Industry: **Food & Drink /// Dairy**
Products Used: **Drives /// PLCs /// HMIs**

Mitsubishi drives down dairy's energy bill

The power requirement for the water management system at Milklink dairy has been reduced by up to 173kW per hour, giving a pay back period of only 19 months for the entire system, based on a new control solution from Mitsubishi Electric.

The engineering team at Milklink's dairy in Crediton, Devon, prides itself on constantly improving efficiency. Their latest energy saving project involving the site's water management system, has shown what careful planning and implementation can achieve.

The site has its own two bore holes that can produce all their water requirements, but can also connect onto mains water if required. Water is an essential commodity at the dairy and is used for a host of water services such as wash downs, cooling etc. The water is softened before use to avoid leaving any residue on the production surfaces.
The old water control system had inherent problems such as water wastage due to leaks, lack of capacity to meet new production demands (the dairy produces 2 million litres of UHT milk per week) and high energy expenditure.

After careful examination of the shortfalls of the old system, Ken Mason, Electrical Systems Manager for the Dairy and his team, put the plans for their new water management solution into practice based around Mitsubishi Electric's latest energy saving Variable Speed Drives (VSDs).

Application story first released 2003 by Mitsubishi Electric UK

Ken stated "The objective of the project was to simplify the operation of the system, save energy and operating costs, reduce downtime, reduce water wastage, improve leak detection and to be as environmentally friendly as possible". Firstly they installed two new raw water silos (69k litres each), a soft-water silo with 145k litres capacity and replaced the entire water supply piping. The new storage tanks capacities allow the stored water to match all the production requirements, with the tanks being constantly topped up when required.

To improve the pumping of the water around the entire site and to achieve controlled measurement and control to pumping requirements, Milklink used Mitsubishi's F540 drives and a Q series PLC to control the whole operation.
The pumps motors are now down from 15kW to 7.5kW because of the drives controlled starting. Using the F540's Advanced Flux Optimisation technology means extra energy savings can be achieved as the drives ramp down the voltage when the load reduces. 'Flux Optimisation' works by calculating and controlling the voltage applied to the motor, so that the motor is working at its maximum efficiency the whole time, using the least possible power.

> **"Using the latest energy saving drives from Mitsubishi allows us to not only save running costs, but to down rate the pump motors considerably, saving material costs."**
>
> John Bater

Connected to the PLC is a Mitsubishi E700 HMI which is used as the operator interface. From the interactive HMI screens the operator can change any of the PID control values and settings for any of the pumps and, if required, manually override any elements of the automatic water control system.

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