



Carlsberg Leverages IoT to Scale Digital Transformation Across Global Sites

BY LUIGI DE BERNARDINI | TUE FEB 15 2022

Founded 172 years ago, Carlsberg is a Danish Brewing company with a global presence that is one of the world's leaders in the brewing industry. With over 140 brewed beverages, including core beers, specialty and craft beers, alcohol-free brews, and local brands from numerous countries, Carlsberg has a diverse and globalized beer portfolio.

Having grown through multiple acquisitions, Carlsberg faced some challenges common to manufacturers that operate sites in different regions of the world. Namely, there was little consistency in how various sites tracked production data. Consequently, the lack of consistent data and outdated methods meant they couldn't fully optimize machine performance, which led to unplanned downtime, longer lead times, increased costs, and decreased throughput—all of which negatively impacted overall equipment effectiveness (OEE).

Despite having a full manufacturing execution system (MES) in 10 factories, Carlsberg knew they needed a lighter solution that would scale quickly and easily, one that would help them standardize data collection across their global facilities to improve production performance.

Carlsberg partners with Autware to leverage IoT solutions and improve OEE

Carlsberg turned to Autware, an Italian software company focused on implementing digital transformation in the manufacturing sector, as the technology partner to help them improve their data collection and processes. To do so, Autware leveraged PTC technology to design an IoT-based application for real-time performance monitoring. The application could be used by machine operators to easily assess production performance across different facilities via real-time data and alerts.

To develop the application, Autware utilized Kepware, a software that automatically pulls data from a variety of automation devices and software applications and aggregates it into a uniform data model. In addition, Autware used ThingWorx, an end-to-end industrial IoT platform which provides visibility into production and asset health with real-time data analytics and a rich array of insights and production reporting. Together, the technologies allowed Carlsberg to monitor machine data and project it onto dashboards.

The data gives operators a clear understanding of how the line is performing against targets, while real-time alerts help them quickly identify and resolve any production issues. Similarly, some floor operators have tablets equipped with an app that leverages ThingWorx data to track the downtime of a specific machine and proposes the reason in real-time; the operator can then confirm next actions to take, even from a remote location in the facility.

Autware's solution helps Carlsberg standardize and scale with efficiency

Carlsberg had already laid much of the groundwork toward standardization across facilities, but their new solution would better address the gaps created by legacy equipment and variations in data collection, architecture, and software. Importantly, the standardization of data and metrics would allow Carlsberg to evaluate machine performance and productivity relative to other factories. After launching in just three months, it would also help satisfy the need to scale quickly across multiple facilities.

Notably, Kepware was key to achieving value and to working within a centrally configured data environment. It allowed them to import and export configuration information and easily adapt any particular facility's variances to meet the application's data standards. Kepware collects data from the PLCs throughout the regional sites, and ThingWorx utilizes the data from Kepware and visualizes it for real-time monitoring and diagnosis at each site.

The team chose a cloud-based architecture for the new solution, which offered some significant benefits over the previous on-premise solution in their other facilities. A cloud-based solution makes it easier to evolve the system and add new features. Any updates to the application only need to be deployed once, and the cloud-based architecture makes those same changes immediately available to any site. At the same time, they can make some site-specific features available only to certain locations and deploy them at others later.

This flexibility to configure the solution as needed—thus being more efficient and saving time—greatly improves the total cost of ownership. “The footprint of the new solution is much smaller than the footprint of an on-premise solution—it takes fewer resources to manage,” says Marco Faltracco, Technical Lead at Autoware. “The architecture enables them to scale to so many more plants, and now they’re considering further expansion because it’s easy to do that,” he continues. “In terms of total cost of ownership, it’s much lower than having an on-premise solution.”

Carlsberg achieves improved performance and productivity while planning for a more sustainable future

To date, the application has been rolled out at 28 Carlsberg facilities. Eventually, the agenda will include implementation in the remaining breweries. While Carlsberg's digital transformation journey is still unfolding, they've already seen clear benefits of real-time performance monitoring throughout their business. First, they've seen improved operational procedures and higher quality products, as well as fewer line interruptions with greater visibility. Additionally, Carlsberg has experienced reduced equipment downtime with better preventive maintenance. Another positive outcome is the reduction of waste, which positively contributes to company goals around carbon emissions and sustainability.

Notably, the power of partnership has made all the difference in Carlsberg's ability to roll out their solution with

confidence and efficiency, which only stands to benefit all parties in the long run.

For Carlsberg, advancing their digital journey has been a confirmation of the company's consistent place in the brewing industry as not just an innovator, but as a company looking to create a better, more sustainable future—and they look forward to partnering with Autoware for continued success.

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