NovaTech®
Bitronics ♦ D/3 ♦ Orion

D/3® Loop Optimizer

D/3® Loop Optimizer
Powered by Control Station

Proportional Integral Derivative (PID) control strategies are responsible for maintaining control of production processes within prescribed tolerances. They are heavily employed in most modern production facilities throughout the world.

Properly tuned PID control loops are fundamental to the success of any well managed process control strategy. Loops must be properly tuned in order to minimize energy usage, maximize product quality, and improve corporate profits.

A number of factors contribute to improperly tuned loops in modern processing plants. Please consider the following five examples:

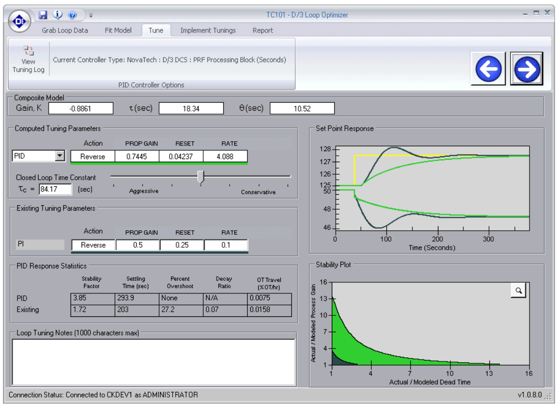
1. In many of today's plants, it is typical that one or two people are the recognized experts with respect to PID loop tuning. The availability of these key resources and the amount of time allotted to tuning loops is directly proportional to how effectively and accurately loops are tuned. When a plant has hundreds of PID loops, a large amount of time may be required to properly tune all loops. This time is not always available during hectic startups or plant expansions. Therefore, it is typical that many loops are not tuned optimally.

2. The dynamics associated with typical PID control loops can change over time. Furthermore, the wear and tear on instrumentation and other production-related assets can negatively affect PID loop performance.

3. Adjustments to a product's specifications may result in new process dynamics and could present variations in typical PID loop performance.

4. Manual tuning of PID control loops can be very time consuming, inaccurate, and inconsistent. Successful loop tuning is highly dependent on the knowledge and experience of the individual tuning each loop and can vary widely from person to person and loop to loop.

5. Many time-domain modeling technologies require steady-state operation for proper PID loop modeling. Failure to achieve steady-state operation impairs the efficacy of model generation. The impact of a sub-optimal model can be significant from an economic standpoint and can be counter-productive to the goal of efficient process optimization.



D/3 Loop Optimizer

D/3® Loop Optimizer is designed to provide a highly intuitive and effective platform for all PID loop tuning on a D/3 system. It solves common problems associated with tuning PID control loops and it allows users to model, analyze, and tune PID control loops quickly, accurately, and consistently. Since it is so intuitive, lesser skilled users can now tune loops as quickly and effectively as those with many more years of experience in PID loop tuning.

D/3® Loop Optimizer employs patent-pending process modeling algorithms that enable users to accurately model non-steady state or noisy process data. Users then analyze and adjust tuning parameters via highly intuitive wizard like display screens.

The software allows each user to model and tune various aspects of a process operation and determine optimal tuning parameters for each. For example, a user could easily generate optimal tuning parameters for a reactor at startup, steady state, or shutdown phases. Furthermore, D/3® Loop Optimizer provides tuning capability for multiple simultaneous users from any D/3® Console.

Key benefits:

- No setup required at run time
- Less skill required to tune loops
- Significant time savings when tuning
- Accurately model non-steady state data
- Tolerant to noisy data
- Easily perform "What-if" experiments
- Save parameters to PCM and UDB
- Intuitive wizard based tuning process
- Comprehensive Documentation

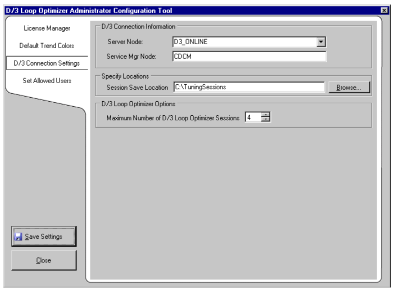
D/3® Loop Optimizer
Powered by Control Station

