

REFRIGERATION ENERGY INITIATIVES

Woolworths is an Australian chain of supermarkets and grocery stores owned by Woolworths Group. Founded in 1924, Woolworths today is Australia's biggest supermarket chain with close to 1,100 stores Australia-wide.

OVERVIEW

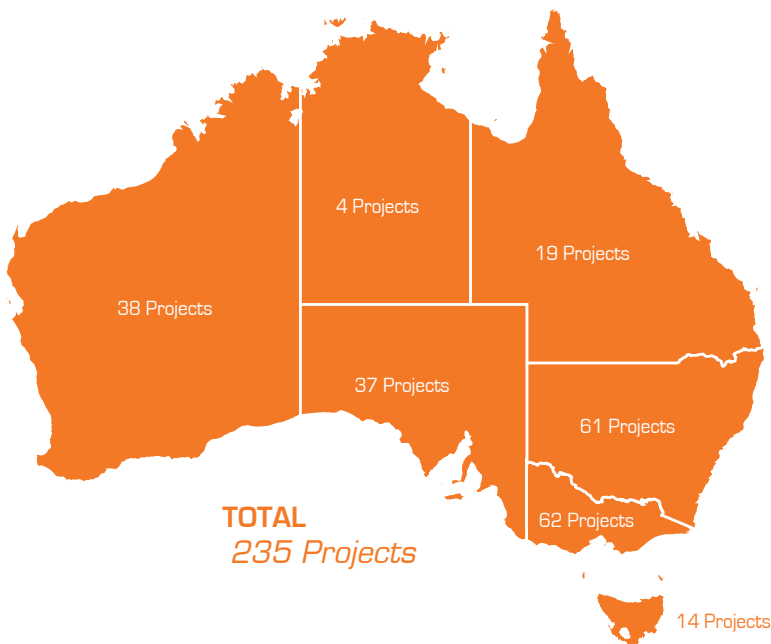
Refrigeration equipment on average accounts for 50% of a typical supermarket's total electrical energy consumption. All refrigerated fixtures are business critical infrastructure to any supermarket's operational and sales ability. As such, the equipment needs to be optimised with accuracy and precision to ensure continuous operation and efficiency without compromise to product temperature. In consultation with the Woolworths Energy Management Centre, critical elements of the refrigeration plant were identified as high in energy consumption and an engineered solution was developed. A big fleet of stores needs a large amount of energy to drive it, so capturing every opportunity is crucial.

SOLUTION

- **REFRIGERATION CONDENSER FAN UPGRADES** Upgrading the refrigeration condenser fans using variable speed drive (VSD) technology and reworking the control strategy to optimise energy efficiency. By utilising variable capacity control, as opposed to staged control, the condenser fan motors now take full advantage of the varying ambient conditions and avoid unwanted motor inrush currents.
- **REFRIGERATION COMPRESSOR CAPACITY CONTROL UPGRADES** Using VSD and digital compressor control technology, seamlessly integrated into the existing plant design and construction. Enhanced compressor control strategies were implemented, whilst always keeping within the original equipment manufacturers design envelopes.
- **REFRIGERATION PLANT COMMISSIONING** The refrigeration plant in a typical supermarket is a big system with a lot of moving parts and complex control strategies. Recommissioning of stores ensured Woolworths could set the energy base loads across their nation-wide fleet of stores with optimal performance. Calibration of new and existing sensors for improved system readouts for better data analytics capability through Woolworths' Energy Management Centre. All accomplished without disruption to sales equipment and trade.
- **ANTI-CONDENSATE CONTROL** Just like a cold drink will sweat on a hot summers day, the glass doors of freezers sweat if the doors aren't heated to above the space dew point. By optimising their control, the heaters won't run any more than necessary.

- 12,998,000 kWh**
Energy savings per annum
- 8,531,887 kg**
CO₂ reduction per annum
- 2,816**
Houses powered per annum
- 42,659**
Trees offset per annum
- Circa 3 years**
Return on investment

* Based on projects delivered by SEDAC Energy Management only



BENEFITS

Depending on your electricity tariff (e.g. \$0.15/kWh), a 1,000,000 kWh reduction would equate to as much as \$150,000 saved per annum!

Total annual energy costs to operate a supermarket are usually equivalent to net profit: both are between 1 and 2% of sales. Therefore, a 10% reduction in energy costs can increase net profit by as much as 16%. How much would that be worth to your business?



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