CASE STUDY

Bringing Stainless Sartorius® Reactors Out Of Retirement

Discover how two companies leveraged drop-in replacement controllers to un-retire their reactors after Sartorius® exited the stainless steel reactor market.

Retired Sartorius BioStat C

*An existing or used system with a replacement controller typically **saves 50–75% vs the cost** of a new system.*

Expanded Control Functionality

- Cascade or Alternate Temp Control
- Scale & Feed
- Multi-Variable Custom DO
- Automated Sequential Control (SIP)
- Batch Recipe
- Addition of Advanced Sensors

Background

If you work in the Biopharm field, the image to the left is probably familiar to you. Your company may have some of these systems and could be actively using them. If so, then you or someone in your organization has received notification from Sartorius® that these systems have been "retired." It's a nice way of saying, "You are on your own, good luck." Sartorius® has exited the stainless reactor market completely.

Sartorius® sold thousands of these stainless systems over the last few decades. The tanks range from 15 to 40 liters, are extremely well-designed and — with proper maintenance — are built to last indefinitely. While the tanks are great, the electronics are now dated. They have reached the point where Sartorius® needed to end support due to the lack of available parts.

Fortunately, we at ILS have a solution. We have replaced the controller on dozens of these systems and brought them out of retirement. The product has been so successful that a single customer ordered over 20 replacement controllers.

We'd like to share with you the successes and pitfalls from two of our customers.

Just Like a Superhero, the AFC 2000 has an Origin Story

A fermentation company, **Company A**, came across an opportunity to purchase eight, mostly complete Sartorius® BioStat® C 40L systems. None of them had been used for some time. The owner of the company hoped to use the parts and components from the eight to get some number of them operational. One of their consultants was familiar with our work and brought ILS in to design and build a PLC-based replacement controller for one of the systems. That was over a decade ago, and so it began.

A Not-So-Obvious Misstep

A second fermentation company, **Company B**, owns a handful of 40L BioStat® B/C units. Not knowing about ILS, they did what a number of other companies have done. They contracted with a local automation company to design and build a PLC-based controller.

At first glance, this seems like a logical approach. The problem is that very few automation companies have any fermentation expertise. They don't have the background to appreciate the complexities of cascading closed-loop control and the multitude of strategies used to control fermentations. The resulting unit was electro-mechanically fine, but lacking in any true usability. In the end, the system essentially works only in a manual mode.

AFC 2000s replace 15L - 40L Sartorius BioStat B/C DCUs/controllers

A Not-So-Obvious Misstep (continued)

Adding the features needed by fermentation specialists would require writing a very detailed and lengthy specification document, then having the automation company write the software. This is an extremely expensive endeavor. As this is now custom software, any hope of later adding features or enhancements pushes the cost beyond any reasonable budget. Company B quickly realized the final system had little actual functionality and it now sits idle.

Company B is a small company, still in the start-up phase of its business. After their experience with the local controls company, they were a bit reluctant to try again…but they needed to. Their plan was to replace the controller on a second BioStat® unit with an ILS controller.

Company A Leads To a Standard Solution

When we designed the controller for that first unit, we planned to reuse this design for subsequent units. These systems were sold in a range of volumes, but the piping and valving are the same. We soon realized that there are a lot of these systems out there desperately in need of the same fix.

As a result of all these systems being identical, the actual replacement process has become predictable and routine. Our delivery for the initial replacement includes a completed AFC 2000 bioreactor controller and a computer loaded with ILS's Batch Expert+ software. Subsequent units require only the controller as a single Batch Expert+ installation can control hundreds of reactors.

When we come on site, the old Sartorious® controller box is removed. A fully-programmed, new AFC 2000 bioreactor controller is mounted to the skid. New valve cables and wiring are run. **In two days, the system is fully installed and ready to start testing**.

The ILS AFC 2000 bioreactor controller and ILS Batch Expert+ are products of decades of experience in fermentation control. In addition to excellent basic temperature, pH, air, and agitation controls, additional capabilities of multiple probe selection, temperature cascade control, scale and feed control, dissolved oxygen cascade control to multiple variables, sequential control (SIP), batch recipe control, and historical data collection and analysis tools are provided. The AFC 2000 controller is equipped with touchscreen HMI displays designed for maximum human usability, capable of communicating with a full SQL data historian and data analysis tools.

Before replacement (above)
After replacement (below)

No Retirement Required

The reason Sartorius® retired these systems is because their custom parts are no longer available. What makes all ILS controllers unique is the lack of any custom parts. Every electronic component is commercially available from their respective vendors. That makes your company independent of ILS and allows you to be in charge of the future of your fermentation equipment.

Software is upgradable. ILS has invested thousands of hours into the programming of these controllers, making them robust, flexible, and expandable. Almost any fermentation strategy you might use is probably already included because we don't start over with each new system. If a new strategy is required, software and hardware can be updated. We recently added software to support Hamilton's Capacitance probes and retrofitted existing controllers to accept them.

We don't know what new strategy or sensor your lab will need in the future, but we have engineered a solution that allows for your lab to grow along with your needs. **Let ILS help bring your systems out of retirement.**