Dear Readers,

I’m pleased to bring you our second Procontrol P13 news, intended for users of the ABB Procontrol P13 control system. I trust you enjoyed our first issue, and would like to thank you for all of the positive feedback and requests we have received.

This issue focuses on our life cycle service program for Procontrol P13 systems. We present two project stories highlighting successful upgrades that have extended the lifetime and performance of P13 systems. We consider essential topics, such as:

- increased hardware reliability
- updated software to increase functionality and secure use of the latest computer hardware for operation and engineering
- new functionality that reduces cumbersome processes and increases the flow of information, creating flexibility for fast action
- ensuring proven upgrade procedures are available within very short shutdown times

In addition to the upgrade projects, there is an article about service and maintenance, demonstrating the strong ABB “backbone” of customer support in essential areas like repair, spare part management, life cycle management and more. ABB can help you secure reliable operation beyond the traditional lifetime of control products.

I hope you find the information and insights valuable, and consider the support services described for your own operations. As always, we look forward to your feedback and invite you to share your interests and comments with us. And we are always happy to provide any additional information or advice you may need.

I wish you happy reading.

Kind regards
Matthias Bolliger
VP, Head of Global Execution
ABB Power Systems

Welcome to the new issue of the Procontrol P13 news bulletin
Be “in touch” with your control system

ABB control systems provide unique solutions for all customer requirements, including the need for “hands-on” operational capability. This case study demonstrates how easily the Procontrol P13 control system can be augmented with the latest HMI and IT technologies.

The Rumford Paper Company owns a paper mill in Maine, USA, which can produce 100 percent of its energy (process steam and electricity) using multiple boilers and a 120 MVA steam turbine generator controlled by ABB’s Procontrol P13 distributed control system (DCS). The control application is based on ABB’s Turboturn control solution for industrial steam turbines, consisting of 3 local buses with four processing modules. The P13 DCS has worked reliably since the day it was installed, but even the most durable systems need maintenance from time to time. In addition, upgrading the old HMI system with a third party solution a few years back did not produce the expected benefits, so the customer asked ABB about maintenance possibilities for the entire system.

To ensure safe, reliable operation now and well into the future, ABB proposed a full scope of P13 on-site upgrade and maintenance services over the course of two years, which commenced in 2012. First, the existing engineering tools were upgraded to Progress 3, ABB’s latest Windows-based engineering and diagnostic solution. Progress 3 is a programming, documentation and service tool specifically designed to upgrade or replace older generation Procontrol engineering tools, enhancing the ability of plant operators to completely maintain the plant control system with all options in fault-finding, trip analysis and even preventive maintenance. In addition, critical electronic components like wet capacitors and fuses were refurbished in all operating modules and spares in stock to prevent premature card failures, and avoid plant unavailability.

This year, the work concluded with the replacement of the outdated 3rd party HMI with ABB’s latest HMI solution, which includes the tailor-made Procontrol P13 connectivity package based on the P13 OPC server. The new HMI is connected redundantly to the P13 system via the reliable and widely-used ModBus protocol and newly installed 70BK06a modules.

In planning the HMI upgrade, ABB took care to ensure every customer requirement was fully met. Pre-existing functionality has been freshly implemented according to customer specifications. A unique feature of this solution are two touch screen operator workplaces that have been directly integrated into the main control room operation panels. Problems with the old hardware meant the touch screen workplaces did not work anymore. ABB’s flexible HMI solution put these workplaces back in service again, upgraded to the latest touch screen technology.

A particular challenge of the HMI upgrade was the tight schedule – just eight weeks from receiving the purchase order to delivering a solution. ABB’s highly skilled and experienced engineering team kept the schedule with no delays. Commissioning was finished in just two days during a scheduled outage with no additional downtime, ensuring minimal loss of production for the customer.

Main control room operation panels with integrated touch screens at Rumford Paper Mill.
ABB control system upgrade improves hydro plant reliability in India

Procontrol P13 with a current HMI solution averts total control system replacement.

