



■ **Bell's Brewery Inc., USA**

# Precision Brewing

By utilizing the benefits of the extremely compact and cost-effective Braumat PCS 7 Compact process control system, Bell's Brewery has a temperature control system in place that rivals the major brewers' systems in efficiency.

**B**ell's, a 25-year-old private craft brewery in Galesburg, Michigan, brews about 74,000 barrels of 26 different varieties of beer, ale, porter, and stout a year. Bell's was using single-loop controllers on its 45 fermentation tanks and was considering installing additional controllers to service all 76 of its tank temperature control points. However, producing 26 different beers posed significant challenges in terms of maintaining the optimum temperature profile for each variety, and controlling temperature in fermentation is vital to the quality and flavor of beer.

## Automatic temperature control

In 2006, Bell's decided to make the quantum leap to the Braumat PCS 7 Compact process control system, which combines the brewing expertise of the world-

famous Braumat package with the automation technology platform of Simatic PCS 7 Box. Bell's was the first brewery in the United States to install the system. "We became aware of the new brewhouse control package that Siemens had just released for small brewers," says John Mallett, production manager at Bell's. "We recognized that it could provide a much more precise level of temperature control than what we could ever achieve manually with single-loop controllers."

## Multiple benefits

The Braumat PCS 7 Compact system can record tank temperatures as often as every second, and it adjusts the process automatically to maintain the desired temperature profile. It also provides a complete information management system. Fermentation data

## Braumat PCS 7 Compact

- ▶ Includes Simatic PCS 7 Box with integrated Braumat Compact library
- ▶ Integrates new and existing automation system and devices in a single platform
- ▶ Integrates into any existing PCS 7 environment
- ▶ Scalability allows expansion at any time
- ▶ Compresses a complete distributed control system (DCS) into a compact industrial PC platform
- ▶ Integrated hybrid PLC/DCS unit operates independently of the PC
- ▶ Includes common tools for engineering, visualization, and plantwide asset and maintenance management
- ▶ Supports complete fieldbus connectivity

goes straight to PCS 7's built-in data historian, allowing trending, archiving, and data analysis of key process variables, as well as process debugging features such as quick backtracking to determine the cause of problematic batches. Brewers can react more quickly to changes in production and modify and adapt processing sequences and parameters.

### Scalable architecture for future growth

Another big plus for Bell's was the open architecture of the system, which would allow other processes to be brought within the brewhouse. The full-blown PCS 7 client/server system could control the entire brewery, and the Siemens solution was fully scalable and could meet future needs without any need for re-engineering or retraining. The functions that can be brought into the Braumat PCS 7 system are virtually unlimited. It can run everything from grain handling

through the brewhouse, fermentation, filtration, carbonation, and pipe routing, all the way up to finished beer and packaging.

"We can now modify the way various functions of our brewhouse system operate. There is flexibility in standardization. This is a huge issue for us. For example, tying in our yeast production with Braumat will allow us to integrate a new propagation system, which is 20 times larger than our current equipment, into the Braumat platform," Mallett says. "By installing a new system that includes sanitary Sitrans MAG flowmeters, we can also automatically control carbonation to a desired set point on the fly, within the integrated Braumat system. We no longer need to continually monitor and manipulate the gas flow."

### Optimized cooling performance and reduced cost

Another benefit is the ability to optimize cooling performance during fermentation. The PCS 7 system is continuously monitoring and automatically making adjustments, so it spreads the heat-exchange load out more evenly over time, eliminating temperature swings and maintaining more stable temperatures in the tanks.

"The improved performance within our fermentation process is clearly evident. Doing one to two manual checks per day, for each of our fermentation tanks, involved serious man-hours. Now, this is all controlled from one central location in a fraction of the time," Mallett says.

In addition to the many improvements in brewhouse capabilities, the cost of the Braumat PCS 7 Compact was about 20 percent less than the estimate for the single-loop controllers – so it was not only a higher-performing but also a more economical control solution. ■

## » Brewers of our size want to work smarter, not harder. «

John Mallett, production manager at Bell's



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