MAKE SAVINGS WITH AN IRRIGATION ENERGY AUDIT

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A quick guide to Queensland’s Energy Saver program, which has conducted energy efficiency audits on 130 properties. The program includes an energy audit that examines power use on the farm and takes measurements of the most energy-intensive equipment. The final audit report helps farmers identify where they can make energy savings and other gains with their irrigation systems. It also includes a list of recommendations with costings the farmer can use to make investment and management decisions.

Big savings possible

Significant energy savings were identified in a recent audit of farm growing macadamias and sugar cane. Motor upgrades and the installation of variable speed drives were recommended for the irrigation system, resulting in reduced pumping costs of 16 per cent and 39 kW in demand savings. The capital cost was $22,000, which sounds significant, but the estimated payback period was only 15 months.

On another mixed horticulture farm the auditor compared upgrading an 18.5 kW centrifugal pump by either replacing it with a high efficiency model or retrofitting a variable speed drive. Both options offered around 50 per cent energy savings or nearly $4,000 per year with a payback period of two years. The project has given the grower the idea to increase the size of the pump with a variable speed drive to expand the farm!

On a Mareeba mixed horticulture farm, the auditor recommended reducing the size of the pump to pump water over a longer period as it was being transported up a hill to the irrigation blocks through a mains pipe that was too narrow to deliver the required water. As a result, the system was incurring high friction losses. By reducing the pump from 45 to 18 kW with a variable speed drive and increasing the pump time, the farm would cut pumping costs by $3,200 a year with a payback period of around four years. A 16 kW solar power system would save an additional $6,000 per year with a payback period of just over three years.
Tips for reducing water and energy costs

Over the 130 audits the Energy Savers team have identified five ways to reduce your water and electricity bills:

Tip 1 Know your energy and water use

Businesses that monitor their energy and water consumption end up paying less. Record your energy and water consumption and your production output at over time and work out how much energy and water you use per unit of output, e.g. kWh or ML/t. Check this regularly and compare it with other growers and set targets to reduce energy and water use.

Conduct a walk-around to look for wasted energy on site. Turn off appliances when they’re not needed. Dust equipment like motors, compressors, condensers and ducting. Check for leaks in compressed airlines ducting and cold rooms. Allow for smooth flow in irrigation systems: extra check valves, right-angles, “T” junctions and narrow pipes increase friction and mean that more energy is needed to pump the required amount of water.

Tip 2 Look for easy wins

Pumping water is a major cost on many farms and farmers have saved energy through water use efficiency projects. By optimising the amount of water applied to your crop, and delivering it the most efficient way, large energy and water savings can flow.

Tip 3 The right amount of water at the right time

Up to 80 per cent of the lifetime cost of a pump can be the energy bill after you buy it so think about the 10-year running cost rather than just the purchase price. Research to find out the most efficient models on the market so you can make a cost-effective decision if you need to act quickly.

Solar panels are proving to be cost effective where most of the energy can be used on site at the time it is generated. Solar hot water systems can be cost-effective and batteries and renewable technologies are improving and getting cheaper.

Tip 4 Plan for efficiency

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Tip 5 Consider renewables

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Find out more

The Energy Savers website includes case studies from farms that are reducing energy costs at www.qff.org.au/energysavers

The Energy Savers programs are being delivered by Ergon Energy in partnership with the Queensland Farmers’ Federation and are funded by the Queensland Government.

More Information

For more information on this topic visit the Australian macadamia industry website www.australianmacadamias.org/industry or contact the Industry Development Manager at the AMS on 1800 262 426.

This Macadamia Article first appeared in the Summer 2018 edition of the AMS News Bulletin.

The News Bulletin is partly funded by the macadamia research and development levy and contributions from the Australian Government.