

## Emerson Wireless Solution Helping Leading Global Brewer Reduce Energy and Water Consumption

### Wireless networks installed at 10 breweries and distilleries to provide standardized automated measurement, supporting sustainability improvements

Food and beverage manufacturers trade on notoriously thin margins and are therefore always seeking ways to reduce operating costs. A large percentage of these are sustainability-related, in areas such as energy, water and wastewater, so reducing waste and lowering consumption in this sector is crucial. In fact, according to a market research report on operational excellence<sup>1</sup>, more than one-third of food and beverage manufacturers (37%) identified sustainability-related costs as the area in which they are most looking to improve.

Reducing energy and water consumption by even a small percentage can result in significant financial savings. But sustainability is not just an often-untapped source for cost reductions, it also presents food and beverage manufacturers with an opportunity to highlight their social responsibility credentials and enhance their brand image. The industry's top quartile performers understand this and are therefore more likely to consider sustainability when making operational decisions.

Sustainability is a major concern for breweries. These facilities use large amounts of water – as much as 11 times the volume of beer produced – which means anything that can be done to improve efficiencies, reduce waste and lower consumption will result in significant savings and environmental benefits. This includes adhering to the concept of Zero Liquid Discharge (ZLD), the objective of which is to eliminate liquid waste leaving a plant at the end of an industrial process, and to instead recover it for reuse. In India, where around 600 million people are facing an acute water shortage<sup>2</sup>, the need to improve water management is critical, and this is a compelling reason why the ZLD approach is becoming widely adopted throughout the brewing industry in that country.

#### Brewing in India

Within India there is a growing demand for greater variety and more authentic beers. A leading brewer, responsible for producing one in four beers sold globally, believes the country could soon become the largest beer-consuming market in the world. This vast potential for growth has encouraged the brewer to make significant investment in the country. To help it flourish in such a highly competitive marketplace, the company has identified the importance of optimising its energy and water management practices, and striving to achieve ZLD at the 10 breweries and distilleries it operates in India.

To make sustainability improvements and achieve ZLD, the brewer recognised that it must first be able to accurately and reliably measure and monitor all energy and water use throughout its facilities. It would then be able to analyse the resulting measurement data and understand how consumption levels are impacting overall operational performance. This understanding would then better inform the changes to processes and procedures that can deliver sustainability gains.

#### The Challenge

The lack of a standardised measurement solution across all its breweries and distilleries was causing a problem for the brewer, with a variety of flow measurement technologies being used and some facilities relying on manual measurement of energy and water usage. Without standardised forms of measurement, monitoring and reporting, the company was unable to compare data with a common basis from its different units and plants, and therefore could not properly establish an overview of its energy and water usage. This in turn was preventing it from taking the actions necessary to tackle any inefficiencies and try to achieve ZLD.

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The brewer needed to implement a standardised solution that would enable it to achieve two things. First, to accurately and reliably monitor, in real-time, data from the various units of its breweries and distilleries, thereby enabling it to calculate their specific energy and water consumption. These units included boiler plants, cooling plants, water treatment plants, CO<sub>2</sub> recovery plants, nitrogen generation, compressed air plants and electricity supply. And second, it needed to create efficiency reports as part of a comprehensive management information system, which would enable consumption and production patterns across all 10 breweries to be reviewed, as a basis for management decisions.

## The Solution

Emerson's vast experience in implementing wireless solutions was a key reason why it was chosen by AB InBev India to install wireless networks at each of its 10 facilities. Emerson wireless technology has helped transform industrial facilities around the world, and has surpassed 10 billion total hours of wireless operations globally across 32,000 systems, demonstrating its accuracy, reliability, robustness and security.

A critical part of Emerson's solution for the brewer was the installation of new flow measurement points throughout the 10 breweries and distilleries. This provides greater visibility and ensures all energy, water and wastewater is accurately measured and monitored at each unit. The brewer initially invested in more than 50 of Emerson's Vortex, Coriolis and Magnetic flowmeters to provide additional process measurement points across its facilities. These different flowmeter types were installed to meet the varying requirements of specific measurement applications. For example, the use of Vortex meters is well established in steam flow, compressed air and CO<sub>2</sub> applications, Magnetic meters have proven reliability in measuring water and wastewater flow, and Coriolis meters provide high-accuracy, real-time monitoring of wort concentration.

Because the various units of the company's breweries and distilleries are dispersed across a large area, this created a challenge for the required supporting communications infrastructure for the new measurement points. The company was keen to avoid any disruption caused by having to lay new cabling and was also looking to minimise capital expenditure costs. Emerson's wireless solution eliminated the need to lay power and communication cables over such large distances, thereby delivering significant savings in terms of labour, time and costs.

A wireless network was implemented at each of the 10 sites, with THUM™ adapters used to transmit measurement and diagnostic data to a wireless gateway, which collects the data and seamlessly connects to the existing SCADA control system at each site via Ethernet. As well as providing wireless connectivity for the new flowmeters, THUM adapters were also retrofitted to existing flowmeters with HART capability. This enabled the flowmeters to transmit data directly to the SCADA system separately and in addition to the existing wired connections to the local PLCs. Totalised flow data could then be gathered without the need for excavation and cable-laying to establish links between PLCs and the SCADA system. This ability to integrate existing devices into a wireless solution was an important consideration for AB InBev India, as it minimised its need to buy new flowmeters.

The Emerson solution also created maintenance benefits for AB InBev India. Access to diagnostic data from the flowmeters via the wireless network now enables the company to identify any potential problems with a device at an early stage and schedule maintenance during planned periods of downtime. This reduces costly unplanned shutdowns and helps to ensure that the flowmeters are always operating correctly, thereby increasing measurement reliability.

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### Data Analysis

With the wireless-enabled flowmeters standardising the way accurate and reliable production and sustainability data is transmitted across the 10 breweries and distilleries, the brewer could then begin analysing the information to see where any underperformance may be occurring. Emerson's solution sees data from all the units at each site being sent via either the internet or telemetry systems to a central point, where customised reports are generated automatically. The analysis of these reports provides an understanding of how production and sustainability are affected by variables such as product mix, production volumes and schedules. This data intelligence then enables the company to make more fully-informed decisions to help reduce waste and consumption, and optimise performance at each of the breweries. This not only reduces operational costs, it also helps to conserve water in a country where it is scarce, thereby accentuating the brewer's environmental stewardship and enhancing its brand image and reputation.

<sup>1</sup> *Achieving Operational Excellence in Food & Beverage - Reid Paquin, research analyst, manufacturing, product innovation & engineering, and Kevin Prouty, senior vice president, research, Aberdeen Group, July 2015.*

<sup>2</sup> *Composite Water Management Index, The National Institute for Transforming India (NITI) Aayog, June 2018.*