

CASE STUDY: Building the Brewery of the Future - With IoT Sensors and IoT Gateway



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Problem

Craft breweries are a booming business in the U.S., and with the Charlotte area boasting nearly 50 independent craft breweries, it has become a mini mecca for craft brew connoisseurs. With a rebellious spirit and passion for infusing traditional recipes with modern flavors and techniques, Sugar Creek Brewing Company, founded in 2014, specializes in crafting rich and aromatic Belgian style ales in the tradition of Belgian Trappist monks. Today, the company produces about 7,000 barrels a year and by adding a bottling operation, Sugar Creek has expanded sales to reach the greater Carolinas.

Bottling beer is not without its challenges, however. The beer making process is more complex than people realize. For example, as beer moves from tank to tank along the bottling line, even a slight variation in pressure or temperature will create foam. Foam creates spillage, and spillage equals waste. In Sugar Creek's case, that beer spillage equated to \$30,000 a month in lost revenue, making the case for a significant capital investment in technology.

Solution

Deciding to implement Artificial Intelligence and Internet of Things (IoT) technology into their brewing process, Sugar Creek Brewing Company was poised to become a brewing factory of the future. To

help facilitate the transformation, they turned to the Industry 4.0 experts at Bosch Rexroth.

"We chose to partner with Bosch Rexroth for three reasons," says Sugar Creek's CEO and co-founder Joe Vogelbacher. "For one, their brand is synonymous with quality. Their parent company, Bosch, has extensive experience in all types of manufacturing. And they are a leader in connected industry. This combination of experience and expertise made them the ideal partner for Sugar Creek."

Featured Solutions

- Bosch Rexroth IndraControl XM Controller
- Bosch Rexroth IoT Gateway
- Bosch Rexroth IndraControl S67 IO Modules
- Bosch Digital & Bosch Rexroth Connected Industry Consulting
- IBM Watson

Implementation

A Phased Approach to Automated Bottling

Phase One

The first order of business was to make the entire bottling operation more transparent. Sugar Creek's team needed to be able to visualize the bottling process in real time from anywhere in the brewery, so that immediate action could be taken to correct issues when and where they were happening.

Leveraging the extensive connected industry engineering experience of Rexroth, IoT sensors were installed in the beer tanks to monitor and report information on fill levels and temperature. That information was then transferred via Rexroth's IoT Gateway for analysis and visualization that operators could access in real time via laptop, tablet or mobile phone. With that information at their fingertips, operators can respond in real-time to adjust the temperature set-point remotely.

Phase Two

When the initial implementation proved successful, Sugar Creek is expanding the control and analytics functions to a total of 17 of their brewing tanks and adding the ability to remotely control their glycol tank level and boiler on/off function.

Outcomes

As a result of this connectivity and visualization, Sugar Creek Brewing Company was able to save \$120,000 last year—money they could then reinvest into their business. And now that the company can monitor fill times, temperature, pH, gravity, pressure, carbonation and fill levels in real time, they're able to develop new processes and refine existing ones, so that in addition to waste reduction, they can increase efficiencies, manufacture more product, and improve the flavor and quality of their products.



About Automation Alley

Automation Alley is the World Economic Forum's Advanced Manufacturing Hub (AMHUB) for North America and a nonprofit Industry 4.0 knowledge center with a global outlook and a regional focus. We facilitate public-private partnerships by connecting industry, education and government to fuel Michigan's economy and accelerate innovation. Our programs give businesses a competitive advantage by helping them along every step of their digital transformation journey. We obsess over disruptive technologies like AI, the Internet of Things and automation, and work hard to make these complex concepts easier for companies to understand and implement.

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Our Contact Info

2675 Bellingham
Troy, MI 48083-2044

Phone: 248-457-3200
Toll Free: 800-427-5100
Fax: 248-457-3210

Email: info@automationalley.com

Website: automationalley.com

