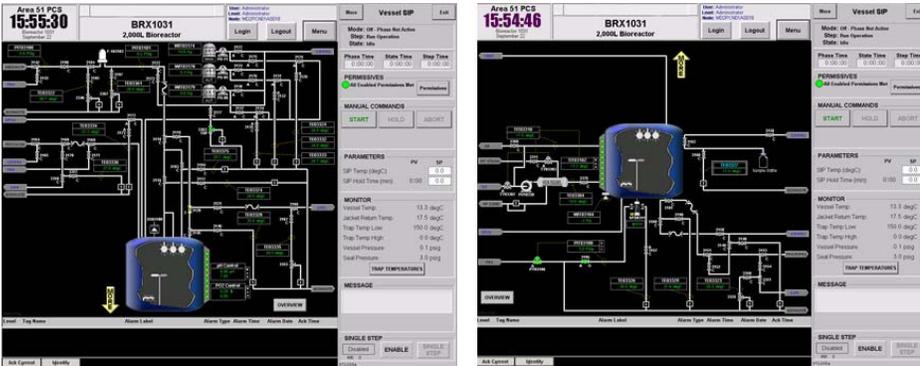




Automated Control Concepts, Inc.
Smart solutions.

Creating a process control system for a large-scale cell production facility: ACC applies innovative thinking to standards deployed across all systems, reducing training need



- ACC provided the PCS for a flexible, large-scale mammalian cell culture-based production facility.
- Involvement early in the process allowed ACC to meet a lengthy must-have list on an aggressive timeline.
- Beyond the overall SCADA system, ACC designed and programmed 20 PLCs controlling stick-built plant equipment.
- Optimizing communication between multiple PLCs and controllers, and deploying and enforcing standards across all systems, ACC helped reduce the staff's training burden and planned for easy modification for future growth.

THE STARTING POINT

To enable production of forthcoming products, a biotechnology company chose to build and license a flexible, large-scale mammalian cell culture-based production facility adjacent to their existing manufacturing center. This complex and challenging project was delivered on an aggressive timeline. The result was a facility capable of handling a wide variety of products supported by a fully integrated Process Control System (PCS).

ACC provided the PCS for this facility. The PCS provides control, monitoring, data collection, and reporting for all of the utilities, upstream and downstream manufacturing processes. This includes control of both stick-built and OEM (skid) supplied systems.

THE PROBLEM

A must-have list with a tight deadline

ACC'S SMART SOLUTION

ACC was included early during the initial design of the building and hiring of OEMs. The purpose of this early involvement was the development of standards and templates that were deployed for use by these OEMs in the development of their PLC applications. ACC's responsibility included the entire SCADA system that provided visibility into these skids. Working closely with these vendors provided the seamless integration that the customer desired.

In addition to the overall SCADA system, ACC was responsible for the design and programming of 20 PLCs controlling stick-built equipment in the plant.

Among these systems were the utilities, including city water supply and distribution, purified water supply, storage and distribution, process waste, and biowaste. In the manufacturing areas, systems included media and buffer preparation and hold tanks, harvest and product hold, filtration, and formulation.

The most complex aspect of the system included the transfer operations between tanks for cleaning, sterilization, and processing. This required communications between multiple PLCs and two (2) central traffic-cop controllers that managed arbitration between paths.

The customer's facility was completed in an aggressive time frame. The standards deployed and enforced across all systems facilitate the maintenance of the system by reducing the staff's need to learn different technologies and styles of programming and configuration. The flexibility built into the system creates a manufacturing

CASE STUDY: BIOTECHNOLOGY

ACC'S SMART SOLUTION –continued

environment that the biotechnology company can utilize for current and future products with minimal investment in modifications.



Let's take a closer look at a few key project execution innovations.

RIGOROUS CHANGE CONTROL

Prior to the building being partially complete, ACC installed and configured the software change control system to manage system software as delivered for each system. Each programmer (ACC and OEM) received a logon, instructions and training so that all changes were tracked and controlled from the moment of arrival on-site. As more systems were brought on-line and the number of programmers increased, this strategy allowed for tracking who was modifying programs, when changes were made and what those changes were.

OFF-LINE SIMULATION SYSTEM

Due to the size and complexity of the system, commissioning involved multiple teams working around the clock to verify and validate both the installation and operation of equipment. During this process, changes and

enhancements were ongoing. In order to streamline the workflow, a complete off-line process simulation system was developed as a duplicate of the live system. This allowed off-line testing and verification of software and SCADA changes without interfering with ongoing live system commissioning and testing. The subsequent loading of changes and enhancements required minimal system downtime and interruption to the work of the commissioning teams.

TRAINING SYSTEM

A software training system was built that mimicked the live system and included a unique subset of all the actual plant equipment. This allowed new personnel to be trained using scenarios that reflected the actual experience they will have in the plant.



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