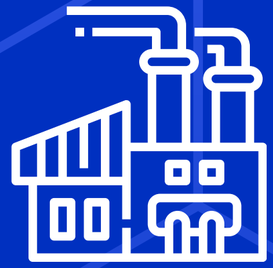
GS Renewable

Case Study

Dairy Processing Industry



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Industry Challenges

01

SUSTAINABILITY AND ENVIRONMENTAL CONCERNS

There is increasing pressure on the dairy industry to adopt sustainable practices, reduce carbon emissions, and address environmental concerns. Balancing the need for increased production with sustainable and eco-friendly practices can be challenging. Meeting consumer expectations for environmentally conscious products may also involve significant investments in technology and infrastructure.

02

MARKET VOLATILITY VS. BOTTOM LINE

The dairy industry is often influenced by market fluctuations, including changes in global demand, commodity prices, and trade policies. Fluctuating milk prices can impact the profitability of dairy manufacturers, making it challenging to plan and invest in long-term strategies.

03

REGULATORY COMPLIANCE

Dairy manufacturers need to adhere to various regulations related to food safety, quality, and environmental sustainability. Keeping up with evolving regulatory standards and ensuring compliance can be a significant challenge. Changes in regulations or the introduction of new standards may require adjustments in production processes and supply chain practices.

CASE STUDY | Dairy Processing

Client Profile

The client is an international dairy export company with an annual revenue of €700,000,000. The client focuses on various aspects of the dairy industry, including cheese production, nutrition and flavourings.
The location of the production facility is 50KM to the closest city in Ireland.

The client, with established sustainability commitments, seeks to eliminate the usage of liquefied natural gas (LNG) entirely within their production facility. The intricacies of their processes, which involve diverse temperature requirements for heating, cooling, hot water, and steam, have posed challenges in identifying a suitable solution. The client is actively exploring options that not only contribute to significant operational cost savings but also effectively address the pressing challenges associated with climate change.

The ever-increasing pressure on organizations to disclose their carbon emissions across operations, driven by stakeholders ranging from consumers to regulatory authorities, particularly under initiatives like the Corporate Social Responsibility Directive (CSRD) introduced by the European Union, underscores the imperative for transparency in reporting not only carbon output but also the decarbonisation process.

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CLIENTS OBJECTIVES

01

DECARBONISE OPERATIONS

The production site includes operations for processing milk into various products, such as cheese, whey proteins and nutritional ingredients. As such, the client's requirement is to decarbonise its production operations **that demand multiple temperature requirements. in heating / cooling / hot water and steam.**

02

CARBON CREDIT

The client needs to earn carbon credits, as part of the company objective to demonstrate its commitment to reducing greenhouse gas emissions and minimising its overall carbon footprint. This aligns with global efforts to combat climate change and showcases client's dedication to environmentally responsible practices.

03

COST EFFICIENCY

The facility's remote location presents a challenge for traditional construction methodologies. As a result, the client is proactively exploring decarbonisation solutions for its operations without incurring unnecessary additional project costs.

04

MINIMISE OPERATIONAL DISTURBANCE

The production facility, operational for approximately 310-320 days annually, necessitates the seamless integration of a decarbonisation solution that minimises operational disruption, aligning with the client's commitment to maintaining uninterrupted high-demand production schedules.

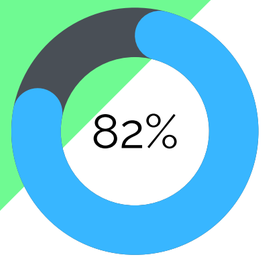
CASE STUDY | Dairy Processing

GS Renewable Solution

Implementing 2 Bespoke Modular Heat Pump Plant Room for client site's production facility.

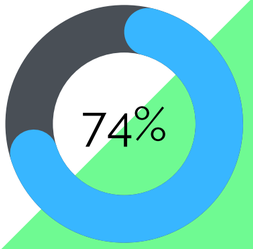
PERFORMANCE METRICS

CARBON REDUCTION



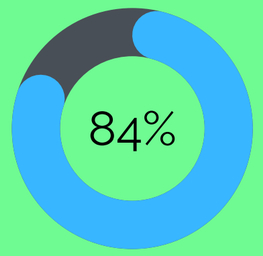
Existing System - 36,000 tonnes / year
New System - 6,000 tonnes / year

OPEX REDUCTION



Existing System - €20M / year
New System - €5M / year

PRIMARY ENERGY REDUCTION



Existing System - 173,000 (MWh / year)
New System - 27,900 (MWh / year)

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DESIGN CONSULTATION

Based on the consultation process, GS Renewable met client's objectives by designing a modular solution that entails the installation of two Bespoke Modular Heat Pump Plant Rooms. This initiative aligns with the client's aspiration to transition out of its existing production systems ran on LNG to an environmentally friendly and sustainable alternative while maintaining its production quality and output levels.

TECHNICAL SOLUTION

Bespoke Heat Pump Plant Room no.1.

- Supply a new permeate cooling heat exchanger which will be installed in parallel to the existing system.
- Replacement of 4 existing compressors to produce 2°C cooling water and produce 90°C process water.
- Supplement 1 existing compressor to recover waste heat which is currently going to the cooling tower and to produce 90°C process water.

Bespoke Heat Pump Plant Room no.2

- Supply 150°C steam for use in high temperature processes throughout the site.

INTEGRATED CONTROLS AND MONITORING

Both PR-2 Heat Pump Plant Rooms will have integrated machine-learning controls and monitoring system to ensure performance of the plant rooms are continuously optimised with regular service maintenance.

"Before working with GS Renewable, I had consulted with nine other heat pump specialists and was left convinced that heat pumps weren't a feasible option for my site. However, GS Renewable changed my perspective entirely, proving that heat pumps can indeed be a viable solution. I'm grateful for their expertise and innovative approach."

Dairy Processing Company,

Engineering Manager