Solutions in Action

CSI

Rockwell Automation
Machine Builder Partner

The CIP 2.0 system provides an ultramodern, smart solution for clean-in-place applications.

Allen-Bradley CompactLogix Programmable Automation Controller

Allen-Bradley PowerFlex 755 AC Drive

Allen-Bradley Integrated Display Computer

For the food and beverage industry, satisfying consumers' insatiable appetite for new products is just one part of a complex equation. Equally important is protecting the food supply – and maintaining compliance with the Food Safety Modernization Act, Title 21 CFR Part 11, S88 and other regulatory mandates.

The latest standards have had a direct impact on equipment cleaning processes and have heightened food and beverage companies' expectations of their clean-in-place (CIP) systems. CIP systems are designed to efficiently clean the interior surfaces of process equipment without disassembling it.

Stepping up to the challenge is Central States Industrial (CSI), an equipment supplier focused on providing value-added components and systems for hygienic processes. A family-owned business headquartered in Springfield, Missouri, CSI serves a global customer base ranging from Fortune 500 food companies to craft breweries and family farms.

With its modular CIP 2.0 system, CSI is well-aligned to meet both industry and regulatory demands. Designed for food, dairy and beverage plants and delivered on scalable skids, CIP 2.0 incorporates smart machine technology to enhance performance, flexibility and reporting.

"The core programming of our system makes CIP 2.0 smarter than previous generations of equipment," said Trent Bullock, manager, engineering services, CSI. "Historically, CIP systems relied on time-based cleaning cycles – and many still do. CIP 2.0 controls the cycles using process parameters."

From pre-wash to final rinse, each cycle within the system is configured to reach predetermined setpoints for flow, temperature and chemical concentration. Additional sensors can be added to the system to control the duration of the cycle.

"For example, we can add turbidity sensors to a pre-wash cycle as a configurable option," Bullock explained. "So we can actually pre-wash until an acceptable level of soils is removed from the line."

Relying on process parameters enables a more accurate and repeatable process than a strictly time-based approach. In addition, a process-based system minimizes overuse of chemicals, water and other resources.

CSI also works with customers to improve cycle times further by offering additional configurable options, such as incorporating a hot water supply or direct steam injection.

"In plants that must clean-in-place 8-12 times a day, accelerating cycle time by 30 or 40 minutes can have a dramatic impact on overall productivity," Bullock said.

To maintain efficient operation, CIP 2.0 allows operators to configure, monitor and run washes in real time from the recipe-driven interface. Trend charts and maintenance manuals are also digitally stored and accessible through the HMI to streamline troubleshooting.

"The validated system also incorporates automated record keeping," Bullock said. "This functionality is designed to help customers comply with regulatory standards, including the Food Safety Modernization Act."

CIP 2.0 also facilitates connectivity to enterprise-level systems through the control environment.

Thanks to a standard approach to control system design, the same functionality is available on all CIP 2.0 installations – whether it's a single-supply, one-tank skid or dual-supply, four-tank system.

CIP 2.0 is based on a Rockwell Automation® control platform featuring Allen-Bradley® CompactLogix™ 5370 controllers and Allen-Bradley PowerFlex® 755 AC drives. The system is integrated on an EtherNet/IP™ network and includes Stratix® managed switches with network address translation (NAT). The system is monitored on an Allen-Bradley solid-state integrated display computer running on a Windows® 7 operating system and FactoryTalk® View HMI software.

"Our standard, modular approach provides customers with cost-effective options for various areas of their plant," Bullock said. "And since all run on the same platform, operators are automatically cross-trained."

A standard control platform has also enabled CSI to make incremental improvements more easily, which have resulted in a more robust system overall. Today, the most common customer requests are configurable options.

"A one-week turnaround for a quote has become the norm in the food and beverage industry," Bullock said. "Because we have a robust standard, we can typically deliver quotes that meet strict requirements within one day or less."

Standardization also speeds deployment. Rockwell Automation assembles, programs and wires the control panels, which allows CSI to reduce design time and related costs.

"We aim for cost-effective, forward-looking designs," Bullock said. "For example, currently we offer remote monitoring as an option. We are also exploring ways to incorporate cloud-based analytics into our platform to deliver an even more robust monitoring option in the future."

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Publication OEM-AP218B-EN-P – February 2018
Supersedes Publication OEM-AP218A-EN-P – March 2013