SEEPEX.
An Ingersoll Rand Business

FLOW RATE MORE THAN DOUBLED

APPLICATION DETAILS

- Transfer of a shear-sensitive dairy product: buttermilk with a dry solids content of 5 %

KEY SPECIFICATIONS

- Low shear gentle pumping of sensitive products
- Minimal pulsation flow for smooth and constant flow
- Residue-free Clean-In-Place (CIP), thereby avoiding dismantling equipment for cleaning out of place (COP)

BACKGROUND

Clóna Fresh Milk was founded in Cork, Ireland, back in 1919. Fresh milk was originally carted by hand from Hurley Farm to the dairy in town. Today, the company is known as Clóna Dairy Products Ltd. and is a major supplier of liquid dairy products, including milk, whipped cream and buttermilk.

Buttermilk is a high-value fermented milk by-product of the dairy industry, with a refreshing sour taste and which is highly popular in Ireland for baking scones and pancakes. Its microbiological structure makes it delicate and prone to damage from whipping or churning.

TASK AND TARGET

Clóna Dairy was seeking to double its production output. The dairy had been using gravity to fill the bottling machine from a large tank. Due to the viscosity of buttermilk and the existing pipeline, the flow rate dropped when the level in the tank decreased, limiting the flow to approx. 2m³/h, which was insufficient to meet the desired increase in production.

The technical specification was to increase throughput to meet the newly required production output while handling a shear-sensitive and viscous product without compromising its quality, and meeting stringent hygienic requirements.

Residue-free cleaning of plant components is vital for dairy producers.

QUALITY MAINTAINED. FLOWRATE INCREASED.

SEEPEX PRODUCTS

- Pump type CS, range BCSO
- Conveying capacity: 5.30 m³/h
- Pressure: 2 bar

SOLUTION

The choice of pump technology is important and has a direct impact on the integrity and quality of the product. For instance, other rotatory positive displacement pumps have a running clearance between the rotors and the casing creating slippage and pulsation, which have a direct effect on shear. Progressive cavity pumps have an interference fit between the pumping elements (rotor and stator) thereby reducing slippage and conveying with a smooth and constant flow, making them the ideal choice for handling shear-sensitive products.

SEEPEX recommended a progressive cavity pump from their BCSO range, which has a low-shear pumping action and is fitted with a Clean-In-Place (CIP) connection. It is capable of safely handling the buttermilk's delicate microbiological structure with its 5% dry matter content, while delivering 165 % of the initial flow rate with a constant flow irrespective of the level in the storage tank.

The BCSO pump range meets high hygienic requirements with open aseptic universal joints which ensure residue-free cleaning with CIP. The pump range is 3-A Sanitary Standards (USA) certified and designed in compliance with EHEDG directives.

RESULTS

The SEEPEX pump solution exceeded Clóna Dairy's requirements. The production flow rate was more than doubled from two to more than five cubic meters per hour, with a pump speed less than 200 rpm, ensuring steady and reliable operation while incurring minimal maintenance. All with a quick return on investment within less than twelve months.

"The choice of pump technology has a direct impact on the integrity and quality of the product. Progressive cavity pumps are the best choice for handling shear-sensitive products", resumes Ger Cummins, Technical Sales Ireland, SEEPEX UK Ltd.

BENEFITS

- 165 % increase in production flow rate
- Product quality and texture are maintained
- ROI within 12 months