Metso PID Loop Optimizer

metso
Expect results

Control loop optimization through innovation

The fast, easy way to the right tuning
Eliminate the guesswork and stabilize your plant

"Helped us fine-tune Nuclear Reactor BWR #6 - literally tons of money per day."

Instrument & Control Maintenance Specialist, Entergy Operations

Diagnose instrument and valve issues
Metso PID Loop Optimizer shows you how to reduce control valve wear, extending valve life and service time.

Process models you can trust
To get good tuning, you need good process models. Metso PID Loop Optimizer automatically finds the best model to fit your data.

Special tools for special loops
• Level wizard
• pH characterizer

PID Loop Optimizer goes far beyond simple PID Tuning. It helps you to address all aspects of PID loop performance.

Detailed reports for control loops
PID Loop Optimizer automatically generates detailed reports for control loops. These reports can contain detailed information such as:
• Value performance
• Statistical analysis
• Time-line analysis
• Before and after charts
• Performance summary

Loop oscillations
Oscillations, or cycles, come from many different places in the plant. Oscillations can spread and affect every area of the plant.
• Power spectrum to track
• Cascade loop dynamics
• Multi-loop trending
• Cross-correlation analysis

Support for advanced control
PID Loop Optimizer supports your advanced control needs with:
• Frequency domain models
• Generating DMC vectors
• Selecting set point filters
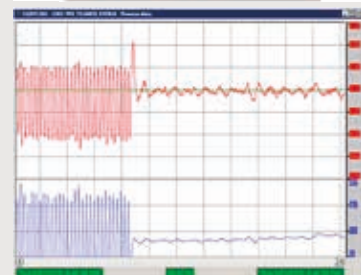• Integration with PlantTriage

Customer examples of PID tuning before and after

1400TC119	FEED TO B001		
	P	I	D
Before	50	250	0
Change	400	45	0

1400TC144	FEED TO B001		
	P	I	D
Before	50	250	0
Change	400	45	0
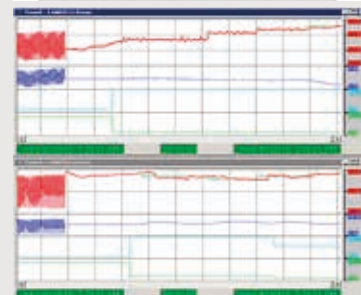
1520TC501	C031 VPR TO EA031 CNTRLR		
	P	I	D
Before	50	400	0
Change	600	100	0

PID Loop Optimizer comparison

Eliminate guesswork in controller tuning and loop optimization

Resolve problems with sensors, filtering, tuning and control valves

The advanced package is required for DCS systems and optional for all other controllers

Feature	Standard (PLC)	Standard plus (PLC)	Advanced (DCS)
Support for all single loop controllers and PLCs.	Yes	Yes	Yes
Support for all DCS Controllers.		Yes	Yes
PID Tuning optimized for load upsets or set point changes (from data collected in auto or manual).	Yes	Yes	Yes
Traditional Lambda tuning rules (including Lambda for level).		Yes	Yes
Safety Factor: Adjust the safety factor for the trade-off between response and robustness you want.	Yes	Yes	Yes
Performance Increase: Tells you how much better the response will be with the new settings.	Yes	Yes	Yes
Process Modeling, up to second order with dead time, including integrators (from open or closed loop data).	Yes	Yes	Yes
Characterizer—Optimal performance at all production rates. Linearizes your process for optimal performance across the entire range.		Yes	Yes
Universal Linearizer for pH Loops. pH control with little or no cycling.		Yes	Yes
Advanced reporting. Customize your report templates in MS Word.		Yes	Yes
Easy Connection to PLCs and single loop controllers via Setup wizards. With OPC or DDE option.	Yes	Yes	Yes
Setup wizards make it very easy to connect your DCS systems. With OPC or DDE option.		Yes	Yes
Tune and analyze data from your plant historian (via OPC HDA).		Yes	Yes
OPC Communication option available.	Yes	Yes	Yes
ASCII Communication option available.	Yes	Yes	Yes

Understand process dynamics ▶ **Stabilize** the plant ▶ **Improve** quality

	Feature	Standard (PLC)	Standard plus (PLC)	Advanced (DCS)
Time Simulation	Time simulation of setpoint changes or load upsets. What-if analysis of current to new. Try out new values in simulation without affecting the plant.	Yes	Yes	Yes
	Comparison of actual to model. See how close the model fits your time data.		Yes	Yes
	Simulated response to noise. Includes valve wear indexes.		Yes	Yes
Robustness Plot	Trade-off between tight tuning and sensitivity to dead time or gain changes.	Yes	Yes	Yes
	Dial in the robustness you want (by dragging the robustness line).		Yes	Yes
Hysteresis Analysis	Hysteresis check—automatic. Improve control by reducing hysteresis.	Yes	Yes	Yes
	Hysteresis check—manually choose locations. Gives you more control of hysteresis checking.		Yes	Yes
Drop 'n Drag Modeling	Graphically zoom in, edit, filter, or average your time data.	Yes	Yes	Yes
	Manually zoom in and set display ranges on the time data plot.		Yes	Yes
Valve Analysis	Valve Wear Analysis. Extend valve life. Reduce valve maintenance.		Yes	Yes
	Valve Stiction Wizard: Correct stiction problems to reduce cycling.	Yes	Yes	Yes
**MPC	MV Loops**	Multi-Variable Loop Analysis: Number of extra trends (to DDE, or OPC). Monitor other variables on the same faceplate or trend.	1	No Limit	No Limit
	Multi-Variable Loop Analysis: Add extra loops (to DDE, or OPC). Match variables for modeling, analysis, simulation, tuning, or interactions between loops.		Yes	Yes
	Multi-Variable Loop Analysis: Relative Response Time. Decouple interacting loops and cascades.	Yes	Yes	Yes
	Auto and cross correlation. Multi-Variable loop analysis. See how loops affect one another.	Yes	Yes	Yes

The complete toolkit
for control loop optimization

- Connects to your controller via industry-standard OPC
- Simplifies PID tuning
- Develops process models
- Simulates mock tuning
- Diagnoses valve issues
- Processes reports
- Analyzes time line
- Uses linearization tools

- Analyzes statistics
- Finds the optimal PV filter
- Levels loops and integrators
- Responds to set point and loads
- Supports over 700 industrial control algorithms
- Graphically balances trade-off with robustness plots

![Metso logo]

Metso Inc., metso.com/solutions/control-performance