fillers, users benefit from a greater focus on hygiene and production efficiency.

suitable solutions, with autonomous ACOPOSmulti servo drives that were able to fully satisfy our requirements for accuracy and speed.” These criteria were essential for implementing the enhanced new functions Sidel’s customers are looking for. “B&R’s solutions scored successfully among 80 criteria of the ESI evaluation,” adds global sourcing manager David Dumouchel, “and easily met our most stringent requirements. Moreover, a selection of 90 different B&R models covers the needs of the whole range of Sidel Matrix machines.”

The hard real-time capabilities of the POWERLINK network protocol, the high performance of the Automation PC – which allows seamless processing of both control and HMI tasks on the same hardware platform – as well as the exceptional level of integration achieved with the Automation Studio development tool were decisive factors in Sidel’s choice to equip the new Sidel Matrix machines with B&R systems.

A strong partnership for a technological edge

To support Sidel in this new challenge, B&R assembled dedicated teams for training, testing and support in every country where Sidel has production facilities. The relationship between the Sidel and B&R teams evolved quickly as they collaborated to bring all of B&R’s innovative technologies to the Sidel machines. With B&R always available for support and advice, Sidel retained full control of the machine development project and ensured that every line of

open SAFETY

The openSAFETY protocol allows reliable safety information exchanges via the POWERLINK network, both within each Matrix machine and across the entire bottling line.

code was written by Sidel engineers. This guarantees that Sidel’s technical staff has all the knowledge necessary to provide support, optimize processes and quickly develop new machine options on demand.

“The cooperation between the Sidel and B&R technical teams was a key factor in the success of the Matrix project,” explains Thierry Deau, manager of automation innovation at Sidel. “With the help of the local B&R teams, we have made the B&R technology our own. This way, we can take full advantage of its distinctive features and pass on all the added value to our customers.”

ETHERNET POWERLINK

The hard real-time capabilities of POWERLINK were decisive factors in Sidel's choice to equip the Matrix machines with B&R systems. This network ensures seamless communication between all automation and drive components for all Matrix machines.



Reduced consumption in the oven by up to 45 percent with fewer heating modules and lamps and approximately 15 percent less heating time.

For Sidel, another aspect of providing its customers optimal service was to make the new machines as easy as possible to maintain. The System Diagnostics Manager (SDM) tool that comes integrated in each B&R X20 PLC gives Sidel easy access to detailed status information about each and every axis and I/O channel on its machines, either locally or remotely. Since SDM can be used in any web browser, Sidel Matrix users don't need a special software tool or extra training to perform diagnostics.

Modular approach for fast, flexible development

When it came to the Sidel Matrix design, Sidel divided the machines into smart mechatronic modules. The high performance of POWERLINK and the embedded openSAFETY protocol ensures seamless communication of both functional and safety data between all automation and drive components, both within individual modules and across the entire bottling line.

Thanks to this modular approach, Sidel teams based in Octeville, France and Parma, Italy were able to develop the blowing and filling modules independently, resulting in a combined solution that is unique to the market. At the equipment level, the modules interact through standardized interfaces. This allows each of them to evolve separately and still come together seamlessly, bringing

new levels of performance to market significantly faster. "The market demand for the Combi machine is already very strong," says Damien Fournier, Sidel's manager of blowing products. "In 1997, Sidel was the first bottling line manufacturer to provide this type of solution. Now, with its modular architecture and proven technologies, the new Sidel Matrix Combi provides enhanced functionality at every level and is sure to once again set the bar for the PET beverage market."

Thoroughly tested for maximum reliability

With the PLC and motion simulation tools provided in B&R's Automation Studio development environment, Sidel was able to develop and test the new machines largely in the comfort of the office. Nevertheless, the bottling line manufacturer tested critical functions over millions of cycles on actual machines to ensure maximum reliability.

"The first lines installed have reached a very high level of performance since day one," explains Jean-Félix Lesueur, vice president of the Sidel Matrix industrial program. "Customers are completely satisfied with Sidel Matrix equipment, and we are proud to offer them machines that combine innovation, robustness and improved hygiene with reduced energy and raw material consumption." ←