Efficiently Improves Watering System for Sustainable Agriculture in Australia

Milesight

Milesight Efficiently Improves Irrigation System for Sustainable Agriculture in Australia

Did you know 70% of freshwater resources are used by agriculture? And 60% of the water diverted or pumped for irrigated agriculture is wasted? In the circumstances of the global energy crisis and water insufficiency, our agriculture industry is being improved with the aim to produce more with only a minimum amount of water. In order to improve water-use efficiency and protect the sustainability of modern agricultural practices, smart irrigation systems are being used.

Farmers always want to improve the water-use efficiency and minimize water losses. In large-sized farms there are complex watering systems and watering operations which may often not be working as efficiently as they expected.

CHALLENGES

- Water control gates and valves openings are manually operated, creating labour, vehicle and power costs along side over or under water application rates, limiting productivity.
- Plants are monitored in person to determine optimal time to irrigate.
- M2M connectivity has always been an issue for regional and rural areas.
- Electricity costs and fuel cost are relatively high.

PROJECT

In Australia, agricultural expert and system integrator are working with farmers to install LoRaWAN based smart watering systems, which supply controlled amounts of water to crops with minimum waste.

SOLUTION

In this irrigated agriculture application, a submersible water level sensor communicates via the Milesight UG87 LoRaWAN gateway to PAMS (Padman Automation Monitoring System) App. PAMS is preconfigured to make automatic decisions based on the water level sensor to open or close the huge water gates allowing water to be transferred from one field to another at the optimal time to enhance productivity and water efficiency outcomes.

The Padman Autowinch water gate controllers regulate and control water from 5 Megalitre to over 300 Megalitre flow plus rates. The LoRa radio enabled Padman Autowinch communicates with PAM's via the UG87 LoRaWAN gateway. The controller can both open and close the water gates and also has the ability to host water height sensors reducing the requirement to have separate Padman Sensor Pro nodes.

Once the UG87 gateway receives the data from the Irrigation nodes, it's passed on to the Chirpstack network server via cellular network, and is then forwarded by MQTT to the AWS IoT platform where the PAMS is hosted for farmer access via webapp, Android and IOS apps.

DEPLOYMENT

Keytah Station – Northern NSW, Australia

Irrigated Agriculture field size: 540 hectares – divided in to 15 x 36 hectare bays. Land is leveled via earthworks to facilitate efficient controlled surface irrigation with flow rates of 120 megalitres per day.

Water level sensors are strategically deployed into bays and water supply channels sending water level data back to the PAM app which, depending on configuration, communicates with the Padman Autowinch and Autowinch Screw drives to ensure efficient, effective water control.

The UG87 gateway is installed approximately 9 metres above ground level with a solar panel power input, and has been tested to be working at least 9.5km away, line of sight, at this site. The 4G module in the gateway provides an easy internet connection for data transmission.

The Keytah Station project is also part of the Australian Government "Smarter Irrigation for Profit phase 2" Initiative.

BENEFITS

- Manpower reduction, labor effectiveness and efficiency gains
- Improvement of water-use efficiency
- Productivity enhancement
- Lowered operating costs
- Most importantly, increase profitability

ABOUT PADMAN STOPS

Padman Stops has been "The Farmers' Friend" for over 30 years, transforming water efficiency for farmers and reducing labour, time and cost with innovative products and technology.