

Pulp & Paper



Integrating Multiple Systems into a Single Monitoring and Control Solution

Avid Solutions combines more than 10 disparate systems into a single, controlled process control system

“Avid Solutions consultants aren’t intimidated by a challenge. There were multiple disparate systems in this project – along with missing manuals, new technology additions, retrofits, and changing requirements – but our success with prior difficult projects and our responsiveness to change showed we were able to truly partner with this client to manage and complete such a task.”
Avid Solutions’ Project Manager

Background

A major consumer packaging company approached Avid to install a Combined Cycle power island with more than 10 individual systems into a single window process control system to streamline both monitoring and control. The systems included gas turbine and ancillary systems, wet compression and fogger, Heat Recovery Steam Generator (HRSG), condensate polisher, feedwater systems, cooling towers, Burner Management System (BMS), breaker monitoring, fire suppression, and Continuous Emission Monitoring System (CEMS).

The newly integrated process control system would need to use new, used, and existing equipment, including an expanded Honeywell Experion Distributed Control System (DCS). The goal was for a single operator to monitor and control each of the systems from one, seamless control system.

In addition, many existing systems lacked manuals and control strategies. Adding to the project’s ambiguity, its scope fluctuated as each phase was completed.

Approach

Avid Solutions offers a unique combination of plant floor experience, IT and operations expertise, and process industry knowledge to solve complex control and information systems challenges that create value for our clients and improve their communities.

For this project, Avid used both its Combined Cycle process knowledge and extensive DCS technology experience to solve the controls and integration problem. Integration and control strategies were required for each of the subsystems. A combination of protocols such as Modbus TCP/IP SCADA and Peer-to-Peer were utilized for data collection, system

monitoring, and control for the various disparate processes. Native Experion I/O and control strategies were used for systems requiring complete controls. For the supervisory controls, the team chose Modbus SCADA because of its easy integration with many third party interfaces, its cost effectiveness, and its ability to log historical data. Once the disparate systems (including turbine controller, PLCs, and Instruments) were connected with Modbus SCADA and Experion controllers, the DCS could collect data from the various systems and display it intuitively on an HMI while allowing the operator to control the entire process from a single control station.

To address the problem of used equipment with missing manuals and control strategies, Avid consultants first determined the required functionality and then developed detailed integration and control strategies. This allowed the systems to communicate together achieving the end goal of one complete monitoring and control system. Because the project scope changed over time, the Avid consultants and the engineering team maintained close communication with the client in regards to future steps, pros & cons, and trade-offs.

System

Avid developed the primary process control strategies for the HRSG, condensate polisher, feedwater processes, wet compression and fogger, and cooling tower, and provided an HMI capable of serving as a redundant operator workstation for monitoring and control of the GE Mark V turbine controls, electrical breakers, BMS, fire suppression, and CEMS.

Results

The new system provides seamless monitoring and control, resulting in fewer breakdowns and other incidents, and requires only one operator, freeing other operators to perform additional duties. The company can run the Combined Cycle plant in one seamless interface with a single console. Now, because the plant generates more of its own energy, it saves costs. The company is happy to have the ability to easily integrate additional systems into the enterprise in the future, and has already engaged Avid in a secondary project.

Applications:

Consumer Packaging

Combined Cycle
Turbine Controls

HRSG

Regulatory Controls

Instrumentation

Technology:

Honeywell
Experions DCS

Mark V Turbine
Control System

Allen-Bradley PLC

Modbus

Schweitzer
Engineering
Laboratories
Real-Time
Automation
Controller

“Our Avid consultants had a unique combination of experience, creativity and grit that enabled them to complete this project successfully.”
Avid Solutions’
Project Manager

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