

New technology for energy efficient cooling

Mitchell is a small service town (population <1000) servicing landholders in the Western Downs district of South West Queensland, about 600kms west of Brisbane.

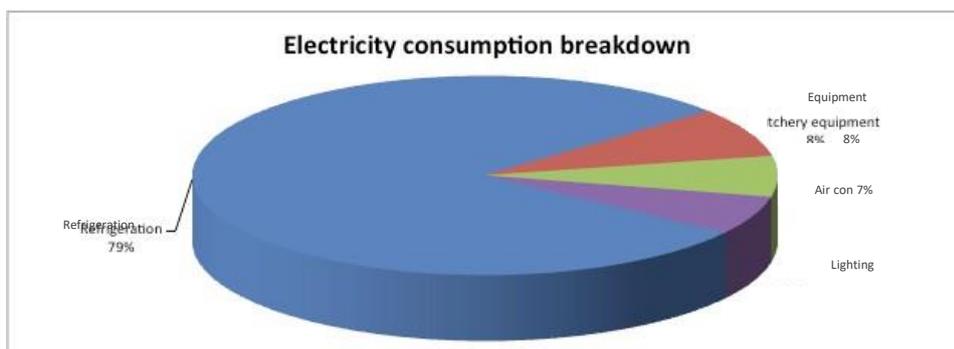
Mitchell business owners were offered a Level Two energy audit to gather information on the typical energy use by their business and to gain an understanding of potential energy efficiency opportunities across the project area while identifying and managing any barriers to implementation.

Opportunities

The owner of the Mitchell Butchery, Mr Jeff Lawson, was keen to participate in the audit activity and implement improvements where possible.

The annual electricity consumption of 64,000kWh breakdown from highest to lowest included refrigeration, business equipment, air conditioning and lighting.

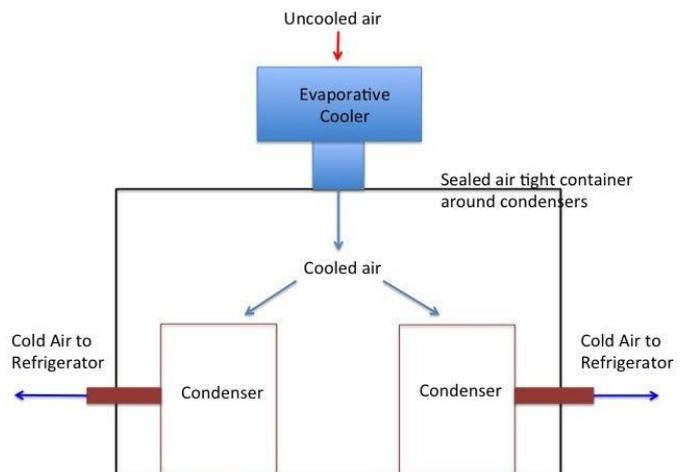
The Mitchell Butchery has relatively high electricity requirements primarily due to refrigeration costs.



The audit identified that significant reduction in electricity consumption for the business could be achieved with the implementation of an innovative technology solution that reduces condenser losses.

Reducing condenser losses

Most of the energy used in a refrigeration system is used by the compressor, which generally consumes between 80% and 98% of the system's total energy use. In a climatically dry area, such as Mitchell, there is the opportunity to provide pre-cooling to the air stream going through to the condenser (air conditioning/cooling/refrigeration unit) using an evaporative cooling unit. Cooler air entering the condenser will ensure the refrigeration effect is achieved with significantly less energy use. Putting this measure in place will save energy. A reduction of 1o C in the temperature of the incoming air to a condenser reduces the energy used by the condenser by two to four percent.



The implementation of this innovation could achieve energy savings of 3500kWh to 4000kWh per year (4 tonnes CO2 emissions) resulting in a payback period of less than five years.

Measures Implemented

Initial discussions with Mr Lawson identified that electricity costs have steadily increased over the years with a significant impact on the business' cash-flow. After examining the audit results and discussing the results with Mr Lawson, it was revealed that while interest in implementing the recommended action was high, he was not in a financial position to do so.

The Queensland Murray-Darling Committee Energy Efficiency project team is able to provide assistance to Mr Lawson in order to implement the new innovative "Condenser Loss Reduction" technology to improve refrigeration condenser energy efficiency.

The opportunity for this project to facilitate a trial of an innovative and potentially highly cost effective energy efficiency solution for the wider Australian business community will be an environmentally-friendly outcome and will encourage others to follow suit.



Above: The Mitchell Butchery