

PUMPED

Powerful combination slashing thousands off grower's irrigation costs

by Wayne Griffin

A leap of faith with a local start-up has led to some significant savings for Burdekin cane grower, Eric Barbagallo.

The third-generation grower is combining the cost-saving power of high efficiency pumps with the generation power of solar, to slash thousands off his quarterly bills and embark on a long-term upgrade of his farm's irrigation network.

Farming 320 hectares at Fredericksfield, just south of Home Hill, Eric had been investigating ways to drive down crippling power bills, when a chance encounter with a local agronomist kick-started a process that he hopes will ultimately revolutionise his irrigation system.

"I had to go into town to meet the local productivity board and I bumped into Jayson Dowie from Farmacist," Eric said when *Australian Canegrower* visited his Burdekin cane farm recently.

"As I was walking in, Jayson was walking out and he asked me how my electricity bills were going.

"I said they were off the charts, as usual, and that I was about to cover my shed with solar panels to try bringing them down a bit.

"That's when he told me that he had a mate starting up a new irrigation consultancy business and would I mind if he brought him out to the farm for a chat."

That mate was Chris Doblo, founder of local consultancy firm, Irrigation Efficiency Solutions (IES).

Following an initial meeting, Eric agreed to let IES conduct an irrigation efficiency report on three of the farm's 27 pumps.

"When Chris came out to the farm, I told him that I wanted to put 100kws of solar panels on the shed and he said, 'hang on a second, before you start going crazy on solar how about we have a look around at your pump efficiencies and see what we find', Eric said.

"So, I just let him loose really and he did his thing on the farm. He came back to me and said, 'your pumps are terribly inefficient, but I've got access to this new type of motor that I think would make a big difference'. So, I just let him run with it."

The IES report found that two of the units tested could pump a combined total of 91 L/sec at a cost of \$76.83 per ML.

However, through the installation of more efficient pumps and variable rate drives, the flowrate could be increased to 92.3 L/sec at a significantly reduced cost of just \$44.87 per ML.

"The first trial investigated only replacing the motor on pump 1 with a variable speed drive and mapping the changes in costs per megalitre," Chris Doblo said.



Pictured: Burdekin cane grower Eric Barbagallo (right) and his son, Mark.

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"The optimal cost per ML was found to be \$23. This resulted in a 42% reduction in energy requirements, but the loss in flow was unacceptable – down to 25 L/sec.

"However, a 2 L/sec sacrifice - from 44 to 42 L/sec - saw a power saving of 32%, bringing the pumping cost down to \$27 per ML.

"It was made clear by the first trial that the correct pump had to be coupled with the motor."

The assessment of pump 2 showed the potential for even greater efficiencies and cost-savings.

"Pump 2 was the best site to retrofit a pump that would be better suited to the site," Chris said.

IES calculated the new system would increase the flowrate by 7%, up to 50.3 L/sec, at a reduced cost per megalitre

of just \$17.87 - an efficiency improvement of 52%.

"By addressing the inefficiencies of the pumps and lowering Eric's load profile we were also able to reduce his solar requirements by 63%," Chris said.

"Eric then used that saving on his solar outlay to offset the outlay on his 24hr solution. This was by far the best investment for his farm.

"It showed a complete return on investment after pumping just 2000 megalitres."

So far, Eric has upgraded one pump, with work on a second already underway and a third upgrade in the pipeline.

While his long-term goal is to modernise all of the farm's pumps, at roughly \$50,000 a time, it's not a cheap exercise.

However, thanks to significant savings per ML, he expects each

upgrade will pay for itself in as little as four years - possibly faster, when the cost savings generated through his 40kw solar system and the snowball effect of previously upgraded pumps are factored in.

"The solar used to run one and a half old pumps, but will run three of the new pumps," Eric said.

"I've really learned how to utilise the solar better. Once the cane is big enough, I pump more in the daytime. When it's small you can't really pump in the day because the evaporation kills you, but when you've got that canopy closure the evaporation isn't a problem.

"Solar gives you about six good hours a day. It'll start working at 7.30 in the morning but won't reach full power until about 10. Then you get to about 3.30 or 4 in the afternoon before it will start waning again.

"So, it's great when it's going at full power, but that's only for a short time each day. On the other hand, if you've got a pump that runs efficiently 24 hours a day, then you can save money day or night."

Eric has already noticed a reduction in his power bills, a trend that will only pick up pace as more upgraded pumps come online and he increases the size of his solar system.

"The bills are significantly reduced. Say you pump 4ML a day - on the old pump that was costing \$160 a day. With the new pump, straight away it drops down to around \$80. Then when you factor in the six hours of solar, it drops even further, to about \$60 a day," he said.

"The biggest bang for your buck definitely comes from the efficient pump, but the solar kicks in that little bit extra, so together

they can really get you some significant savings."

Amazed by the cost-savings he has achieved with IES, Eric is encouraging growers who want to cut costs to seek out efficiencies in their own irrigation systems.

"Chris and Jim from IES are the nicest guys in the world and they don't push a particular product. They just work out what is the most efficient system for your farm and that's what they'll recommend.

"The whole process has been really enlightening for me. I'd definitely encourage other growers who are struggling with power costs to look into what efficiencies they can achieve." ■

Burdekin grower Eric Barbagallo is upgrading his farm's irrigation system with the help of IES consultants Chris Doblo and James Webb.