Energy consumption at the Wide Bay Water Corporation wastewater treatment plant at Nikenbah, Queensland, Australia has been reduced by approximately 12.5% compared to a similarly sized plant.
The pristine waters of the scenic Fraser coast, about 250 km (155 miles) north of Brisbane (Queensland), is a popular playground for migrating humpback whales and dolphins. The UNESCO World Heritage-listed Fraser Island is the largest coastal dune system and sand island in the world and home to a myriad of rare and protected wildlife species. And picturesque Hervey Bay, an internationally renowned holiday destination, boasts an aquatic environment teeming with marine life.

It was against this backdrop that Wide Bay Water Corporation (WBWC), the first local government-owned corporation in Queensland, was tasked to build a new state-of-the-art wastewater treatment plant (WWTP). The AU$33 million project was undertaken to provide the additional wastewater treatment capacity required to keep pace with the rapid population growth.

The challenge

In planning its seventh WWTP, to be its largest and most complex to date, Wide Bay Water Corporation set out to build a facility with a capacity equivalent to the water use of 10,000 homes, or 4.8 million liters per day. The facility, situated beside an 800 ML effluent lagoon at Nikenbah, also needed to be able to expand its capacity nearly three-fold. Using sophisticated new filtration technologies, the wastewater would be treated to a standard above EPA levels with the aim of recycling 90% of the treated wastewater from the plant. The quality of the treated water would be so high that it could be used as a supplementary water source for irrigation or potable water substitution in future drought situations.

Acting as the principle contractor in order to gain maximum leverage from their experience and knowledge and benefit from substantial cost savings, WBWC sought to avoid previous issues where multiple vendors all used different equipment, consequently requiring a large number of spare parts. This time, they looked for a single supplier who would be able to deliver a fully integrated, high-availability process automation solution cost-effectively in order to ensure a lower TCO. They also wanted an installation that was robust, quick to commission, easy to maintain, quick to fault find, able to provide extensive operational data, efficient and easy to operate, and achieved a high level of redundancy.

The solution

WBWC selected Schneider Electric as its single provider because of its proven technology with a solid local track record, ability to provide the complete process automation solution (EcoStruxure Hybrid DCS) from a single, strong brand, the equipment shared a common look and feel for ease of use, and spare parts were stocked by local wholesalers, reducing the need to stockpile them.

EcoStruxure Hybrid DCS™, Schneider Electric’s collaborative automation architecture that enables industrial and infrastructure companies to meet their automation needs while at the same time delivering on growing energy efficiency requirements, answered WBWC’s list of requirements.
Using the EcoStruxure Hybrid DCS hardware, software and support, system integrators iPower Solutions designed and implemented the comprehensive electrical and process automation infrastructure for the WWTP.

Even before it went into operation, the plant at Nikenbah won a top award from the Institute of Public Works Engineering for “water industry projects over $10 million.”

Reduced overall project costs
The project was delivered for AU$2 million under budget.

Smother, faster commissioning
Engineering integration time was reduced by 20%.

Commissioning time was reduced by 25% as it allowed efficient configuration of motor starters from the control room. Over 100 motors were commissioned in only a few days.

Reduced energy consumption
The use of variable speed drives to control the majority of the motors greatly reduced energy consumption as the pumps and mixers can operate at their duty points. Energy consumption has been reduced by approximately 12.5% compared to a similarly sized plant.

Reduced operating costs
The high level of automation at the plant and its robustness means that only one operator is needed on site. A similar sized plant operated by WBWC requires both an operator and an assistant. The reduced manpower requirement means a savings of $50,000 per year.

Fault detection time is greatly reduced as the entire plant can be interrogated from the control room thanks to the SCADA system.

Reduced technical risk
A reliable system utilising proven technology and architectures means less downtime and simplified maintenance.

Improved output quality
The plant produces effluent of a quality 130 times better than other similar plants (turbidity of less than 0.15 NTU vs 20 NTU).

“Everything we do at Wide Bay Water Corp., we do with excellence. Our Schneider Electric solution helped Nikenbah wastewater treatment plant achieved this and more.”

— Tim Mahony, Manager, Electrical Engineering Services, Wide Bay Water Corp.

The high level of automation at the plant... means that only one operator is needed on site. The reduced manpower requirement means a savings of $50,000 per year.
IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric’s open, interoperable, IoT-enabled system architecture and platform.

EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services. EcoStruxure™ has been deployed in 480,000+ sites, with the support of 20,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services.

One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise

Connected Products
The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

Edge Control
Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

Apps, Analytics & Services
Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

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