

# Successful Control of Remote Sewage Pumping Stations

## Challenge

Wastewater Treatment plants have numerous parameters that need to be checked on a continual basis in order to monitor and control the proper operation of the plant and the safe conveyance of raw sewage from the remote pumping stations to the waste water treatment plant. The remote sewage pumping stations need to be monitored and controlled around the clock to avoid any possibility of the raw sewage bypassing the system which could result in an environmental disaster.

The City of Peterborough Waste Water Treatment Plant currently has eleven remote sewage pumping stations which are monitored from the Main Plant. Previously remote wet well levels were controlled by a Siemens Milltronics Multiranger, variable frequency drives and submersible pumps. The process data is relayed from the Multiranger to a Programmable Logic Controller (PLC) on site, then via a dedicated dial-up phone line through a modem on site directly to the modem at the Plant and then routed to the Main Plant PLC system. The challenge is that this technology is unreliable, the connection is frequently lost causing alarms to be activated unnecessarily and the response time for the information to be relayed from the remote station to the Main Plant is extremely slow. When communication is broken a technician is required to visit the remote site and reset the modem, this can take up to 2 hours per visit. On average the City of Peterborough experience 4-6 'drop-outs' or loss of

connections per station per month which results in a loss of productive man hours. The current Dial-up modems are now obsolete and no replacement is available. It is also extremely costly to have a dedicated phone line per remote pumping station. Whether on site or remote, personnel can spend valuable hours checking on the equipment and considerable resources are required to visit remote sites.



An alternative technology that has been installed at the Peterborough Airport site is a radio system, which has a capital hardware expenditure of approximately \$15 000. This has also proved to be unreliable during inclement weather as the signal can be lost.

Until recently this was the case at the City of Peterborough, Valleyview Sewage Pumping Station remote site.

## Solution

In order to achieve an efficient, cost effective, reliable monitoring system the following changes were implemented at the Valleyview Sewage Pumping Station. The process data from the instruments monitoring the wet well are still relayed through the PLC on site, which is now connected to a Redlion Data Station Plus. This unit has three serial ports and an Ethernet port capable of communicating to several systems simultaneously. The Data Station can communicate to virtually any PLC, drive or communications-based sensor. It can control and monitor

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multiple devices as well as perform protocol conversion so that all the connected devices can communicate with each other. This is connected to a General Packet Radio Service (GPRS) unit which allows the information to be sent via a cellular network to the main PLC at the plant.

The Redlion Datastation Plus system has been in successful operation since September 2009. The unit was compatible with the existing PLC system and no additional capital hardware was required. The hardware and antenna were installed easily into the existing panel on site. Minor programming changes were required in order to allow the Redlion Datastation Plus unit to communicate directly to the existing SCADA system in the main plant PLC, this was achieved using the Redlion Crimson software.

## Benefits

The Redlion Datastation Plus and GPRS system are more reliable and cost-effective than the dial-up modem and land line. It is also faster, enabling the operators to view real-time results. The Redlion Datastation Plus allows operators to monitor and control their processes remotely, either via text message or built-in web server from any PC to determine whether or not a site visit is required. Minimal programming is required using the free user friendly Crimson software. The Datastation Plus has a data logging facility which allows the operators to collect historical data which can be collected on a regular basis and analyzed to enable the operators to make decisions regarding future requirements and also assist with troubleshooting potential problems. Communication between remote sites and the main plant is extremely critical. This system is reliable, cost-effective, faster and easy to maintain.

Pat Devlin, Manager of the Environmental Protection Division for the City of Peterborough is extremely satisfied with the results. Since they have installed the new system the Valleyview Sewage Pumping Station remote site has only experienced one dropout for 30 seconds and it was not necessary to send a technician to the site as it could be reset remotely.

The City of Peterborough has commissioned Measuremax Inc to convert another two remote pumping stations this fall and the other eight during 2011. Mr Devlin commented that 'The technology is simple, inexpensive and was easily integrated into our current SCADA system. The monthly cellular bill is cheaper than the landline and two modems with an average saving of \$35 per month per station. If we take this figure over 20 years, we should see a saving of approximately \$10 000 per station, we have 11 stations a total saving of \$ 110 000.'

The operators at the Waste Water Treatment Plant have responded positively to the new system. Mr Devlin said, 'It is a great system, we are extremely pleased with the results and are anxious to retrofit the balance of the remote stations before the end of 2011.'

**For more information please contact Measuremax at (705) 745-1626 or visit [www.measuremax.ca](http://www.measuremax.ca)**

### Products Featured in this case study:

#### Siemens Multiranger 100/200



#### Key Features

- Multiranger 100
- Simple pump control
- Multiranger 200
- Enhanced pump control
- Differential control
- Open channel flow monitor
- Volume conversion
- One mA input

#### Redlion Redlion Datastation Plus



#### Key Features

- Multiple protocol converter
- IT-ready data logging for process tracking and improvement
- Remote asset management and control via built in web server
- Reduce downtime with e-mail and SMS alarm capability

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