The Sardar Sarovar hydropower plant on the Narmada River near Navagam, Gujarat is one of India’s largest water resource projects, covering the major states of Maharashtra, Madhya Pradesh, Gujarat and Rajasthan.

With a total installed generation capacity of 1,450 MW, Sardar Sarovar provides other benefits to the region, including irrigation, drinking water and flood protection. 250 MW of the total capacity are generated with five Kaplan turbines located in the Canal Head Power House.

In 2010, ABB won an order to upgrade the control system for five of the power plant’s generating units located in the Canal Head Power House. Each unit consists of a Kaplan turbine with 50 MW and uses an ABB Procontrol P13 / 42 control system “that had been installed in the early 90s through BHEL.”

Upgrades included five stations for auto-sequence of the individual units, one common station each for auxiliary control and switch yard monitoring, and a diagnostics station, all connected through an P13 / 42 intra-plant bus.

This was necessary, because the old HMI system (POSE) was not functional anymore, which made it difficult to monitor and operate the plant. Synchronization was done manually.

For local operations of breakers, isolators and bus couplers, operation engineers had to walk nearly 300 mt to the switchyard area, as the remote P13 station envisaged for this was not in operation since the original commissioning.

ABB engineers conducted a detailed survey of the plant and held detailed discussions with the customer to thoroughly analyze and find solutions to these problems. This helped convince the customer that improving the control system’s reliability and availability could be achieved by small parts upgrades using ABB components and solutions, rather than totally replacing the control system as the customer had planned.

Among the many successful upgrades, ABB implemented a new HMI system for the auto sequencer function (single HMI command for startup and shutdown) that operates through the existing P13 system; auto-synchronization with a synchronizing panel common to all five units; and a new engineering / diagnostic station supported by the Progress 3 engineering tool.

The upgraded system now provides an overview of plant engineering, modification and maintenance, a remote view only system, a revived intra-plant bus, a functional switchyard and station auxiliary monitoring and operations system, training for maintenance and operation engineers, improved documentation and a supply of critical spare parts.

The project was completed in July 2011, and the numerous customer benefits include a single integrated platform for plant operations, providing a single window from plant startup to auto-sequencing and auto-synchronizing to grid.

Operation of the plant via HMI is possible for the first time, and Progress 3 with its capability of online monitoring of the functional logic is a substantial enhancement of the P13 control system’s diagnostic features. Auto-synchronizing all units using ABB’s Synchrotact5 was a huge value addition for smooth plant operation.

This optimized upgrade solution for ABB’s Procontrol P13 system has increased control system reliability, eased plant operations, increased plant availability, improved diagnostics and fault finding features, improved online monitoring and simulation, provided trouble-free synchronization, remote status updates, and remote monitoring / operation of station auxiliaries and switchyard with a state-of-the-art HMI.

In addition ABB has also provided the plant with an annual maintenance contract for continuous system services.

The canal head power house of the Sardar Sarovar dam with the five Kaplan turbines.
ABB’s strategy for spare part management

Last year the service manager of Limmat Kraftwerke AG, a small power plant operator in Switzerland, asked ABB to review their P13 spare part strategy. ABB analyzed the complete P13 module inventory, including modules in operation and storage. Based on this analysis and the age of the modules, ABB developed a custom spare part strategy and rec application profile. The customer accepted these recommendations, and now has a control system that is ready to meet power demand well into the future.

Do you know the condition of your spare part inventory?

ABB can help minimize avoidable costs resulting from inadequate spare part management, including:

- In an emergency, unexpected costs due to plant outage caused by missing spare parts
- Obsolete and incompatible spare parts that have been held too long
- Unreliable application and uncertain operability resulting from inadequate parts storage
- Misplaced spare parts due to reorganizations and fluctuations in personnel

The first step is to contact ABB for an evaluation of your current active and stored inventory. Based on this analysis, ABB can recommend tailored services to improve your spare part strategy.
Procontrol P13 presence worldwide
We are here to support you
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