

Highland Valley Copper

Canada's largest copper mine and mill rely on open connectivity



The Challenge

To install a flexible SCADA system that would be able to monitor and control the massive area of the mine, as well as interface seamlessly with numerous existing platforms.

The Solution

CitectSCADA was the natural choice both because of HVC's past experience with the system and because it complemented their selection of Schneider Electric's Unity software as the replacement DCS platform. The secure upgrade path ensured their SCADA solution was flexible enough to grow with their expansion plans.

The Benefits

CitectSCADA's open architecture and flexibility have allowed HVC operators to visualize data with a uniform 'look and feel' regardless of the hardware platform. Its built-in redundancy has also ensured HVC can operate 24/7 without concern for the SCADA system's reliability.



The vast expanse of the Highland Valley Copper mine

Highland Valley Copper (HVC), Canada's largest copper mine, is located in central British Columbia. Owned and operated by Teck Cominco, it covers a surface area of approximately 34,000 hectares and is one of the largest copper mining and concentrating operations in the world.

Each year, HVC produces over 315,000 tons of concentrate copper sulfide, containing 250 million pounds of copper and 3,680 tons of molybdenum concentrates containing over 4 million pounds of molybdenum.

The mine is an open-pit truck-and-shovel operation employing conventional drill and blast mining methods. The mill uses both autogenous and semi-autogenous primary mills, with secondary ball mill grinding circuits and conventional flotation to produce metal in concentrate from the ore. HVC processes over 135,000 tons of ore per day.

The Challenge

As the world's demand for copper soars, HVC has had to maximize production levels, whilst upgrading and modernizing operations and continuing to minimize cost.

In 1997, advances in micro-computer hardware and software and networking technologies, coupled with the need to connect multiple disparate systems, led HVC to replace the aging DCS-based operator interfaces with a CitectSCADA solution at the Highland Mill. As a result, total cost of ownership was reduced and functionality increased. These benefits were largely a result of the CitectSCADA software being designed to run on cost-effective intuitive desktop platforms, with a simple upgrade path and no additional per-loop licensing fees.

In early 2007, HVC announced plans to extend the life of the mine until 2019. This decision required a relocation of the in-pit crushers, new mining equipment and an upgrade of the existing DCS system in the mill.



Nearly 200 trucks per shift unload their cargo



Conveyors move 6000 tons of coarse ore per hour

The Solution

After a lengthy evaluation process, HVC decided to replace the mill DCS system with Schneider Electric (Modicon) TSX Quantum controllers running Unity software, creating a standard hardware platform for both process and motor control.

CitectSCADA will monitor and control the entire site – from crushers and tailings, and even remote monitoring, and control of the Spatsum Pump house, located on the Thompson River 20 kilometers away.

The integrated control system now operates with one user-friendly interface for numerous platforms: GE Fanuc, Yokogawa, Siemens, RMC Motion Control, Bailey and now Schneider Electric, courtesy of its native drivers. CitectSCADA has also scaled very well from a networking perspective.

A CitectSCADA workstation is provided to the mine pit controller to help him monitor the crusher operation. With a brief glance, he is able to determine the current status of the crushers, and, if necessary, quickly reroute trucks to respond to short delays.

The Benefits

In addition to the lower cost of ownership achieved by using CitectSCADA as the front end of the PLC system, the exceptional flexibility and ease of integration have allowed the system to easily grow with Highland Valley Copper.

Over the course of the hardware additions and reconfigurations, and throughout this widely varied system, display screens and control popups maintain the same ‘look and feel.’ Existing tags were re-used, and near identical displays provided, resulting in seamless transitions for operators and reduced training costs and associated time.

Within the mill, CitectSCADA’s ability to monitor outside systems is critical to safe and efficient operation. For many years, CitectSCADA has been successfully used in combination with the PLCs to monitor trend and alarm temperatures, pressures, flows and operation of the various outside systems.

This capability also extends to environmental protection, using alarms and trends to prevent or detect and stop potential spills. In addition, CitectSCADA helps HVC meet its strict environmental standards by gathering data from the reservoir for environmental compliance reporting.



“For over 10 years, CitectSCADA has provided us with great reliability, superior connectivity and a secure upgrade path. It will be part of our control and monitoring system for years to come.”

Jack Rainey, Senior Process Control Engineer, Highland Valley Copper

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