

## Software Prioritizes Loop Repairs

**M**any PC-based software packages and standalone PID controllers can tune control loops and improve loop performance. These products work well, but depend on the user to pinpoint troublesome control loops.

Some control loops have obvious problems, but many others have subtle problems that often go undetected. Users could benefit from a software package that automatically detects and prioritizes these problems.

ExperTune, Hubertus, Wis., recently released PlantTriage software, which identifies poorly performing control loops, quantifies the cost of each loop's poor performance, and indicates the control loops where optimum performance will yield the greatest economic benefit. The package is a group of software modules that run on a PC under Windows.

The Assessor module continually analyzes process control loops and ranks their performance. "The Assessor monitors and evaluates more than 20 separate control loop analytical values," says John Gerry, ExperTune president. "All of these values are archived for historical trending. Any combination of values can be viewed for detailed analysis."

Users can enter plant data into the system including costs of raw materials, cost of energy, and the value of finished products. These data can also be automatically extracted from other software programs via an OPC link. The Assessor module uses these costs along with loop performance data to perform a sophisticated economic analysis and to generate value rankings for plant control loops.

The Optimization Analysis module includes the optimization power of the Advanced ExperTune PID Tuner/Analyzer, which contains a range of analysis tools to help optimize control loops pinpointed by the Assessor module.

PlantTriage includes a notification module that can send e-mail messages and reports that identify which control loops will benefit most from performance improvements. The Prioritized Tasks module lists a predefined group of control loops ranked in the order of greatest achievable economic benefit.

The Historian module is a full-feature data historian package specifically designed to help pinpoint process improvement opportunities. "All process variables and performance measures are archived for complete viewing," says Gerry. "The Historian module can obtain data via OPC or directly from an installed OSI Software PI system." (OSI Software's

PI system is a data historian software package.)

The Consultant module is the expert system component of PlantTriage. The Consultant is designed by Greg Shinsky, a world-renowned process control expert. It goes beyond the capabilities of the Assessor module and the Optimization Analysis module to identify and correct the most difficult control loop problems. These problems include cycling, varying performance under different operating conditions, and instability after process upsets.

The Consultant module collects data for each control loop and performs sophisticated diagnostic analysis. "There are about 40 different categories that characterize poor control loop performance," says Shinsky. "The Consultant module looks at many different parameters including the control loop

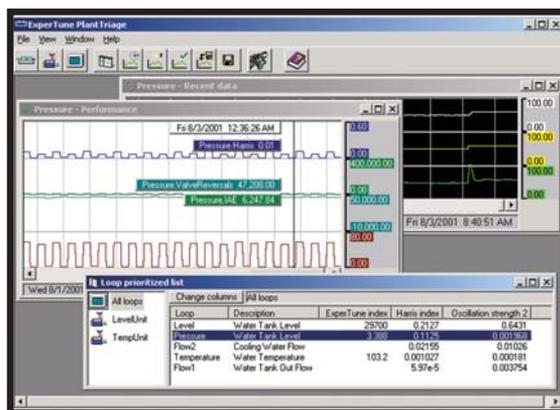
type to characterize and analyze performance."

The Consultant distinguishes among different control loop types including flow, level, pressure, temperature, and various composition loops. Control loop type and behavior are both analyzed in the Consultant. The Consultant then generates a comprehensive definition of the control loop problem along with a list of recommended solutions.

Other control loops cannot perform at optimal levels unless certain components are added or modified. "A pressure control loop on a compressor may have a control valve that is not capable of acting quickly enough to throttle flow. No amount of loop tuning and parameter adjustment will fix this type of problem," explains Shinsky. The Consultant is able to specifically identify poorly performing control loop components and to tell the user exactly what area of performance must be improved in the component.

Some loops require more than simple PID control. The Consultant can identify these loops and recommend advanced control strategies and other enhancements to improve performance. Recommendations may include cascade control, filtering, windup protection, selection of sample interval, and nonlinear characterization. Smart valve positioners can improve control valve performance and often are recommended.

The Consultant also can identify problems caused by interactions between multiple control loops. 



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