Maffra Dairy – SHW

Site:
Tinamba, Gippsland, Victoria

Dates:
- System Design: (from) April 2006
- System Installation: January 2007
- System Commissioned: January 2007

Client:
Maffra Cheese Company

The Maffra Cheese factory is located on a dairy farm in the heart of Gippsland's dairying country.

Owned and run by Ferial Zekiman, Maffra Cheese Company has a reputation in the food service industry for producing some of Australia's best Cheddar. Maffra's *Aged Rinded Cheddar* joined the honours list in 2002, winning the coveted 'Champion Cheddar Cheese' in the Australian Grand Dairy Awards.

Using fresh milk provided by the farm's Holstein Friesians, Maffra's cheeses are handmade to traditional methods and carefully matured to their optimal age. The process is modelled on the very early Australian cheddar plants. It is one of a few of its kind remaining.

Ferial expressed a strong commitment to renewable energy and the need to reduce greenhouse gas production.

Project Goals:
Design of a commercial solar hot water system to offset energy loads and greenhouse gases at a dairy in Gippsland milking 250 cows.

Project Features:
The system consists of:
- 12 X Beasley Enduro SP200 collectors.
- Flat roof 3 panel frame 25 degree to suit.
- 3 X 315L Beasley Centurion stainless steel tanks.
- Rinnai HD200e LPG gas booster.
- UP20-60B circulating pump, sensors and install kits.

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SHW Panels on Roof

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Side View of SHW Panels

Rear View of SHW Panels

Case Studies

The system provides 85 degree water (70 degree temperature rise).

Each 1000L of water requires 81.5 kWh (293 MJ) of energy to heat to 85 degrees. Each MJ of LPG costs approximately 4 cents.

Solar input expected to be an average of 72 kWh (260MJ) per day for a hot water consumption of 945L per day or more – $10.40 saving in LPG per day.

The cheese making process involves pasteurising the milk, cooling down, adding starters, ripening and adding rennet to set the milk. There are significant hot water requirements for these processes and so an opportunity to provide a proportion of the energy required by solar thermal panels.

Maffra Cheese Company previously used off-peak electricity to heat up the 800L of hot water required for the milking process and a gas boiler system for the pasteurisation process.

The system is designed to pre-heat the water required for the milking process with an inline LPG gas booster used to provide the additional temperature increase required.

The dairy industry is significant in Victoria with many opportunities to reduce greenhouse gases. This is the case both at the farm level (where hot water is needed for the wash downs and power is needed for the machinery) and during the food processing.

Project Team:

- Stephen Ingrouille, Principal, Going Solar
- Rob McQueeney, System Designer, Going Solar
- Matt Partridge, Plumber
- Darren Bride, Plumber

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SHW Panels on Roof

Storage Tanks

LPG Gas Booster