Energy Efficiency Across Breweries 2023

Australia

Climate Change Response
Providing Sustainable Solutions

CASE STUDY – Food and Beverage Industry

Agenda

The primary objective of this project was to elevate the operational efficiency of breweries, leading to substantial reductions in utility expenses, while concurrently optimizing the utilization of renewable energy sources.

To achieve these goals and enhance the overall performance of these facilities, the project agenda entailed the implementation of a cutting-edge Energy Management System (EMS) developed by CCR.

Overview

Aim

- To implement a smart energy management system to efficiently monitor and manage energy within the selected breweries to optimize consumption and costs.

Challenge

- Lack of a proper energy management system and framework Unregulated consumption.
- High energy bills and potential energy wastage.
- Limited awareness of energy usage patterns.

Solution

- Design and installation of an EMS, providing real-time data monitoring, proactive energy management. Consumption thresholds
- Predictive maintenance and smart anomaly detection alerts
- Transparency in bills
- DER integration and management
- Future potential for monitoring other critical parameters using the EMS.

Network

Modbus, Bacnet, 4GLte, LoRa, LoRaWAN, Ble

Climate Change Response

Multiple Sites across Australia	**Energy** Consumption Reduced by 15%
Reduced Downtime	**Significant** Cost Saving

Challenges

1. Absence of Real-time Energy Monitoring and Control: The breweries lacked a proper system or framework to monitor and manage energy-related data and processes in real time.

2. Lack of transparency in energy costs: The breweries had no visibility into their energy expenses. Elevated energy bills may result from inefficiencies or wastage, potentially affecting overall profitability.

3. Limited Understanding of Energy Usage Patterns: Individual equipment energy usage data was unavailable. Limited knowledge about the energy consumption of individual brewing equipment hindered their ability to optimize usage and reduce consumption.

Solution

To overcome the challenges CCR implemented the following solution:

1. As a key component of the solution, CCR implemented an advanced Energy Management System (EMS) to address the challenges encountered by these breweries. The EMS delivered the following capabilities.

2. Real-Time Energy Monitoring and Management: The EMS enabled real-time monitoring and precise management of the brewery's energy consumption.

3. Predictive Maintenance and Anomaly Detection: It offered predictive maintenance capabilities for early anomaly detection, reducing downtime and maintenance costs.

4. Asset-Specific Consumption Analysis: The system allowed for asset-wise energy consumption analysis, facilitating a deeper understanding of consumption patterns and opportunities for optimization.

5. Transparent Energy Cost Reporting: It provided transparency in reporting energy costs, helping breweries make informed decisions to minimize expenses.

6. DER Integration: The EMS seamlessly integrated Distributed Energy Resources (DER), streamlining the incorporation of renewables into the system for effortless management and improved sustainability."

Execution

To address the project's objectives, the breweries underwent the installation of state-of-the-art end-to-end energy management systems. This installation was carried out in collaboration with local electricians, under the supervision of CCR project engineers.

The installed system comprised a Multiprotocol Edge Device (MED) responsible for collecting, processing, and transmitting data to the cloud for analysis and visualization. This versatile MED is capable of handling data from various sources. The data collected through the gateway was seamlessly transmitted to the cloud, making it readily accessible through CCR's advanced dashboard.

The deployed system provided real-time access to all components within the respective breweries, ensuring comprehensive and efficient energy management.

Results Delivered

- Reduced peak-hour energy consumption, leading to lower overall usage.
- Detection and address of unexpected energy spikes promptly to prevent unscheduled downtime.
- Real-time monitoring of reactive power to avoid penalties for exceeding set thresholds.
- Implemented AI-driven predictive maintenance and anomaly alerts to identify equipment issues before they lead to failures.
- Enhanced power quality monitoring, including harmonics, voltage drops, and voltage spikes, for sensitive appliances.
- Actionable insights for improved energy management.
- Multi-parametric analysis
- Insights into consumption pattern of individual assets.
- Transparency into breweries' consumption costs and bills.
- Increased financial gains through heightened efficiency.

Impact and Key Takeaway

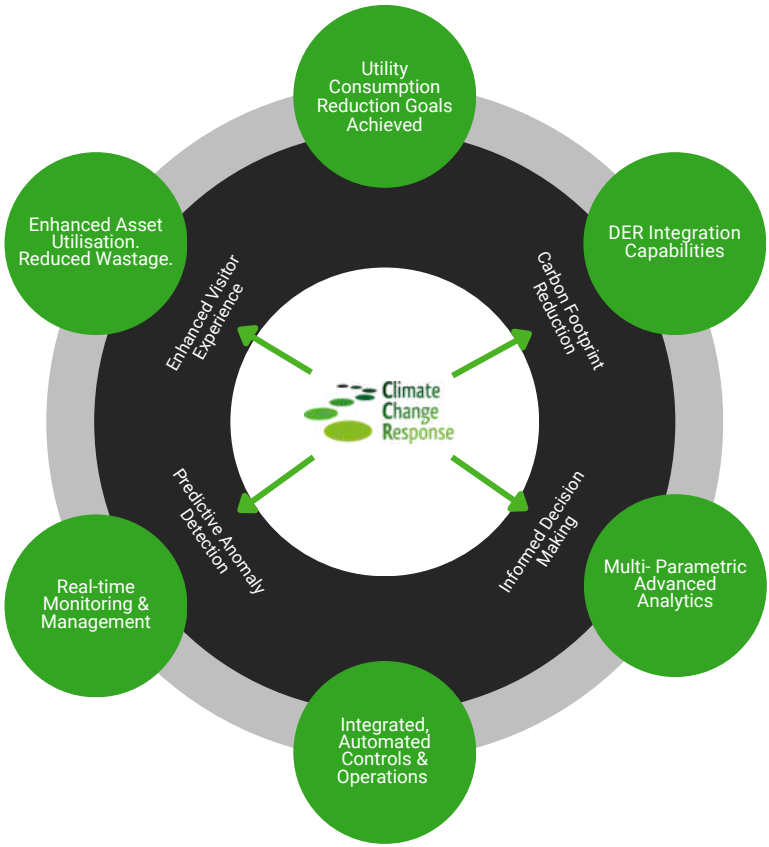
The decision to engage CCR to enhance energy efficiency has had a profound impact on the breweries. The implementation of the Energy Management System (EMS) has been a game-changer.

- The EMS, with its automated real-time data collection, predictive maintenance, and smart notifications, has delivered substantial reductions in energy consumption and bills, significantly benefiting the investors and management.

- This project aligns with CCR's and the breweries' commitment to sustainability, promoting better energy efficiency and cost-effectiveness while setting an example for responsible corporate citizenship.

Future Scope:

The EMS system's versatility extends beyond energy monitoring. It has the potential for broader applications, including air quality, temperature control, ambience management, and visitor comfort and security. This expansion enhances its value to our brewery and potentially opens doors to innovative applications in the future.



Testimonials

Brewery Manager:
"The decision to work with CCR and implement the EMS has been transformative. Our energy consumption and bills have seen remarkable reductions. It's been a win-win for our brewery."

Brewery Owner:
"As the owner of the brewery, I couldn't be prouder of our decision to partner with CCR on this transformative project. The Energy Management System (EMS) has not only delivered substantial cost savings but also aligned perfectly with our vision of a more sustainable and efficient operation. It's an investment in both our company's future and our commitment to environmental responsibility."