

Mitsubishi Electric e-series chiller provides high efficiency process cooling for bulk milk cooling tank, even on seasonal part load.



Project Info

Application

Annandale Dairy Farm

Location

Tunbridge, Tas.

The Team

HVAC Contractor

Superheat Pty. Ltd.

The Challenge

In a dairy farm's cooling process after the milking, it is critical to maintain the bulk tank's milk temperature to the industry standard, generally between 4°C and 6°C.

It was strongly requested to operate the dairy more effectively to reduce operating costs. Seasonal production variations would require that the chiller system to operate efficiently across the load where the dairy can operate anywhere from 30- 300 cows. Also the provision for redundancy was critical in this application. It was time for an updated chiller system.

The isolated location of the farm would require remote monitoring and control of the system.

The Solution

Mitsubishi Electric EACV-P900YA-N modular e-series chiller provided the ideal solution for the main chiller unit.

The e-series offer both high rated and seasonal efficiency with the use of inverter compressors ensuring optimum operation according to the operation load.

The e-series also has both wide range of water and operating ambient temperature making it ideal for an efficient process cooling applications.

For control, the Modbus connection with the Procon MelcoBEMS MINI (A1M) Protocol Converter provides high level controls to monitor the e-series chiller. Given the farms remote location, this means that the chiller can be monitored and controlled by the service provider located many kilometres away. The e-series chiller provides an effective solution providing automated control, reliability and redundancy in a simple to configure system.

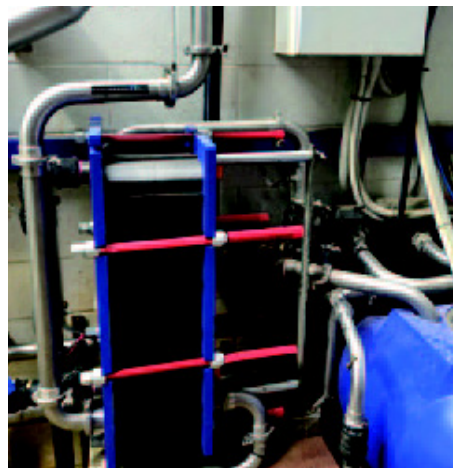


Plate heat exchanger

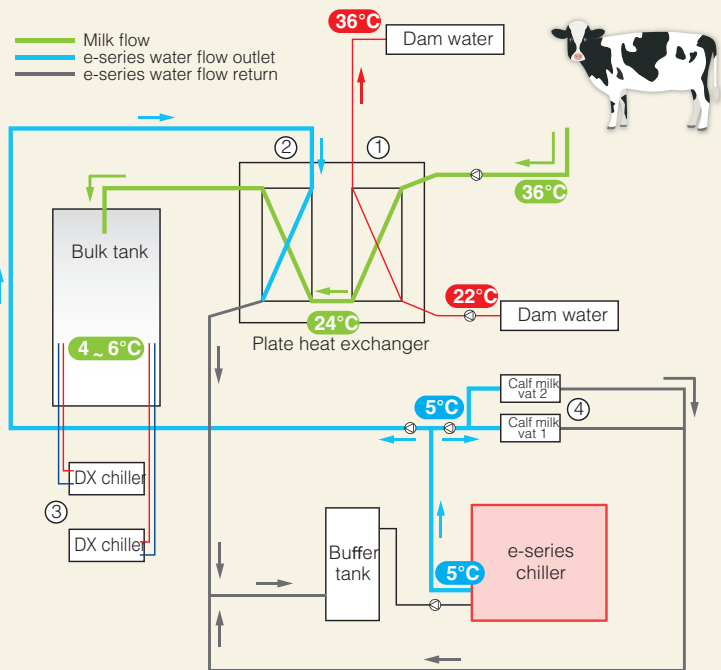


Bulk tank and DX chiller

System Design

The chiller is coupled to a plate heat exchanger supplied chilled milk to the vat.

- ① The milk is initially chilled through an economy cycle from dam water.
- ② The milk then passes through the second stage where it is chilled with an ethylene glycol mix from the e-series chiller which enables to supply milk into the vat at 5°C.
- ③ The once overworked milk vat DX chiller units, previously required to pull the entering milk temperature down are now just used to maintain the storage milk temperature.
- ④ Additionally, the e-series chiller can be diverted to two smaller vats for calf milk production.



e-series chiller, buffer tank and calf milk vat 1 & 2

UNIT INFORMATION



Outdoor Units

EACV-P900YA-N air-source cooling only chiller x 1



Interfaces

Procon MelcoBEMS MINI x 1