



DematecAutomation

**Ensuring water security for the prosperity of premium wine production and local communities, with less reliance upon the Murray River system.**

A case study about a sophisticated engineered solution to control this vital economic resource using IIoT (Industrial Internet of Things).





"IIoT technology enables new possibilities and opportunities to generate significant commercial, environmental and social benefits which only a short time ago were not even imaginable or practicable."

**Magnus Melander**, *Entrepreneur and co-founder, THINGSSTOCKHOLM*

## For the good of South Australia and the multi billion dollar wine industry, water security is now effortlessly under control.

HydroPlan, a leading consultancy in water planning and solutions, utilised Dematec's IIoT (Industrial Internet of Things) platform and industrial expertise to solve a critical issue for a major part of the South Australian economy, the Gawler Water Reuse Scheme (GWRS).

### Why critical?

The GWRS brings new water to the western Barossa (while reducing reliance on the Murray River) enabling premium vineyards to expand and open new markets. Additionally, the harvesting of urban runoff from the Gawler River as an input to the GWRS reduces flood risk in the Gawler region.

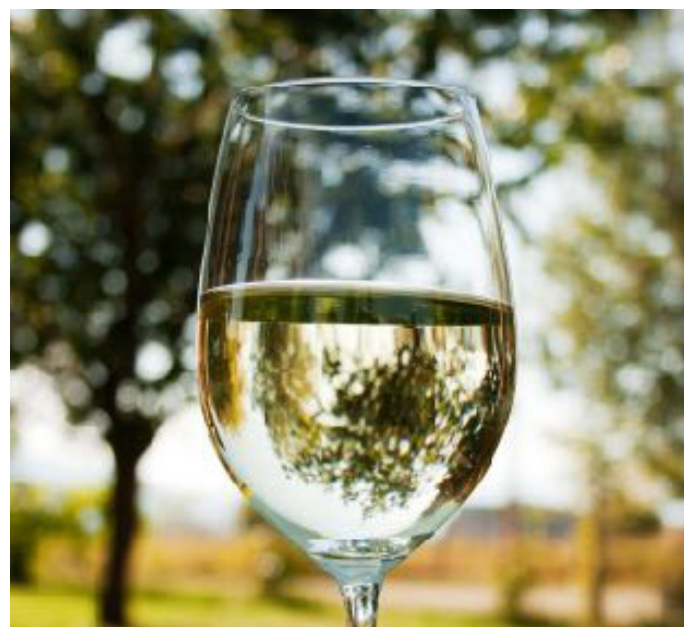
### The impact of IIoT delivered by Dematec Automation.

HydroPlan operates the extensive GWRS system they designed (comprised of five pump stations, river monitoring station, two dams, five monitoring & valve control stations, and a water treatment plant) remotely from Adelaide, requiring a mere quarter of the full time labour as compared to traditional control systems.

This extensive system covers 43 km of pipeline, with the control and communications infrastructure for the GWRS managed by a 3G telemetry system that allows HydroPlan to efficiently operate the system remotely via tablet or phone.

Thanks to the IIoT solution opening up new capabilities for HydroPlan's design, other sources of water were able to be actively sought and incorporated in the design to maximise the volume of secure water available to the region. Instead of just Gawler River water, the GWRS has connected to 4 existing and 7 new regulated water sources including groundwater and treated wastewater.

It was essential that provision for expansion be built into the GWRS design. This meant that a highly scalable IIoT control system was necessary to facilitate the connection for future water sources such as the Managed Aquifer Recharge (MAR), as well as provision for increasing volume delivery if required at a later stage





"The aims of the \$21.4m project were exceeded and continue to improve thanks to the insights and delivery by Dematec, using their IIoT platform."

