

ABB drives and remote monitoring reduce costs in wastewater pumping system



Increasing wastewater treatment requirements prompted Larsmo municipality in Finland to take action to combat the problem of stormwater leakage into its sewer system. A remote monitoring system was installed at a pumping station to allow operators to monitor the volume of fluids being pumped and therefore detect when stormwater leaks into the system.

Two of Larsmo's 15 wastewater pumping stations have been upgraded with ABB industrial drives – both having two drives in master/follower configuration - and intelligent pump control (IPC) software.

These stations utilize IPC's level control and anti-jam functions. Level control randomly varies the holding tank's surface level to prevent sediment build-up on the walls. Anti-jam performs preventive maintenance on the pump by running cleaning cycles.

Intelligent ethernet module

One upgraded pumping stations is equipped with ABB's intelligent ethernet module, NETA-01, for remote access, monitoring and real time diagnostics. Users access the drives via the Internet using a LAN or modem connection. The module's web pages show the status of the system and provide access to the drives' parameters, fault loggers and data loggers.

Monitoring is done using a regular PC at the municipal offices. Communication between the intelligent ethernet module at the pumping station and the supervision site uses a WLAN link.

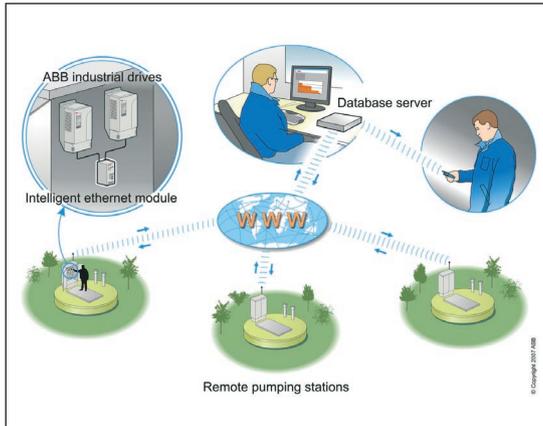
The intelligent ethernet module includes an alarm function which provides confidence that the pumping station is operating correctly. The database server, a system supplied by Pietec, a systems integrator and ABB channel

partner, combines this signal with other information in its database – such as duty rotas and contact details for maintenance personnel – and sends an SMS (text message) alarm to alert the maintenance employee on duty.

Maintaining the operating log

The intelligent ethernet module transmits monitoring data via email which is processed and the data saved in the database server. Users can review the operation of the pumping station over the previous 7-day or 24-hour period using simple mouse clicks. The database server builds up a comprehensive log of drive and process parameters. Long-term operating status information makes preventive maintenance planning easy and information required for reporting purposes is readily available.

The monitoring system eliminates the need to visit the pumping station for routine monitoring purposes. At the pumping station the combination of preventive maintenance performed by the ABB industrial drives with IPC, and remote monitoring, has eliminated unplanned maintenance and significantly reduced maintenance costs.



ABB's intelligent ethernet module, NETA-01, provides remote access, monitoring and real time diagnostics. Access to the drives is via the Internet. The database server compiles a log of drive and process parameters, and can alert maintenance staff by text message if out-of-range parameter values occur.

Also the operators can easily monitor the volumes of fluids pumped through the system, and thereby detect if stormwater is leaking into the wastewater system. Leakage of stormwater into sewers results in unnecessary and expensive processing at treatment plants, overloading the wastewater system resulting in sewage being forced back into properties.

“We’ve achieved significant savings in both energy and maintenance costs. The communication link is straightforward with very few components: it provides continuous operation with a high degree of reliability and virtually no need for servicing,” states Bjarne Häggman, technical manager, of Larsmo Municipality.

Solved problem

- Site visits for routine monitoring are time-consuming and expensive.
- Accurate pumping data needed to detect stormwater leakage into system.

Solution

- Installation of ABB industrial drives with IPC software to operate the pumps.
- Remote monitoring with intelligent ethernet module and database server.

Benefits

- Monitoring system eliminates need for routine site visits.
- Monitoring system produces operating statistics and reporting information.
- Constant monitoring helps detect stormwater leakage into the system.
- Monitoring system alarm function gives additional confidence that everything is operating correctly.
- Intelligent ethernet module enables real time system diagnostics.
- IPC helps to reduce maintenance costs.
- Drives provide energy savings.