

Optimizing beer production with real-time fermentation monitoring

How MashCraft Brewing enhances efficiency and quality with Endress+Hauser's Fermentation Monitor QWX43

Benefits at a glance

- 20% capacity increase
- Up to \$10,000 in yearly labor savings
- Real-time data
- Remote monitoring
- Enhanced time efficiency
- Consistent product quality
- Maximized production capacity
- Eliminates up to 3 manual samples and lab readings per day

Summary: MashCraft Brewing was built upon a foundation of strong relationships. More than a decade ago, the business launched to create great craft brews and a stellar customer experience. In the years since, the brewery has expanded across central Indiana with locations in Greenwood, downtown Indianapolis and Fishers, amassing a dedicated following.

However, like many breweries, MashCraft Brewing faced challenges with gathering real-time insights into its process, at times culminating in prolonged production periods, which in turn affected brewery efficiency.

Along the way, the company fostered a strong relationship with Endress+Hauser. The collaboration refined its brewing process, optimized production efficiency and ensured consistent quality, each a pillar of the company's structure.

According to MashCraft Brewing owner and brewer, Andrew Castner, "The more knowledge we have about what's in the glass, the happier our customers will be."

Challenge: Year-after-year, MashCraft Brewing continues to prioritize high-quality products. Occasionally inefficiencies occur, requiring new methods to mitigate the subsequent challenges. In the craft brewing industry, inconsistencies can lead to time wasted and fluctuations in taste and



Andrew Castner, owner and brewer, MashCraft Brewing

quality, each potentially impacting customer satisfaction and brand reputation.

To optimize its production cycle and increase efficiency and profitability, MashCraft Brewing was tasked with discovering a way to reduce batch time in fermentation tanks while keeping consistent quality. This required real-time data on fermentation progress to enable timely interventions during process interruptions or anomalies.

"As craft brewers, one of our biggest challenges has been the lack of access to



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QWX43

real-time data,” said Castner. “We had to rely on sporadic snapshots of information, like sugar counts taken at specific times, which made it difficult to ensure consistency and quality. With minimal staff and basic or limited equipment, obtaining comprehensive data was difficult. This limitation hindered our ability to track and compare batches effectively, impacting our brewing process’s repeatability and potentially batch success.”

Solution: Endress+Hauser’s Fermentation Monitor QWX43 gives MashCraft Brewing a comprehensive solution to its challenges.

The Fermentation Monitor QWX43 offers real-time monitoring of fermentation progress, providing accurate data on key parameters such as real time gravity, alcohol percent and non-fermentable sugar amounts plus all parameters saved in graph form for future comparison. The precise monitoring capabilities of the Fermentation Monitor QWX43 ensure that each batch meets the desired quality standards. Brewers can pinpoint when to test for diacetyl, increase tank pressure or start dry hopping at the optimal time to speed up production cycles and increase production capacity.

Holistically, the Fermentation Monitor QWX43 measures density, temperature and acoustic velocity directly in the fermentation tank, calculating key parameters like degree

of fermentation, residual extract and alcohol content. The device provides precise, real-time measurements that can be integrated into control systems and monitored remotely via Netilion, Endress+Hauser’s Industrial IoT ecosystem. The company can even compare current batches to previous ones using the Golden Batch feature. This system eliminates the need for on-site presence, offering minute-by-minute updates and data-driven process improvements. It also features a hygienic design for easy cleaning and automatic creation, saving and downloading batch data.

“This gives us real-time data uploaded to the cloud that we can reference anytime,” said Castner. “This access to data is invaluable for us at MashCraft, especially since we don’t have trained labor available 24/7 to take sugar counts hourly, daily and even on busier weekends. Tracking variables like percent alcohol, temperature and fermentation percentage allows us to ensure consistency in our products by comparing current batches with past ones.”

Results: The brewery can produce more batches per year by reducing the average tank time with a potential output capacity increase of 20%. This increase in production capacity translates to higher returns and the ability to meet and address consumer demand and changing market conditions. In addition, MashCraft Brewing has saved time by reducing measurements by hand, saving approximately \$5,000-\$10,000 in labor costs annually.



Fermentation Monitor QWX43



The real-time monitoring and precise data provided by the Fermentation Monitor QWX43 have helped ensure the consistency of MashCraft Brewing's products. Real-time monitoring allows the company to compare key metrics like sugar counts and fermentation rates, ensuring batch consistency. Any deviations can be promptly addressed, ensuring that the final product meets its established standards on the intended release date.

"In the brewing industry, comparing batches is essential for ensuring consistency and quality," said Castner. "For instance, if last year's batch had a non-fermentable sugar number of 9 and this year's batch shows 6.5, we already know on day one that the beer will taste different. By overlaying real-time data from current batches with golden batches, brewers can identify deviations early

in fermentation. This allows for immediate adjustments, ensuring each brew meets the desired standards and flavor profiles."

Just as they always have, customers can continue to rely on the brewery to deliver high-quality craft beer. Similarly, MashCraft Brewing can feel confident in maintaining customer satisfaction and loyalty.

While MashCraft Brewing is still in the early stages of optimizing the use of the Fermentation Monitor QWX43, the potential for further gains is evident. As the brewery continues to refine its processes and fully leverage the device's capabilities, additional efficiency and quality improvements are expected.

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