**John Gransbury**, *Principal, HydroPlan*

## Game changing way of delivering value to customers:

Dematec introduced their IIoT platform as a SaaS (Software as a Service) when tendering for the GWRS project to Bunyip Water. This innovation promised to deliver cost effective means to run a large infrastructure project and thus produce benefits such as:

- Removed the requirement for capital expenditure of computer hardware and software licenses
- Secure 3G communications platform for the remote operation and control of the network (via tablet or phone)
- Cloud based operator interface with automated process trending and reporting
- Data connections to third party software packages for presentation of water usage information directly to customers
- Camera access at critical pump stations to enable remote visual inspection and security
- Independence from physical and IT limitations of servers.

## Collaboration that adds value, providing you with the competitive advantages that IIoT delivers.

### 1. Tender stage

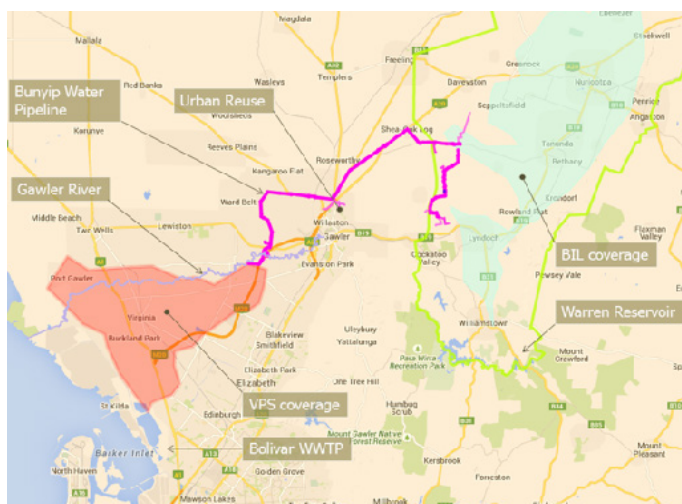
HydroPlan forwarded a tender for the electrical and control system for GWRS, outlining the minimum system requirements but stipulating a 'non-prescriptive' approach to submissions that encouraged innovation. Dematec presented three alternatives for the control system infrastructure that allowed HydroPlan to shape a 'hybrid' system that met their key requirements for functionality, delivery, timing and cost.

### 2. Construction pressure

The timing for the GWRS construction was extremely tight with the electrical contract awarded in June 2016 and practical completion due for 31 August 2016. This meant that works needed to be undertaken with an efficient and pragmatic approach. HydroPlan and Dematec maintained close communication through the construction phase and regularly 'swapped' scope and activities (including those of some other small contracts) to manage and streamline the interfaces between contracts and civil, mechanical and electrical works to ensure that all milestones were met.

### 3. Enhancements and flexibility

The proprietary WTP (Water Treatment Plant) control interface was substituted for a direct connection into Dematec's IIoT platform to provide more transparent system operation. Automated process trending and report generation via Dematec's IIoT platform was also added.





## IIoT in the service of environmental issues

**The commercial benefits of this significant water infrastructure project are very clear, but just as important are the environmental advantages. This is due solely to the coupling of an innovative hydraulic design by HydroPlan and an intelligent control architecture brought by Dematec's IIoT platform.**

- Savings achieved through the alliance were reinvested in water security improvements and strategic provisions for up to 4,000ML/pa by connection to the Virginia Pipeline Scheme, MAR storage and increased stormwater harvesting capacity.
- The overall outcome of the project is increased volume and water security for the foundation customers, and reduced reliance on the River Murray.
- The Dematec IIOT control system is used to actively track power consumption at all mains powered sites and facilitates control and scheduling of pump operation for optimum energy efficiency for the volume of water delivered.
- The energy to deliver water from GWRS (196m head) to the Barossa Valley is halved compared with Murray Water River (455m head).
- Substitution of 800ML/pa of Murray River water for water from the Gawler River - note that this target has been exceeded by the GWRS in the first season of operation. Additionally, beneficial reuse of stormwater runoff (currently capped at 1,600ML/pa) that would otherwise be discharged into Gulf of St Vincent.
- Productive use of recycled water from Bolivar Waste Water Treatment Plant (via Virginia Pipeline Scheme) that would otherwise be discharged into Gulf of St Vincent (which contributes to seagrass degradation).

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