ABB’s Pulp Mill Simulator SIM800xA gives SCA Östrand skilled operators from day one.

The Pulp Mill Simulator SIM800xA is a real control system that provides the best possible training environment by replicating a mill’s work, behavior and control situations.

“"We use the simulator for education, but it could also be used for optimization, development and maintenance of the production system," says Lars-Åke Sundberg, system engineer at SCA Östrand.

Operators fully trained before system launch
The SCA Östrand simulator is mainly used for education. From day one, the mill’s recovery boiler was run by experienced operators due to the training they received on the simulator.

“"No one was allowed to operate the recovery boiler without a week’s training on the simulator," says Fredrik Jönsson, the SCA Östrand staff person responsible for making sure operators were fully trained before the new system’s launch.

The training was carried out in the control room, with two operators training at a time, one per station, and Jönsson sitting in the instructor’s seat. The 18 operators were educated in all of the new system’s functions.

s simulators become increasingly realistic – and systems become increasingly challenging to operate – training on a simulator has become a key priority for most pulp and paper mills. As a result, simulators are currently an element in all of today’s major automation projects.

Although ABB has years of experience in supplying simulators to different industrial sectors worldwide, interest from the global pulp and paper industry has grown markedly in recent years. Simulators are on the increase in pulp and paper in large part because of their strong track record. SCA Östrand is one of the many mills reporting the positive benefits of using their simulator.

The Östrand pulp mill invested in an ABB simulator for their new recovery boiler. The USD 145 million recovery boiler, which started up in 2006, generates 500 GWh green electricity annually.

Being able to run applications in a realistic manner with the ABB simulator, for example during checkout, became a great asset for Östrand’s production and automation departments. An important role for the simulator is its use as a tool to check the code in the system programming performed in conjunction with the Factory Acceptance Test. For SCA Östrand the simulator has paid strong dividends, in both the short and long term.
At Östrand, training and testing on the simulator were so important that no personnel were allowed to work in the recovery boiler unit they finished their training.

The simulator is also used to check system programming codes. Östrand has a long-standing tradition of doing its own programming. Sundberg thinks that this input into the programming and other aspects of the project is a major reason why the system operates so well today.

The ABB SIM800A simulator at Östrand includes an 800xA automation system with applications and screen layout from recovery boiler control and an 800xA simulator interface for communication between model and automation system.

ABB’s SIM800xA simulator is unique because it can connect a process model to the control system, creating a very realistic environment for the trainee. They can also run different scenarios, such as stop and restart. The communication between units follows industrial standards, so a mill can use process models from any supplier.

ABB’s SIM800xA simulator builds on ABB’s automation platform Extended Automation System 800xA. This makes the environment identical to that of the actual automation system. Because the simulator has the same operator screen layout and logic, all training using the simulator is directly transferable when working with the real system. The SIM800xA simulator can be upgraded in parallel with the real system and can be used for a long time even when the automation system is developed or rebuilt, creating a cost-effective solution for users.

Sundberg says that ABB’s solution was chosen because it was the best match for Östrand. The ABB simulator was an especially realistic training asset because it replicated the mill’s production system.

First developed for power company use

One of the main reasons why ABB’s simulator system is so effective is that it was originally developed for ABB’s oil, gas and nuclear power customers. The demand for simulators in these sectors is very high and those industries have the financial resources to grow highly advanced technologies.

ABB adapted its simulators for use in the pulp and paper industry, removing unnecessary functions and customizing them to meet the industry’s needs and demands. “We saw that the pulp and paper industry would be able to benefit from the knowledge base that ABB has built up over the years,” says Lars Ledung, an ABB Product Manager.

When a project is first starting up, many factors can lead to faster and smoother implementation. “Today we can deliver customized process models together with the system and simulator,” says Ledung. ABB offers mills a single supplier for the entire simulator system.

Continuous training

Even three years after the recovery boiler’s start-up, the simulator continues to be used regularly at Östrand, especially by new hires and personnel who need further training. Östrand managers have found that the simulator is very useful for going over elements of the process that are not often encountered, such as start-ups and emergency stops.

The close similarities between system and simulator also mean that the simulator is relatively easy to update, so that it stays accurate as the system is further developed and modified. This is a crucial factor for the simulator to remain useful in the long run.

Local high school students often come to Östrand for work experience and these students are also trained on the simulator. Because of the realistic nature of the simulator, and the fact that it is in the same control room as the real system, the students can get a true taste of what it’s like to operate the recovery boiler without causing any disruptions in the actual process.

A pulp mill obviously can’t let high school students interfere with the control of its processes. That dilemma is solved by the simulator, which lets the students get a true-to-life feel for how interesting an operator’s job can be using today’s level of advanced technology. The experience has been so successful that many of Östrand’s students who tried the simulator have gone on to become employed as operators.

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