

ELECTRICITY SAVINGS IN THE DAIRY SHED

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“With over 30 years working with the Dairy Industry it is disappointing to see no real move towards power conservation in the dairy sheds. We are using more power than ever but as most dairy suppliers have come through times when power companies were buying customers with cheap power offers, the economical payback time on any energy conservation equipment did not stack up. Power is no longer a cheap commodity and the dairy farmer must play his part to conserve electricity and look at the economics of any units that will save electricity, and therefore saving money on their farms.”(J. Hewson, Dan Cosgrove Ltd., personal communication, 2005.

Introduction

Energy efficiencies are means that result in producing the same or better levels of amenities (e.g. lighting, water heating, milk cooling etc.) using less energy. These processes are generally long lasting, save energy across different time periods **and saving money long-term**. Energy efficiency can be achieved through the use of energy efficient technology and energy wise management and offers a powerful tool for achieving sustainable development

Background

The dairying sector has the highest energy demand of all agricultural industries in New Zealand. In 2003 the New Zealand dairy farming industry used an estimated 4.30PJ of direct energy. This equates to some 30.71% of the 14.00PJ a year demanded by the New Zealand agricultural sector. Significantly the energy demand of the New Zealand agricultural sector has increased considerably in the last decade, by around 40%, much of this increase attributed to dairying.

The main direct energy inputs on dairy farms are electricity, liquid fuels (petrol and diesel) and the indirect energy embedded during the manufacture of fertilisers (Table 1). These three inputs account for approximately 80% of all energy inputs into the national average New Zealand dairy farm, 79% in the average non-irrigated dairy farm and 87% in the average irrigated dairy farm (Wells, 2001).

There are good opportunities to use energy more wisely within most dairying enterprises with the energy savings potential for the dairy farm estimated at 10-20% per kilogram of milksolid. Electricity use in the dairy shed is one of the main direct sources of energy inputs on dairy farms (CAE, 1996), and an area that has been identified as having a potential for making energy efficiency gains without interfering with the farmers vision of what they want to do with their farm.

Potential savings can be achieved through a variety of technologies and management practices in the areas of water heating, milk chilling (Figure 1), the milking machine, water reticulation within the shed and lighting with very little capital outlay and relatively quick payback periods.

Conclusion

- Dairy farmers who initiate pro-active energy management practices add real value to their businesses with every dollar saved on energy costs increasing profits directly by the same amount.
- Energy management is a low-risk tool that integrates both technical solutions and effective management decision making processes.
- There are good opportunities to use energy more wisely within most dairying enterprises in terms of water heating, milk chilling, the milking machine, water reticulation within the shed and lighting.

Table 1: **Breakdown of typical electricity use on a dairy farm**

System	Proportion
Water Heating	40 %
Milk Chilling	20 %
Vacuum pump and milking system	20 %
Water Pumping	10 %
Miscellaneous	10 %

(Source: CAE, 1996.)

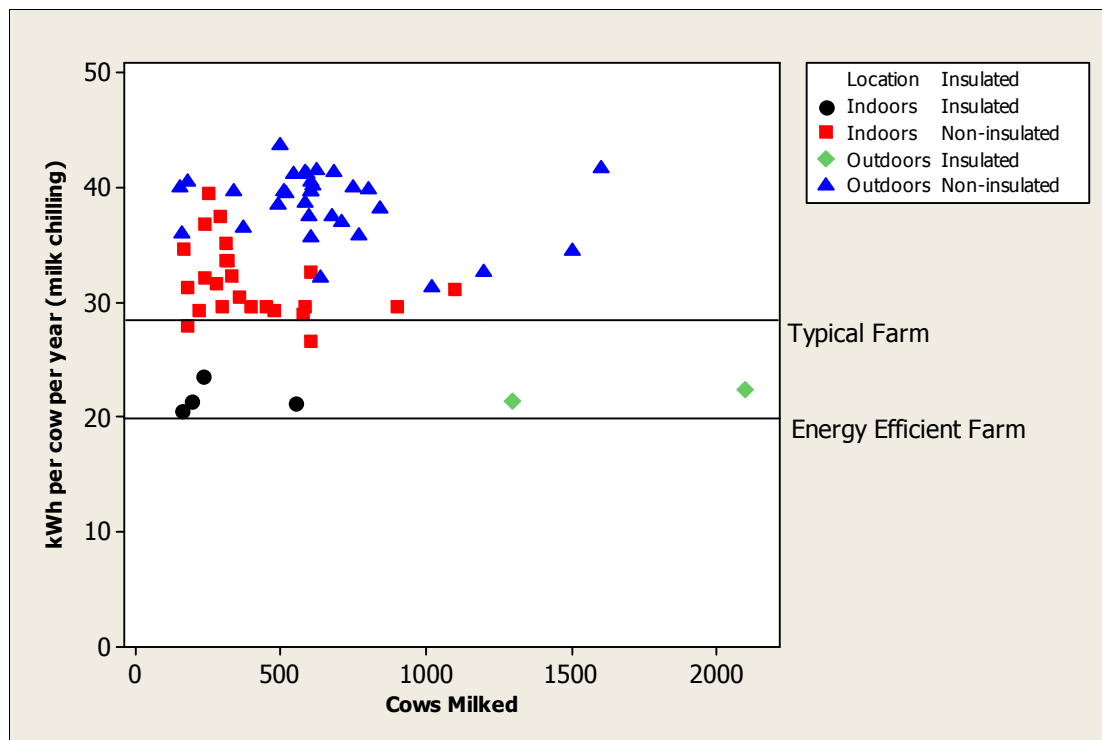


Figure 1: A comparison of insulated and non-insulated milk vats located both indoors and outdoors per kWh used per cow per year

References

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