

Powering into the future with solar

Environmental management case study

Summary

- With the growing dairy business and power needs, Jelbart Dairy faced ongoing issues with the grid power system. It was impacting the operation's ability to efficiently run its dairy shed and milk cooling system.
- To reduce these issues, the Jelbarts researched a solar system that would allow them to utilise renewable energy in their business with a simple working system.

Jelbart Dairy has installed the new systems. The benefits observed so far include:

- A reduction in power costs.
- Consistent and reliable power supply (including for the neighbours).
- Increased life of motors and pumps.
- Reduced risk associated with third party power supply.
- A step closer to carbon neutrality.

"We didn't want to just have solar – we knew it had to be something".

Tim Jelbart – Leongatha

FARM SNAPSHOT – JELBART DAIRY

Brothers Tim, Will and George Jelbart are the owners of Jelbart Dairy, Leongatha South in Gippsland, Victoria

The dairy business has been in the Jelbart family for over 30 years, with the Jelbart brothers growing up on the family's dairy farm. Their parents Max and Barbe Jelbart started dairy farming on 110 hectares (ha) with 127 cows and, over time, built the business up to what it is today.

Farm features

- The property consists of 870 hectares (ha) with a milking platform of 360 ha. The remainder is used for rearing young stock.
- The farm employs almost 20 employees and runs 1,100 Holstein cows that produce almost nine million litres of milk per year.
- One aim is to reduce the number of bull calves produced each year. To achieve this, the business uses genomics and sexed semen to maximise the number of quality heifer calves produced.

- Over 1,000 young stock are raised on the property either as replacement stock or livestock sales.

Business purpose

Jelbart Dairy has a vision to be a sustainable business that can survive variable conditions while remaining profitable and efficient. It is important for the brothers that everyone involved with the farm has a strong sense of purpose.

The Jelbarts carefully assess the value and cost of each major decision so it is in line with the direction of the business. The team is involved in regular discussions to ensure they feel included. They know they need to be flexible and adaptable to meet the changing environment and needs of the team.

"As a community leader, we are trying to facilitate clean, green milk. We are now part way there because we are not fully reliant on grid power".

Practice change

Issues identified

- 1 As the business has grown, power consumption has increased to approximately 270,000 kW per year.
- 2 The main power supply to the dairy shed is SWER (Single Earth Wire Return), two-phase and 480 volts.
- 3 This power supply was not adequate to effectively run the dairy shed twice a day, which included:
 - milking platform and machines
 - milk cooling
 - operation of the grain mill.
- 4 Lack of power caused problems for years including fuses blowing and fluctuations in power supply. To deal with these issues during peak power usage (milking times), the Jelbarts would turn various equipment on and off to avoid fuses blowing. They also installed interlocking technology to allow different things to be blocked during milking.
- 5 The life of pumps and motors was reduced due to the variations in the power supply.
- 6 Other power users in the area also experienced fluctuations in supply when the Jelbarts were drawing on extra power during milking times.
- 7 Mains power outages created further issues with a reliance on the limited supply from diesel generators.
- 8 Their milk chiller system would not work effectively during power outages.
- 9 Energy provider AusNet requested the Jelbarts reduce their power consumption.

Changes made

- 1 Tim Jelbart took his time to research the various solar systems that might suit their business needs.
- 2 When looking at a renewable system, the main goals were to find a system:
 - that worked!
 - not just solar – knew they would need batteries too
 - that was relatively simple to use
 - enabled them to use the power without exporting it
 - remove the fluctuations and supply the power required when they needed it.
- 3 In 2021, the Jelbarts installed a REDEI Renewable Energy System with solar energy now being the primary source of power.
- 4 The Team at REDEI worked with the Jelbarts to design and install a system that would meet their energy supply and storage needs without needing to export energy.
- 5 During the day, the solar system feeds into the batteries, which allows energy to be stored for use when solar isn't available.
- 6 A PLC (programmable logic controller) is set up in the dairy so that loads can be shifted according to solar power availability.
- 7 The milk cooling system works using 90,000 litres of water (at 3-4 degrees Celsius) that can be chilled during the day using solar energy.
- 8 The power supply is consistent and seamless to the point where the team are unaware of what the power source is at any time.





Benefits of the change

- The installed solar system has allowed the Jelbarts to lock in, regulate and steady the voltage without the requirement to export.
- Power is consistent with no fluctuations allowing the business to run more effectively.
- The life of pumps and motors has been increased with reduce costs on repairs and maintenance.
- Negative impacts to other power users in the areas have been removed.
- Financial benefits include reduced power costs, reduced repairs and maintenance.
- Power outages don't impact their operations. Milk cooling is no longer an issue.
- Power is no longer a constraining factor for future farm project and growth options.
- A step in the direction of becoming carbon neutral.
- Jelbart Dairy as a community leader, is now able to facilitate the production and promotion of clean green milk.

The future

- Planning for upgrades to motors to allow for more efficient operations.
- Potential to install a deployable solar pumping system for their water – which may reduce existing diesel pumping costs.
- Continue to de-risk the business to maintain long term stability and resilience.

FOR FURTHER INFORMATION

Contact Dairy Australia Climate and Energy Lead at elissa.mcnamara@dairyaustralia.com.au

Scan the QR code for information about Dairy Australia's environmental programs.

