



Steve Attard, AgriTech Solutions, discusses the automation with Aaron Linton.

Automation: **110** fewer hours per year sitting in the ute

Automation of furrow irrigation has allowed Aaron Linton to better balance a busy business and family life with farming – and also deliver productivity and efficiency.

Burdekin farmer Aaron Linton had already seen the benefits of irrigation automation from the work he had done installing a drip system at his Leichhardt farm.

So when the opportunity arose to expand the automation to his furrow irrigation on the same farm, he jumped at the opportunity.

This came about through an SRA-funded project led by the University of Southern Queensland and the National Centre for Engineering in Agriculture, with input from AgriTech Solutions and Burdekin Productivity Services (BPS).

Through the project, Aaron automated 11 irrigation sets over 53 hectares, with water delivered via pump direct from the river. The drip on the rest of the farm was already automated.

The property is 35km from Aaron's home, and with a young family and a hire business on the go, the benefits of the automation were immediate.

"Even if I save three trips per week, this equates to 11,000 km per year, and in reality I was saving a lot more than that without even fully realising it," Aaron said.

"That equates to about 110 hours or a whole month of work for someone in a government job, so that is a lot of time that I can spend on other businesses, my family, my own time, or being able to sleep at night."

He also sees that there will be productivity improvements through yield, which he will only be able to quantify after using the automation for a few more years.

He has learnt that he was often not applying sufficient water for his cane at peak times, which he is rectifying through pulse irrigation.

This involves irrigating one poor soaking set for an hour, changing to a second set for an hour, changing to a third set with better soakage for four hours, and then switching back to the first blocks for another hour each. This appears to be improving the wetting and infiltration on these blocks. "Without the automation you just could not physically do it. Even if you lived on site, it would be a huge job," he said.

He is also able to take advantage of specific cheaper irrigation tariffs, something he said was increasingly important as electricity prices continued to increase year-on-year.

He was previously on a day/night tariff (tariff 65), whereas now he has switched to a weekend tariff (tariff 62) to use the cheaper off-peak hours.

“That of course means irrigating all weekend, but with a young family, that just wasn’t possible before. Now I use the iPad to set up the program and off it goes. If there is problem, it emails me and I can be anywhere, so long as I have internet reception.”

To establish the automation, pump controllers have been installed on both pumps and there are 11 actuators which are controlled by six actuator control radios. The layout of the fields and drainage network allow the system to monitor the runoff from all eleven blocks with three drain sensors.

Pressure transducers have been installed in the pipelines from the pumps to monitor the height of water and to provide a fail-safe should something go wrong.

For example, if a valve fails to open and the pressure increases above a calibrated limit, the system will either shut down or will send Aaron an alert.

Aaron was also interested in monitoring flows, therefore the existing mechanical water meters were replaced with electronic meters that are able to log water usage and are compatible with the WiSA software.

“I’ve gone weeks without going to the farm now in peak irrigation season in situations when I haven’t had to do any other work there. All the sensors and equipment are showing me that there are no problems. So, I’ve just let it run its course and everything’s been perfect, every time.”

He encouraged anyone who was interested in the automation to calculate and value their own time. Through the project, the assumptions were for a 3.5-year payback period at Aaron’s property, and this did not include yield improvements.

“It does seem expensive when you are going to install it, but the benefits are worth it. With electricity, if you miss the changeover for a tariff, the cost can switch from say 17 cents to 48 cents.

“Even for farms that are gravity-fed, water is generally \$50 to \$60 per megalitre, so the cost of over-irrigating can add up. And that’s before you get to the crop benefits of getting water on it when it is needed, or avoiding water logging.”

For more information

To see the CaneClip of Aaron’s experience, visit <https://sugarresearch.com.au/sra-information/media/>

Aaron Linton

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System costs (approximate)	
Area automated	53 hectares
Total cost	\$68,365
Cost per hectare	\$1,290
Base station, computer & software	\$7,700
Pump controller & installation x 2	\$7,000
Pressure transducer x 2	\$800
Water meter x 2 ¹	\$11,465
Actuator control radios x 6	\$18,000
Actuators x 11	\$5,500
Actuator brackets & fitting x 11	\$4,400
End of field radios x 2	\$6,000
Advance sensors x 3	\$1,500
Advance sensor installation	\$1,000
System commissioning ²	\$5,000



Footnotes:

- (1) Included replacement of SunWater flowmeters, would not be required if existing meter was electronic
- (2) System commission costs cover installation of base station and field radios and checking that all are working correctly.