



Industry project for smarter energy use

Case Study: The Van Diemens Land Company, Tasmania

The Van Diemens Land Company (VDL) is the oldest continually operating company in Australia and currently owns and operates 23 large dairy farms in North West Tasmania, 11 of which are on the historic Woolnorth property.

VDL's Paul Niven said the company was concerned about rising energy costs, "we recognised that our energy costs were rising sharply so saw undertaking energy assessments as a way to take a close look at what was happening and what we could do to make positive change to the way we used energy in our dairies".

As part of the Dairy Australia project, VDL had energy assessments done on all their properties and Paul said this gave them a company wide perspective, "It was interesting to see all the farms individually and then to compare them to each other. This enabled us to find internal benchmarks and to identify common problem areas and energy saving opportunities".

The majority of the farms are 50 unit rotaries or larger, and the smallest are 32 unit herringbones. The smallest herd size is 350 and the largest is 1800, the average being 850. Most of the dairies were built in the 1990's, with two new large dairies being added in the last couple of years.

Cooling Systems

The energy assessments showed that 74% of the dairy plate coolers were not performing at their optimum level, and were consequently leaving more energy intensive work to be done by the refrigeration units.

The majority of the VDL farms have access to a valuable cool 15 degree bore water resource, which should ideally be able to take care of up to 60% of the total cooling duty with a properly sized and functioning plate cooler system. The assessment results estimated that ensuring all plate coolers are running optimally across VDL farms could save around 120,000 kWhrs per year, which would equate to a cost savings of a massive \$24,500 per year for the company.

As a result of the assessments, VDL have begun an investigation into the design size of the plate coolers and the current water flows through them, and also a comprehensive service and maintenance program. It is evident that on the older dairies the milk volumes have increased over time but the plate cooler sizes have remained the same, or if they have been upgraded then the water pumps supplying them may not have been.

Paul explains "we have started by implementing a regular back flushing program on the water side of our plate coolers to ensure they are always thoroughly clean, and then identified where we need to upgrade water flows, and also where we need to increase the plate cooler capacity. Now that we can see what each under-performing cooler is costing us we can prioritise our upgrades accordingly".



Vacuum Pumps

The assessments also highlighted how energy could be saved by installing variable speed drive (VSD) controlled vacuum pumps across the 16 farms which didn't yet have them.

Paul says "we decided that VSD driven pumps were an effective way for us to further reduce our power demand, especially given the larger pump sizes and longer operating times of many of our sheds. We anticipate savings in excess of 130,000 kWhrs and \$27,000 annually in energy costs when the roll out is eventually completed, with an estimated average payback period of around 4.5 years per dairy".



Energy Recovery Systems

The energy assessments also gave an indication of the savings potential of energy recovery systems to pre-heat the dairy hot water from the waste heat of the refrigeration systems. These units could be especially useful to increase hot water storage volumes in some sheds, enabling better use of the off peak power rates available.

Paul says "we can certainly see the value and benefit of these units, and that's why we have installed heat recovery systems in our new sheds. I envisage that as the cooling systems and hot water systems in the older sheds need replacing we will continue to include heat recovery units as a matter of course."

As a result of the on farm assessments, VDL identified the potential to further reduce energy consumption by an estimated 286,000 kWhrs per year across the 23 farms, with a potential cost saving of around \$34,000 per year.

"The exercise has been excellent assistance for us in establishing exactly where we were in terms of our energy use across our farms," says Paul.

"It has highlighted the areas where we needed to be focussing our both efforts and our capital, and I know that our people are now more aware of where their energy costs are accumulated."

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