

StatSoft Power Solutions™

From StatSoft - the worldwide leader in advanced process monitoring and optimization software systems and predictive data mining applications

Optimize combustion, OFA

Cyclone, Wall-Fired, T-Fired; robust flame temperatures; primary, secondary, tertiary air values

Stabilize operations

avoid uncontrolled emissions, excursions, expensive downtime, generation roll-backs

Reduce emissions

NO_x, CO, LOI

Predict problems

emissions related to combustion optimization; maintenance issues



Before you invest tens of millions in new equipment


Let us work with you to improve your operations with your existing equipment by leveraging the data that you already have, and for a fraction of the cost of other methods.

After you invested tens of millions in new equipment

Apply StatSoft's advanced data driven optimization strategies to fine-tune the equipment to optimize its performance for your specific site and/or the type of boiler/process.

Powered by StatSoft's patented technologies for Data Driven Process Optimization

- Proven data driven solutions
- Multivariate nonlinear optimization from historical data, no computer expertise required
- Application of the most advanced data mining technologies specifically adapted for power-plant optimization
- Advanced multivariate on-site or remote process monitoring

Leverage the information in your existing data (e.g., in the  **PI data historian) to optimize power plant performance**

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Examples of Typical Applications and Successes

Note: The following case studies describe applications of StatSoft's technologies to coal-fired cyclone and wall-fired furnaces. The data driven (data-mining) approach to plant optimization is equally successful with other common types of furnace designs, manufacturers and different fuels (coal, gas, etc.). Applicable to optimization of other types of key operational performance indicators (e.g., urea injection/ammonia slip, ultrasonic leak detection, etc.).

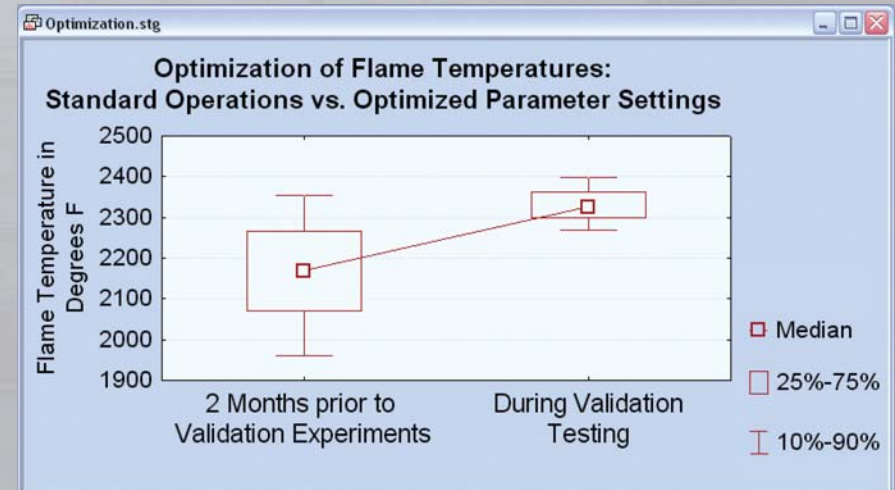
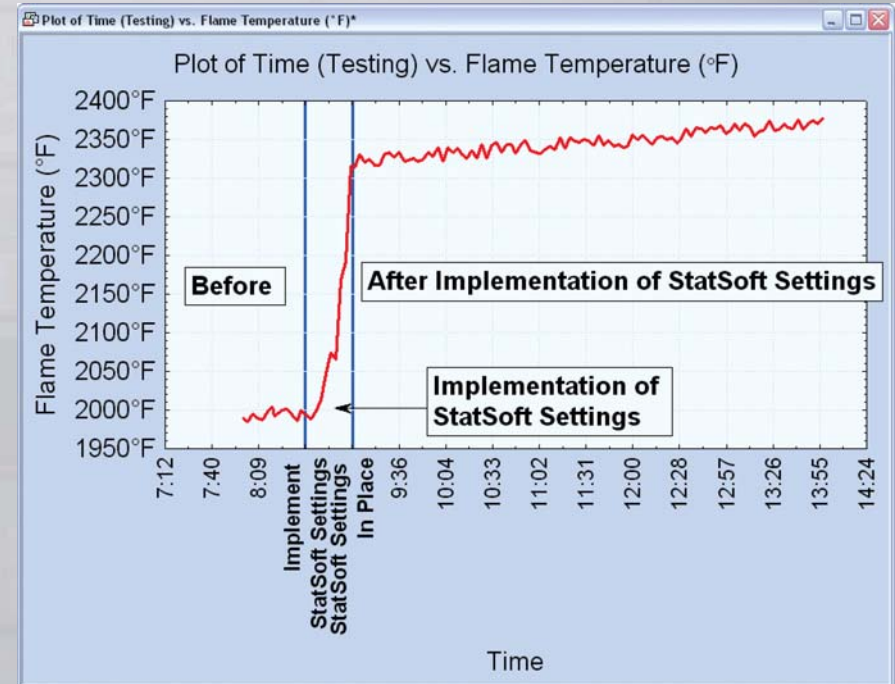
Optimize Operations (Increase Flame Temperatures)

