

Nelson Mandela Municipality

Integrated solution helps monitor and control large-scale sewage facilities



Fish Water Flats treatment works

The Nelson Mandela Metropolitan Municipality, in the Eastern Cape region of South Africa, controls the water and sewage utilities for Port Elizabeth and the surrounding areas – a service area with a radius of approximately 35 kilometers.

Utilities like the Nelson Mandela Metropolitan Municipality have a large number of outstations that generate vast quantities of data. Sophisticated control and communication techniques are vital in processing such a high volume of data.

The Challenge

The municipality needed to upgrade its sewage control facilities and required a robust SCADA system that could easily manage large amounts of data. The project covered two areas: the first involved the upgrade of the treatment works, also known as “Fish Water Flats;” and the second phase covered the remote monitoring of the pump stations.

The Solution

In 2002, a valued integration partner was awarded the contract to upgrade the SCADA and telemetry for the 70 remote sewage pump stations, which involved monitoring the pump alarms, levels and pump status. They also provided CitectSCADA and the communications backbone for the Fish Water Flats sewage treatment works.

The project involved:

- CitectSCADA installation
- 18 remote SSE RTU-10s
- 4000 tags for the initial phase, with plans to increase to 8000 tags in the future
- Wireless LAN to connect to the RTUs
- Five display clients in the control room connected to the CitectSCADA server

The 18 SSE RTU-10s monitor and control the inlet works, aeration ponds and clarifiers. They communicate to the CitectSCADA server via a wireless LAN, a



The Challenge

To update the RTUs and SCADA system at the sewage treatment works and 70 remote pump stations with a system that could easily manage large volumes of data.

The Solution

An integrated solution utilizing the CitectSCADA system and telemetry for the sewage utilities. The CitectSCADA system enables operators to monitor and control the RTUs easily from the control room. The wireless LAN easily accommodates the addition of new RTUs in this harsh environment by eliminating the need for cabling.

The Benefits

Monitoring the facilities has become much easier with the implementation of CitectSCADA. Its unique Process Analyst feature combines alarms and trends onto a single, integrated display, thereby helping operators to determine the cause of disturbances much faster. CitectSCADA's open architecture and flexibility also facilitate smooth upgrades and expansions.

Large amounts of data are effectively processed into useful information



Fish Water Flats water treatment facility



Remotely monitored pump station

necessity in such rugged terrain. The wireless LAN also permits smooth future growth that will allow the addition of new RTUs without having to install network cables back to the control room.

The CitectSCADA system in the control room provides real-time data on level, flow, alarm and motor run hours that are automatically logged and trended. This system also permits operators to perform manual overrides, if necessary.

The RTUs and SCADA system employed at the Fish Water Flats match those used by municipality's pump station telemetry system. Standardizing on the same SCADA, communications, and telemetry platform allows the treatment and raw sewage pumping processes to be fully integrated. It also reduces training costs. Operators who are transferred from the sewage treatment plants to the pump stations are already familiar with the screens.

The fully redundant CitectSCADA system operates on two servers each serving 5000 I/O points. Operational and statistical information is gathered to a central control room situated at the Mandela Metropole headquarters. Operations include pump trip alarms, sump levels, and intrusion alarms. The statistical data is valuable for planning future residential and industrial growth. Two display clients – located in different locations – provide full functionality and communicate over a wireless network to the servers in the central control room.

Future management information systems will process the data aggregated by both Fish Water Flats and the pump stations' network to provide the value data for planning ahead as the network grows.

Benefits

Implementing CitectSCADA has enabled easier monitoring and control of the water and sewage utilities. By opting to standardize on the same communications, telemetry and SCADA platforms, the municipality has been able to seamlessly integrate the treatment and raw sewage pumping processes to reduce operating and training costs.

Operators can now diagnose and rectify any process disturbances faster than before thanks to CitectSCADA's unique visualization tool, Process Analyst, which combines trend and alarm displays on a single integrated screen.

The system's superior scalability also means that any plant upgrades or expansions will be easily accommodated and information will continue to be available in a uniform, consistent display at all stations.

The Nelson Mandela Metropolitan Municipality's integrated automation solution, has resulted in improved efficiency and productivity across the group's entire sewage operations.



“The CitectSCADA system has supplied Fishwater Flats with meaningful information and has proven to be very reliable. Our process operators are now effectively using the system to gain better productivity.”

Mike Clinghan
Acting Works Manager
Nelson Mandela
Metropolitan Municipality

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