

The BCI Update

Volume I, Issue I

Valley Court Pump Station

New Controls for Sewer Pump Stations Provide User-Friendly Operations

A new control system for one of Juneau's sewage lift stations is making the job easier for municipal sewage employees.

The Operator Interface (OI), an Allen-Bradley PanelView 300, displays all information about pump status and other systems. It's a menu-driven system that easily allows operators to configure level setpoints and operation of the pumps and to monitor alarms and historical data.

It includes a built-in operations manual, which can be used as a step-by-step guide for operators to work through alarms or other problems with the system.

That manual came in handy the first weekend the new system was running and one of the operators responded to a call-out at the pump station. With no training, he was able to use the operations manual to clear the alarm.

"It's real user-friendly," said Tom Trego, wastewater collection supervisor for the city of Juneau. "Compared to what we did have, it's 100 percent better."

BCI worked with the municipality to come up with a system to meet their needs, including an Allen-Bradley Micro 1500 PLC, with two A-B 30 hp soft starters to control the motors. BCIs duplex pumping system only needs a dial-up or radio modem for an easy link to the Mendenhall Valley wastewater treatment plant for a full-blown SCADA system.

"The controller is an open PLC which has the expansion capability to control and monitor anything that anybody can think of," said BCI president Greg Smith. He said the wastewater department was skeptical at first about switching to new controllers.

The city had sole-sourced another system to control its pump stations for the past five years, but opened up the bid to consider the new approach from Boreal Controls. BCI was awarded the project on competitive bid.

"It's been trouble-free," Trego said.



Pump station control panel for the Valley Court Pump Station, Juneau, Alaska

The BCI Update

Produced by the staff of Boreal Controls for the purpose of keeping customers informed of our recent operations and for the education of new customers as to the types of services that we provide.

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Greens Creek Cleaner Flotation Plant Plant Upgrade Pays Off Quickly

BCI finished work recently on improvements to the processing plant at the Greens Creek Mine on Admiralty Island.

Control additions were part of a \$5 million expansion of the silver, gold, zinc and lead mine's mill with a new cleaner flotation plant. The plant refines the mine's ore concentrate, reducing waste.

"We're able to get more zinc out of the concentrate and produce a cleaner concentrate that reduces our shipping and smelter treatment charges," said Buddy Crill, electrical superintendent for Greens Creek Mining Co.

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Greens Creek Cleaner Flotation Plant

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One highlight of the controls, said BCI's Greg Smith, is a hot backup PLC system providing the plant with a redundant PLC that can take control at the same place as the primary control, allowing processing to continue smoothly even in the event of a primary PLC failure.

"It's actually paid for itself, maybe even more than once," Crill said. "It was a smooth startup. A lot of that was due to Greg's hard work."

The new plant consists of several banks of flotation cells for both zinc and lead. Each bank includes up to four agitators and analog PID loops for airflow and slurry level control. There are approximately 25 reagent injection points.



Hot Back-up Allen-Bradley PLC 5 control panel.

BCI provided all of the PLC programming, which included controlling approximately 50 motors and 25 analog PID loops and 25 reagent control loops. The company also manufactured three PLC and I/O control panels and several local start-stop stations.

The control system consists of a hot backup Allen-Bradley PLC 5/60 and the I/O is A-B Flex I/O. The operator interfaces include three A-B Panelview 1400s and a 19" touchscreen and PC on the plant floor which Utilizes RSVIEW.

Control panels were delivered by barge to the mine at Hawk Inlet, and BCI staff commuted with miners via ferry and bus to the project's remote site. One perk of the job was wildlife viewing during the commute, with humpback whales, deer and brown bear spotted frequently.



Zinc and lead flotation cells in Greens Creeks new cleaner flotation plant. Greens Creek Mine, Admiralty Island, Alaska.

Vale, Oregon Water SCADA System

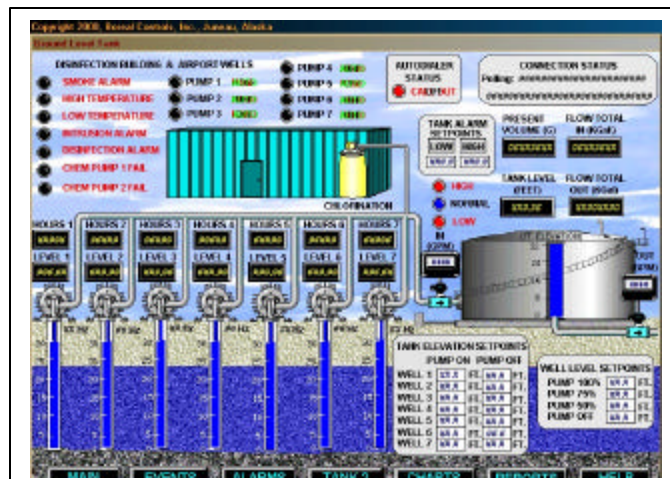
New Water SCADA System for Vale, Oregon

A small town in Eastern Oregon now has a high-tech control system for its water supply.

Boreal Controls Inc. recently supplied a SCADA monitoring system for five sites in Vale, Ore., including new and existing pump stations and treatment plants as part of a water system expansion.