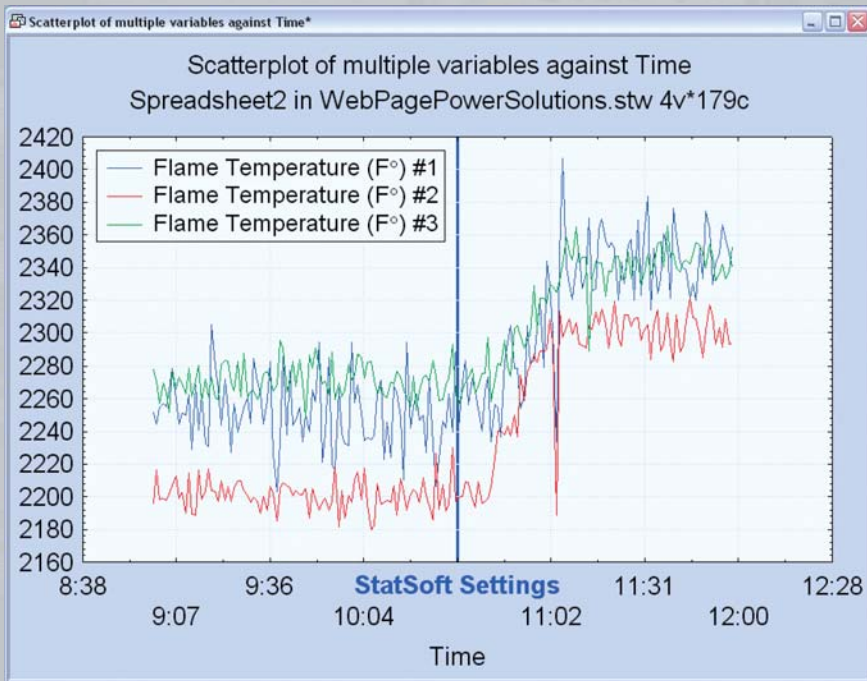
Problem: Optimization of a coal-burning 300 MW multi-cyclone unit for consistent high flame temperatures; increase the flame temperatures to avoid forming slag, burning fuel oil, etc.

Solution: Analyze 12 months of 3-minute historical data, using StatSoft's specialized data-driven (data-mining) methodologies; optimize settings for Stoichiometric Ratios (S.R.), Coal Flows, Primary Air, Tertiary Air, Split Secondary Air Damper flows, etc.

Results: StatSoft identified optimized control parameter settings (S.R., Coal Flow, Primary Air, Tertiary Air, and Split Secondary Air damper flows); after dialing in StatSoft optimized settings at 8:40 am, flame temperatures immediately responded (strongly), resulting in more stable and higher flame temperatures (cleaner combustion).

Note: The flame temperature at some of the cyclones had been abnormally and critically low for several days, requiring the burning of fuel oil (at a substantial cost), and intermittent shut-downs; flame temperatures “recovered” almost immediately after StatSoft's optimized control settings were applied.





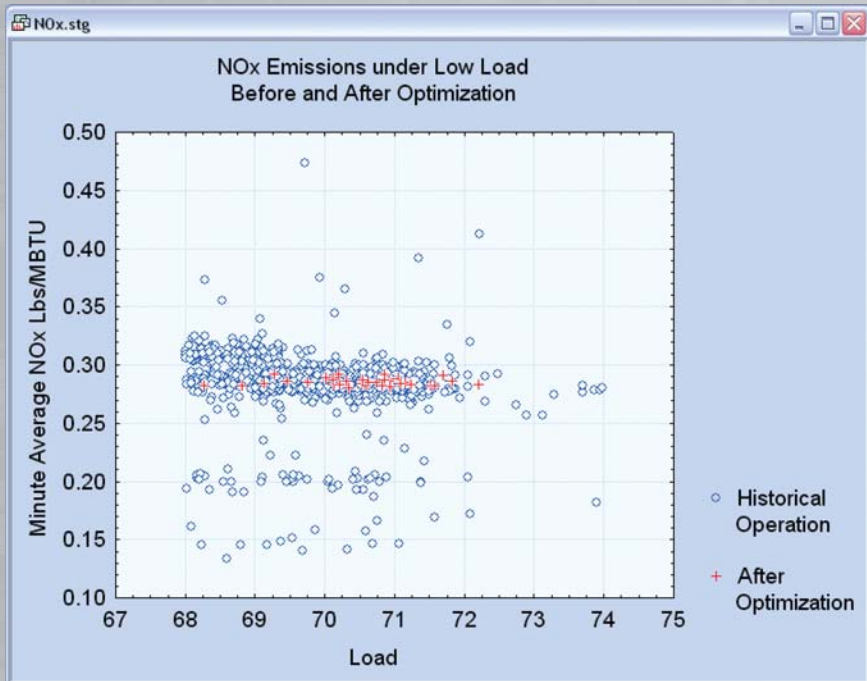
Improve Efficiency and Performance of Your Equipment

