
South American pulp mill

expedites issue identification using ABB's Advanced Digital Services

Fine-tuning system maintenance using Advanced Digital Services

A South American pulp mill relies on ABB products and services to keep its pulp mill product quality and runnability high. The mill is a manufacturing facility that converts wood chips or other plant fibers into a thick fiberboard, which is then shipped to a paper mill for further processing. This wood pulp is manufactured with the assistance of ABB Control Systems that provide Advanced Services to the mill, helping them to realize both production improvements and cost savings at the plant. Plant managers use Automation Sentinel, ABB's control system life cycle management and support program to ensure that their system software is continuously updated. System 800xA Performance Service helped to change the maintenance strategy at the site, expediting issue identification through automatic analysis, and identifying trends to mitigate equipment and process issues.

The mill's management team wanted to invest in performance-enhancing services to achieve high-level process analysis and troubleshooting. In 2015, the ABB service team in Buenos Aires, Argentina introduced Advanced Services powered by ServicePort to the management team. A test unit was installed, which provided data to show the customer that they could realize production improvement and cost savings through these Advanced Services. As a first step in their migration process, they decided to upgrade their existing ABB control system to achieve higher, better functionality. Next, they investigated all available options for advanced services and chose to invest in ABB Advanced Services to continuously improve system performance and maintenance. The manufacturer selected System 800xA Performance and the Loop Performance Monitoring Services to help improve equipment and process performance.

Benefits

- Accelerates problem solving through 24/7 visualization and analysis of control loops
- Establishes a solid foundation for continuous improvement, including higher availability, increased production and improved quality
- Increases process availability and control utilization through reduced process variability
- Lowers maintenance, raw material and energy costs with quick identify of process errors or trends
- Reduces response time and travel expenses by providing remote access to ABB experts for troubleshooting



01 Since the early nineteen eighties, a South American manufacturer, together with its subsidiaries, has produced, sold, and exported forestry and timber products worldwide. The company operates in pulp, panels, sawn timber, and forestry segments.

Predictive notifications from 800xA Performance Service

ABB’s System 800xA Performance Service uses data collected during scheduled and on-demand analyses for comparison against best practices and standards to detect performance irregularities. This comparison quickly pinpoints issues, helping to improve system reliability, availability and performance. With ABB System 800xA Performance Service, proactive data analysis delivers advantages to reduce the time and effort needed to identify software, hardware, system and network performance irregularities. Finding the sources of irregularity and inefficiency is a challenge that can be met through visualization and proactive analysis of system key performance indicators.

Predictive notifications from the System 800xA Performance Service have helped to reduce unscheduled downtime for the mill. Data is classified based on the established Key Performance Indicators (KPIs) to provide a list of items that are prioritized based on severity, criticality and/or financial impact. This analysis allows tracking and the development of accurate trend performance histories so that more decisions can be made with increased knowledge and make systems perform better with higher availability.

Using the System 800xA Performance Service, managers obtained an automated control system checkup that provided a benchmark for system performance and configuration. The plant managers use the comprehensive diagnostic analysis tools to assess their control system’s operation, implement improvements, identify, classify, and help prioritize opportunities for improved performance.



02 The ABB ServicePort Service Delivery Platform runs on a server and provides data analytics to users through multiple interface options, from environmentally hardened workstations through hand-held tablets as pictured here.

800xA Performance Service Report Summary

- Network 60

- Software Versions 43

- Systems 43

- Hardware 42

- AC800M 28

- Aspect System 3

03 Overall Performance Issue – The customer realized that their control system network needed attention. The report generated by ServicePort outlines the number of warnings that the server detected on each subset of the network. The first action to be taken by the operators is to fix the network issues or to determine what the causes of the network performance are. ABB engineers can perform this diagnostic troubleshooting on-site or use a remote connection to the site to perform network diagnostics.

Loop Performance Monitoring Service

ABB’s Loop Performance Monitoring Services include a series of platform-independent, non-invasive services that can be applied to any automated process or control system to benchmark, correct and sustain performance. Recommendations for improvements are delivered in a detailed report, prioritized based on resolutions that deliver the greatest benefits.

The Loop Performance Monitoring Service implemented at this manufacturing site presents a continuous report of process deviation in control loops, giving the mill managers the opportunity to make corrections. Now mill personnel can identify and address troublesome loops through data collection, model identification feedback tuning, feedforward tuning and controller simulation.

The performance of each control loop is evaluated based on responses related to: control, process, and signal conditioning. Each loop that gets a lower rating is counted as having an issue that needs investigation. This does not always mean there is a problem. However, a large number of issues indicate that there is room for improvement. The following figure shows the number of issues by each category.



05 Overall Performance Issue – The mill management team categorizes these performance issues into control issues, process issues and signal conditioning issues. The report generated by ServicePort outlines the number of warnings that the server detected indicating a deviation from desired operation. The most critical set of issues in the graphic above relate to control issues: these are control loops that have problems associated with process control tuning, setup, or configuration. The second most critical set of issues relate to process issues: these are control loops that have problems associated with process disturbances (not typically related to tuning). Third most critical are the signal conditioning issues: these are control loops that have problems associated with signal conditioning. Problems here can be corrected with filters and proper analog input setup. ABB engineers can perform these diagnostic troubleshooting steps on-site or use a remote connection to the site to perform network diagnostics.



04 The mill uses ABB Quality Control Systems. Pictured here is an ABB Network Platform that is scanning the paper web to ensure that all quality parameters are met.

ABB Advanced Digital Services reports provide improved process performance capabilities

Today more than 40 employees use ABB's System 800xA Performance and Loop Performance Monitoring Services on a daily basis to control production processes at the site. ABB has helped this customer to improve process performance, prevent problems and increase both the system's availability and the mill's productivity.

After the deployment of these services, mill management requested training for plant staff on ABB 800xA Control System Services. The maintenance discussions ABB now has with the customer focus on the analysis provided by the Advanced Services. For example, reel report information can be analyzed for each grade produced to monitor total variation, cross-direction variation and machine-direction variation against industry standard key performance indicators (KPIs). Through continuous, automatic monitoring and analysis of these KPIs, mill and ABB personnel can be informed and alerted to KPIs exceeding pre-set thresholds, so actions can be taken immediately to improve process performance.

Conclusion

With the help of ABB Advanced Services, this customer is more rapidly identifying and addressing equipment and process issues that may affect their production, and as a result is both making more pulp and reducing overall maintenance costs.

Extensive control system upgrade completed in 2.5 days with no unplanned downtime

When mill personnel decided to upgrade their control system on their Line 1, they turned to ABB Argentina to manage the project. The ABB team meticulously planned the extensive controller upgrade to the customer's Line 1, and was able to get the machine back online fast by delivering the project within two and a half days. The ABB team was able to complete additional upgrades while other areas of the mill were continuously running. With the help of ABB, the pulp mill was able to upgrade this critical control system while avoiding unplanned downtime.

“We want to extend our congratulations to all the staff who participated ... successfully completing a task that we viewed as critical. We believe that by focusing on safety and the work preparation together as this job was planned, success was guaranteed.”

- Mill management at the South American pulp mill