



ILS[®] Case Study



ILS Brings New Life To An Old Reactor

A bioprocess control system update helped a leading manufacturer of USDA-licensed biologicals improve batch consistency.

Industry: Pharmaceutical

Challenges

- 30+ Year Old SIP Reactor
- Outdated Control Software

Solutions

- AFC 2000 Semi-Custom Controller
- Redeploy Existing Cabinets
- Batch Expert+ Software

*"I got exactly what I wanted."
- Department Supervisor*

Client

Like so many companies today, our client's corporate policy prevents them from allowing their name to be used by other companies, and so must remain anonymous. The client is a leader in the manufacturing of USDA-licensed biologicals for both large and small animals. Much of their work is in the production of cattle vaccines and drugs for companion animals.

Background

The manufacturer had an 800 liter microbial, 30+ year-old stainless steel, steam-in-place (SIP) reactor that was mechanically sound but in desperate need of a new controller. The old controller had become unreliable, causing the vessel to sit unused for over a year. Being a contract manufacturer, they needed to replace the production capability and required flexible controls for the varying products their customers produced. Of foremost concern was the cost to replace the idle system.

The Hardware Solution

A new vessel and controller package was quoted at well over **\$1.2 million** dollars. Rather than start over, the manufacturer opted to have ILS Automation provide a new controller for a fraction of the cost.

The client's department supervisor defined the operating specifications for the new controller and ILS provided their **AFC 2000** semi-custom bioreactor controller. To help further reduce costs, ILS built the controller into the existing cabinetry, updating the Human-Machine Interface (HMI) with a large touch screen and web-based remote access.



Alliance Technical Sales | 630-321-9646 | www.alliancets.com

ILS Automation, Inc.
PO Box 1309
Warrenville, IL 60555

(267) 907-9507
info@ils-automation.com
ils-automation.com





The Software Solution

The manufacturer chose to implement **Batch Expert+** (BE+) from ILS Automation. BE+ is a state-of-the-art, web-based Supervisory Control and Data Acquisition (SCADA) system designed specifically for the fermentation and cell culture industries. The software provides supervisory control of the reactor, common recipes, a data historian (SQL), and provides trending, alarming, and batch reporting.

Batch Expert+ is built on top of **Ignition**, a uniquely scalable SCADA platform from Inductive Automation. Ignition allows BE+ to scale to accommodate an entire facility, including multiple brands of reactors, mass spectrometers, assay and other external data, while monitoring separation units, chillers, freezers, and other devices.

As a contract manufacturing facility, it is critical that the client is able to provide full documentation and data logs for their customers' production runs. With BE+, any deviations in the run are automatically documented. These detailed records give the manufacturer's customers more confidence in each batch, allowing them to accept runs with minor deviations they might otherwise reject.

Access to BE+ can be both local and remote, allowing users to check and modify batches from their office, at home, or even from their mobile device.



Original reactor vessel



AFC 2000 Customized Feature List

The new AFC 2000 controller was configured for this manufacturer to provide the following set of features:

- ✓ A semi-automated SIP cycle that walks the operator through the steam-in-place process.
- ✓ A modern interface including digital communication to Mettler-Toledo ISM pH and optical DO probes, as well as analog transmitters for pH and polarographic DO.
- ✓ New Alicat Scientific gas flow controllers for air and O₂.
- ✓ Communications through digital Modbus to read and write mass/flow, feed pressure, temperature and gas totalizer.
- ✓ A new integrated remote "Pump Box" controlling speed and direction of three Watson-Marlow fixed and three variable speed pumpheads with DriveSure Technology.
- ✓ Cascade PID loops for pH, temperature, and dissolved oxygen, with an easy-to-use interface to establish DO cascade for RPM, air, and O₂.
- ✓ Setpoint profiles for each control element including gas flows, temperature, pH, DO, and pump speed.
- ✓ A new AC agitator motor and Variable Frequency drive supporting digital communication for RPM, power, torque, and drive temperature.
- ✓ Multipoint pump calibration curves with the option to enter pump set points as a speed or a flow rate.
- ✓ Emergency Shutdown of all high-power, heat, and moving elements of the reactor.