

Application Note 12



Application

- Centralised Information System for Distributed Real Time and Non-Real Time Plant
- Large Scale Structured Development Environment

Technology Applied

- Real Time & Time Series Protocols
- Improved Integration Techniques to improve Return On Investment
- Leveraged Existing Control & Monitoring Equipment (RTUs & PLCs)
- World Class SCADA Software
- Data warehousing (Historian)
- Web based reporting

Engineered Solution

- Improved Management of Water & Waste Water Plant
- Deep mining of process data to find correlation between events in history and real time
- Support for maintaining legacy conventions during process improvement phases
- Redundant Historical Data, Application, Alarm and Automated Messaging systems

System Elements

Cairns Water manages a diverse infrastructure in a tropical location in North Queensland. The infrastructure suffers from the stresses of wet seasons and the associated infiltrations. PLCs typically control treatment plants and RTUs monitor and control remote stations (eg pumping, reservoir, valve stations).

Various PLC and RTUs brands and models are used for control and collection of real time and time series data. This information is used to operationally manage the network components and subsequently provide a basis for modelling and system design. Protocols such as Kingfisher Series II and DNP3 have been used to communicate with Multi-brand RTUs. Parasyn Drivers were used in this application to support automated storing of time series data into a compatible high performance Data Historian. It is this Data Historian that is used as the repository for real time Treatment plant data and real time and time series Reticulation System RTU data.

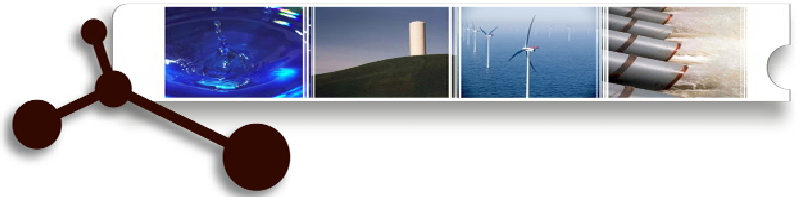
Typically SCADA systems do not natively support time series data very well if at all. This enterprise application supports time series data for alarms and historical trending. Additionally Terminal Services clients are used to provide thin client access for WAN support. All this combines to support a highly structured, distributed, redundant application environment that has all the tricks to support very large scale SCADA systems with time series protocols.

The telecommunications project components included base station design and distributed architecture so that radio devices could be positioned in strategically ideal locations along the corporate LAN. The design included provisions for software systems for full driver and interfacing redundancy. The resultant was single points of failure only being in the radio repeater systems. The most likely failure points namely office equipment and windows based servers, were removed.



Cairns Water

Enterprise Wide SCADA & Information System



Professional Services in this Solution

Driver Development: Enhanced Time Series Drivers supporting time series data to the Data Historian. Redundancy.

HMI Development: Alarms, Trends, Graphics, Security, Terminal Services Clients, SCADA Clients.

Application Server and Historian Redundancy: Utilising and developing Vendor redundancy facilities.

Telecommunications: Equipment Design, Implementation and Testing.

Messaging: Interactive Voice Response (IVR) including email, SMS, alphanumeric paging, operator schedules, redundancy, historical logging and reporting.

Automated Reporting: Using the Process Information Portal – Professional Services not really required!

RTU and PLC code development: Control Systems design and implementation.

System Benefits

Cairns Water now have the ability to further develop legacy and unsupported SCADA systems into a single common development environment which includes standards and systems to retain their current investment. New systems can now look forward to raw data, rich information and correlated events. This ability is extended to the web browser in such a way that when new ideas are conceived about how plant or process can improve, reports can very easily be developed and constructed "in-house" to substantiate change or confirm that best practice is already in place.

Having historical data in a high performance Historian empowers the owner to come back later and test and diagnose after the event. It substantiates, uncovers and opens new potential that two dimensional flat file data management systems have never been able to deliver. While MES (Manufacturing Execution Systems) make many promises of making real time process improvements, it does not capture with significance what Utility Modellers and Asset Owners demand. Data must retain original event times. Data must be synchronised to become meaningful for system wide network analysis.

Looking Forward

The Parasyn – Cairns Water SCADA upgrade project ultimately provided a new user interface and data repository. The crystal ball shows a period of data capture refinement; analysing the minimum reporting element and ensuring that modellers get what they need without demanding such a volume of data that all operational sensibility is compromised. This delicate balance is now defined and must be managed to ensure longevity and minimised infrastructure investment.

Parasyn - Process Information & Intelligence

Quality Design is required to implement complex communications and control systems. To understand further how the above system design could be used to control and monitor your plant, including the application of interactive voice response systems, historian databases and web access tools, call Parasyn Controls.

Client Comments

“They are better than any other integration vendor that I have worked with. Parasyn operates in the centre of the field of professionalism and integrity. I never have to doubt their statements and practices, as they always place the customer needs first.”

Ted Ellis
SCADA Control Officer



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