Does Start-Up Mean an End to Profit?

Bigelow-Liptak has been supplying world-class engineering, equipment and materials for high temperature processes since the 1950s. The company's equipment has been successfully deployed around the globe, supporting the needs of manufacturers across numerous segments of the process industries. Just like their customers, Bigelow-Liptak understands that time is money and lengthy commissioning comes with a clear cost to the company's bottom-line profitability.

Commissioning temperature-based control systems can be difficult and time-intensive as the dynamics are typically slow and often involve extensive Dead-Time. Bigelow-Liptak's more complex batch processes had a history of taking many days - sometimes weeks – to commission and optimize tuning parameters for a single controller. When presented with a project in central China, the company sought to control the time and cost of tuning each of the system's PIDs by turning to the technology experts at Control Station.

"Optimizing controller performance was a breeze with Loop-Pro™. A single bump test was all that we needed to accurately model the complex dynamics of each control loop. The software's graphics made it easy to finely tune parameters for optimal responsiveness and control. It easily reduced the time we budgeted for tuning by over 80%. It's a truly remarkable product."

Neil Gordon, P.Eng. - ***Engineering Manager,*** **Bigelow-Liptak of Canada**

When a Picture Tells a Thousand Words

Chromium-based catalyst activator systems from Bigelow-Liptak are high-temperature, multi-zone systems used in the polymerization of High Density Polyethylene (HDPE). They are designed to satisfy the most stringent of petrochemical specifications, quality control standards and operational safety requirements.

Bigelow-Liptak was contracted by a customer located in central China to deploy, integrate and commission a new chromium-based Catalyst Activator system - a high temperature process utilizing a batch fluid bed. Like other firm, fixed price projects, this engagement required Bigelow-Liptak's engineers to pay particular attention to working efficiently. Any additional time onsite would undermine the project's profitability.

Commissioning time allocated to tuning the system's interacting PID controllers was a significant concern for the deployment team. The process was known to be exceptionally slow, requiring a minimum of 24 hours to set-up, initiate and complete a modest 20 degree bump test. The multi-zone, cascading process architecture presented challenges in terms of establishing accurate models of the system's dynamics and of assigning tuning parameters that would deliver effective control to the customer.

The start of each batch proved the most challenging. Temperature was raised initially through use of an electrical heating system that tended to run away when catalyst was first introduced. Recovering from this initial condition while minimizing overshoot and holding steady at each ramp level in the batch cycle presented the primary difficulty. The engineering team's challenge was to get it right from the start, so they looked to the unique PID tuning software from Control Station.

Loop-Pro™ is the only tuning software that accurately models oscillatory and noisy data associated with the full range of industrial control loops – not just level loops. Using the software the Bigelow-Liptak engineering team was able to model and tune PID controllers with a single bump test, essentially eliminating days of commissioning with each loop. The software's graphic tools empowered the engineers to tailor loops easily for appropriate responsiveness and optimal control. Payback for the software came in just three (3) days, and the project was both a technical and a financial success.