PlantTriage

Plant-wide Performance Supervision System

Case Study:

Power Generator Sees 2.5% Production Increase

Results

PlantTriage improved process performance at a power plant in Spain:

- 2.5% Production Increase, worth over €1,220,000 = $1,894,000 U.S. per year
- Stabilized during load change – reducing risk of turbine trip. Each trip costs over $50,000.
- 100% payback in less than 6 months.

Background

This case study examines the first 6 months after PlantTriage installation at a combined-cycle power plant in Spain. This plant is a public utility. The site was equipped with a real-time data historian, OSI-PI.

The Challenges

The plant was faced with frequent load changes. During load changes, temperature overshoot as small as 2% could cause a turbine runback/trip.

The Problem

An initial assessment with PlantTriage revealed the following facts:

- 51% of control loops oscillating
- >15% controller tuning issues
- >50% of control loops interacting
- 20% of control valves with mechanical problems

> "With the controls are stabilized, operators are pushing the process toward more profitability."
>
> Control Engineer

The opportunity to make improvements was clear: Improve the fundamental performance of the controls, to stabilize the process.

The Journey & Discovery

The improvement team consisted of plant engineers, ExperTune staff, and local engineering support provided through Invensys, an ExperTune partner.

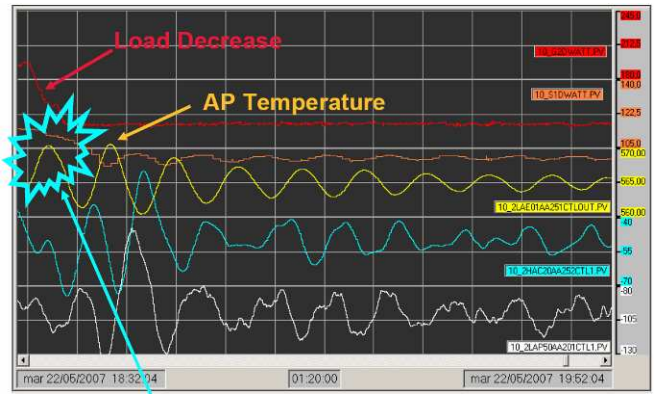
Solution

A PlantTriage system was installed to monitor all 1000 control loops in the facility. The group started by focusing on stabilizing the must unruly control loops. The assessment tools in PlantTriage simplified this process, allowing control loops to be ranked by a combination of variability and economic importance.

> "PlantTriage found many of these opportunities very quickly. It is like having a staff of engineers working for me."
>
> Senior Consulting Engineer, Invensys

Results were achieved using a methodical approach:

1. PlantTriage identifies and prioritizes key opportunities.
2. Engineer confirms diagnosis, and schedules repair or small project.
3. Results are confirmed with PlantTriage.



Before: Load Change and Unstable Response

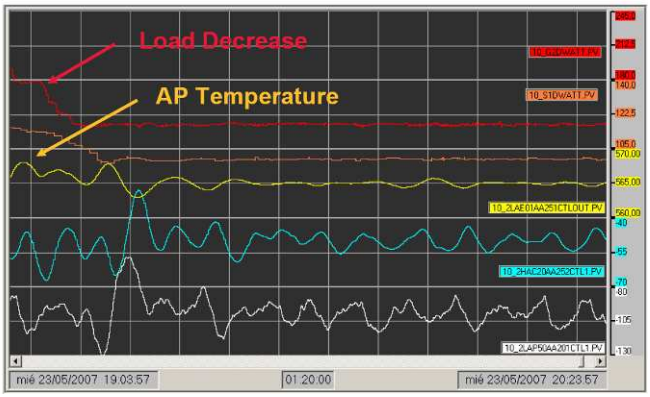
Implementation

Prior to this project, the site had an OSI PI historian in place. PlantTriage was connected directly to the PI server, to collect real-time data. This had 2 advantages:

1. There was no additional communications load on the control system.
2. Historical data could be analyzed in the PlantTriage tools.

Invensys provided installation support and training. Service and training were included in the PlantTriage purchase. Each control loop was assigned a relative economic weight, so that results reflect not just technical issues, but the actual business impact. Upon installation, PlantTriage immediately identified a number of key opportunities.

Calendar time for installation and configuration was less than 1 month, for server hardware, network connection, loop configuration, and training.



After: Load Change with Stabilized Response

Delivered Value

The market value of the increased production was over €1,220,000, based on industrial market pricing. Additional benefits from reduced trips, and reduced equipment wear, were not calculated directly, but are estimated to exceed another €500,000.

Monitoring with PlantTriage is now a regular part of daily operations.

About PlantTriage & ExperTune

PlantTriage software was developed by ExperTune, Inc. With hundreds of installations worldwide, PlantTriage is helping to save money, reduce energy demand, and increase production in a wide variety of process industries. ExperTune's 20+ years of process and control expertise have been incorporated into the PlantTriage software.