The community, west of Boise, Idaho, now has Opto 22 controllers and Microwave Data System radios to pass information from relatively remote pump sites to the master controller at the public works building. With the addition, the remote sites can communicate wirelessly thus saving on recurring telephone charges.

At the heart of the system is a graphical operator interface



Operator interface screen for the airport wells and the disinfection building. Vale, Oregon.

running on a PC. BCI wrote the control program, tailoring it to the city's needs to track pump speeds, levels and water flow. "That gives them pictures of the whole system and logs flow data so they can get trending screens with graphs," said BCI engineer Tory Oien.

Vale public works director Dave Hatt said it's convenient for the city's water chief. If there's an alarm he can check in on the system from home to determine whether it's something he needs to head out to follow up on.

"The graphics are extremely good," Hatt said. "I think we're extremely pleased with it."

A useful feature of the new system is the ability to print out reports of pump hours and total flow for days or months.

It also can be monitored and controlled through a dial up modem from a laptop, so that system operators can access the controls, literally, from anywhere in the world.

Ketchikan, Alaska Wastewater SCADA System

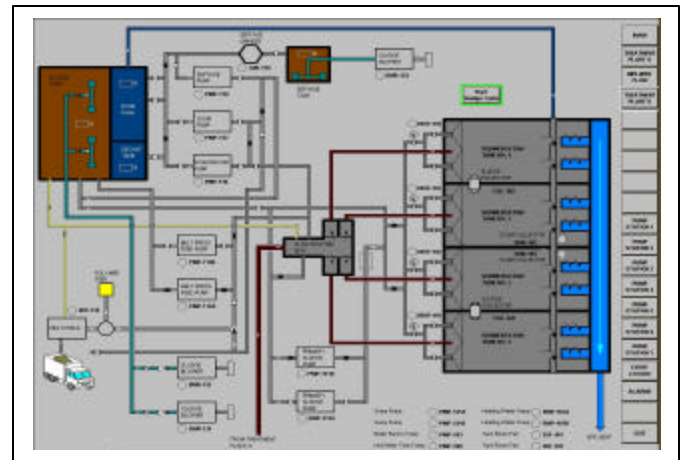
Ketchikan Sewer System on Track

Sewer operations are running smoothly after installation of a SCADA system for the Ketchikan, Alaska, sewer lift stations and sewage treatment plant.

Boreal Controls Inc. started the project by replacing aging variable frequency drives at two large pump stations with new Allen-Bradley (A-B) Variable Frequency Drives (VFDs) and A-B SLC 5/05 PLCs. Each pump station had three 60hp pumps which were retrofitted with Boreal Control's custom VFD pumping system.

BCI President Greg Smith, P.E., said one interesting aspect of the project was the city's requirement that the system keep running while the existing equipment was torn out and replaced with new controllers. That wasn't a problem, though; with a temporary VFD hookup, the system continued working. The complete construction time was only about four days for each pump station. This minimal transition time from old to new meant that the city didn't have to worry about the reliability of an interim system for more than a few days.

Ketchikan wastewater system operator Hugh Fleury said the new system is virtually maintenance-free and after installation, BCI provided technical support seamlessly over the phone and with modems.



RSView operator interface screen for Wastewater Treatment Plant B. Ketchikan, Alaska.

"We're not having to wait for someone to come to town," Fleury said. "It's a sweet deal for us."

"It greatly increased the efficiency of the pump stations," Smith said. As flows increase, the old system would bring one pump up to 100% speed and then run a second pump at a lower speed to maintain flow. The new system can run up to all three pumps at the same varying speeds, thereby increasing efficiency.

The next phase of the project included a retrofit of a third large pump station with VFDs and control system upgrades at the wastewater treatment plant. Boreal Controls replaced old Texas Instruments PLCs with new Allen-Bradley SLC 5/05s to control the operations of the plant. Part of this project also included putting the three large pump stations and the treatment plant on a SCADA system. The PLCs at the pump stations and at the plant all use Ethernet to communicate with the SCADA system through a DSL network.

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Wastewater Pump Station No. 2 VFD and PLC control panels. Ketchikan, Alaska.

Ketchikan, Alaska Wastewater SCADA System

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“At the wastewater treatment plant an RSView SCADA system was installed which provides the central control and monitoring station of the plant and the three large pump stations,” Smith said. “The system is fast, data and alarm information is received in milliseconds, compared to other systems which might take ten minutes or more for remote station updates.”

The third phase of the project included adding the remaining four sewer pump stations to the SCADA system. BCI was awarded a sole source contract by the city for the complete design/build and programming of the system.

Such a system allows plant operators to monitor data from remote pump stations such as pump performance. Soon after its installation they were able to pinpoint a problem with an ailing lift station pump and replace it.

“We saw that on the system (and) we were just tickled,” Fleury said. “We’re able to monitor efficiency ... and it’s quick, too.” The station had been the cause of callouts for quite some time, but the real problem was difficult to diagnose until the data trends were displayed on the SCADA system.



Allen-Bradley SLC RTU for Wastewater Pump Station No. 4.
Ketchikan, Alaska.

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