Key Features of D/3 Loop Optimizer:

NSS Modeling Innovation

Equipped with Control Station's patent-pending Non-Steady State (NSS) Modeling Innovation, D/3® Loop Optimizer is uniquely suited to analyze non-steady state process data collected directly from the D/3 and to provide superior PID controller tuning parameters by:

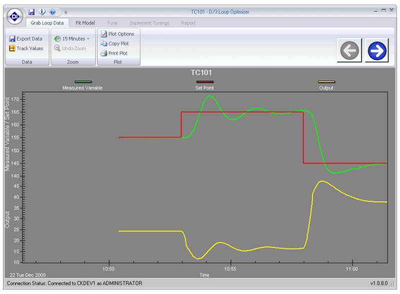
- Segmenting of process data that are associated with any/all experiments performed (i.e. bump tests).
- Centering the process model over the entire range of process data under review.



Configuration software simplifies integration with D/3

Customizable Controller Performance

The adjustable Closed-Loop Time Constant allows users to tailor a controller's performance. Users can achieve control characteristics from Conservative to Aggressive via the intuitive slider bar control.

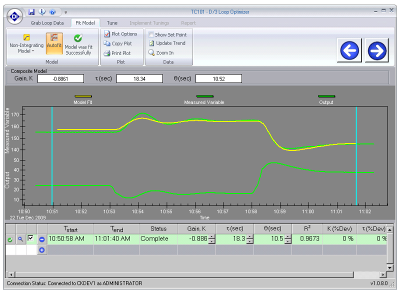


Automatically starts collecting data when launched from D/3 Console

Comparative Statistics and Stability Analysis

D/3 ®Loop Optimizer enhances accuracy and understanding by providing dynamic stability analysis. Tabular statistics and graphical performance charts reveal the relative improvement to the selected control strategy:

- Displays performance statistics such as: Settling Time, Percent Overshoot, Decay Ratio and Controller Output Travel.
- Advanced robustness analysis algorithms are used to calculate process stability.

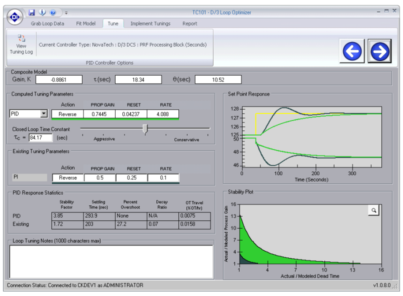


Graphics show accuracy of the NSS model fit

Simulated Controller Response

Dynamic simulation of the PID controller's response curve permits users to evaluate proposed tuning parameters before implementing them in the PCM. In particular, users benefit from the display of:

- Side-by-side comparison of existing vs. proposed tuning parameters.
- Optional controller settings, including P-only, PI, PID, and PID with Filter.

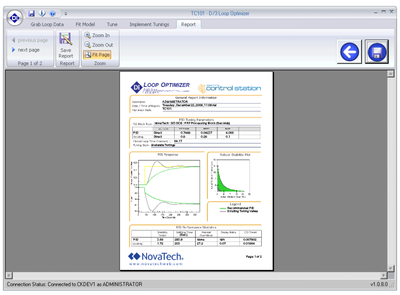


Analysis reveals performance improvement

Documentation and Reporting

D/3® Loop Optimizer provides comprehensive documentation of the decision-making process and presents appropriate information in an easy-to-follow report. Each report includes:

- Process data used
- Associated model fit
- Simulated PID response
- Performance statistics
- Related stability analysis
- Model parameters
- Related data properties
- Controller scaling values



Documentation generated for future review

Contact:

NovaTech, LLC
NovaTech Europe BVBA
Kontichsesteenweg 71
2630 Aartselaar Belgium

T: +32 3 458.08.07
F: +32 3 458.18.17
E: info.europe@novatechweb.com
www.novatechweb.com

NovaTech®
Bitronics ♦ D/3 ♦ Orion

D/3® Loop Optimizer