Problem: Optimize performance and reliability of ongoing operations; stabilize and improve flame temperatures of an 85 MW coal-burning multi-cyclone unit.

Solution: Apply StatSoft's specialized data-driven (data-mining) methodologies to consistently increase flame temperatures under a variety of loads.

Results: Flame temperatures increased consistently across all cyclone burners, leading to more reliable operations.

Note: Even though the flame temperatures had been within satisfactory limits, StatSoft's settings improved temperatures further and significantly beyond historical values.



Stabilize Operations

Problem: Optimization of a 400 MW coal-fired DRB-4Z burner for consistent and robust low-NOx operations; avoid excursions, expensive downtime.

Solution: Apply StatSoft's specialized data-driven (data-mining) methodologies to optimize for both average lower NOx and less variability (control variability, then target process for better performance); optimized solution allows burner to operate consistently under normally occurring (external) variability in load, coal quality, etc.

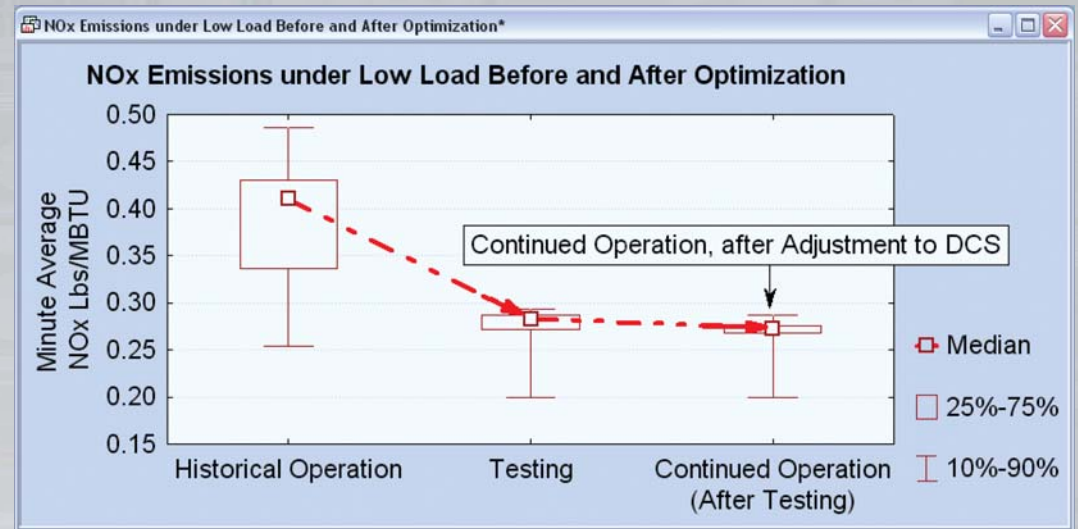
Results: Optimized settings for combinations of control parameters not only resulted in lower NOx, but also greater robustness, i.e., consistently lower NOx emissions with less variability (no excursions) were achieved over continued operations at low load.

Reduce emissions (NOx, CO)

Problem: Optimization of a 400 MW coal-fired DRB-4Z burner for low-NOx operations under low load (50-175 MW).

Solution: Apply StatSoft patented data driven (data mining) technologies to historical data; identify optimized parameter settings (changes to air flows); results consisted of a set of specific (achievable) input parameter ranges that could be implemented easily into the existing DCS (digital control system).

Results: After optimization, NOx emissions under low-load operations were now comparable to NOx emissions under higher loads.



Predict Problems Before They Happen

Root causes: Identify root causes of ammonia slip in a selective non-catalytic reduction process for NOx reduction based on historical data collected at the actual site.

Failures: Predict failures or unexpected maintenance issues.

Call us today to discuss a project to implement the most cost-effective solution for power plant optimization.

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StatSoft Power Solutions™

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