

Lockheed Martin Aeronautics Company

Aeronautics company's powerhouse boilers upgraded with Ultra-Low NO_x burners, are monitored successfully by Rockwell Software, Software CEM® and Real-time Environmental Management applications from Rockwell Automation.

Lockheed Martin

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Fort Worth Facility, Air Force Plant #4, produces military aircraft for the US and a number of foreign governments.

Key Benefits:

- Up to \$1,000,000+ savings in the total cost of ownership versus installing, operating and maintaining a hardware-based CEM
- Reduced risk of fines or penalties associated with monitor downtime
- Reduce compliance costs associated with monitoring, recordkeeping and reporting
- Less than 6% Overall Relative Accuracy Test Audit on the three boilers (US EPA regulatory requirement is +/- 20%)
- Intuitive, browser-based user interface enables faster user adoption, lower training costs and less time to diagnose and respond to occurrences

Challenge

At Lockheed Martin's Fort Worth, Texas, facility, three large industrial boilers in their Central Boiler Plant were recently upgraded to emit extremely low concentrations of NO_x by employing "Ultra-Low NO_x" burner technologies. The air permit on-site required a continuous monitoring system that would provide reliable and accurate emissions records in order to meet the regulatory requirements of the Texas Commission of Environmental Quality (TCEQ). Rather than replacing its current monitoring and reporting method with a costly hardware-based continuous emission monitoring system (CEMS), Lockheed Martin preferred to save money and manpower by finding a way to leverage the Predictive Emissions Monitoring System (PEMS) already in place at its site. The company recognized that replacing their current system with a hardware-based CEMS would require a significant capital investment. Subsequently, the ongoing maintenance needs of a hardware-based CEMS would produce considerable expenses over its lifetime. These expenses could amount to more than \$1,000,000 to maintain the three boilers, as compared to implementing a software-based solution.



Software CEM Solution

Lockheed Martin chose Software CEM® as its progressive software-based solution for their emissions compliance requirements. Once the advanced technology for their boilers was installed, a team of Rockwell Software engineers implemented the world's first and only software-based Predictive Emission Monitoring System (PEMS), Software CEM, to continue to meet its stringent standards for monitoring of ultra-low NO_x boiler emissions.

LISTEN.
THINK.
SOLVE.™

Software CEM is a patented, model-based, predictive emission monitoring system from Rockwell Automation. It provides a certifiable, cost-effective solution as an alternative to hardware-based Continuous Emission Monitoring Systems (CEMS). Powered by the Pavilion8® software platform, Software CEM provides a highly reliable emissions monitoring solution to meet or surpass worldwide regulatory requirements. Software CEM utilizes powerful analytic models of the process with real-time sensor validation to provide predictive emission values with unparalleled accuracy. Unlike hardware systems that provide stack output information, Software CEM uses process sensor data that operates in real-time, providing the Lockheed Martin plant with a window into the actual front-end control of the boilers. These real-time values enable their plant to monitor operating conditions that could affect the final output of emissions. Software CEM uses a patented sensor validation system as a qualifier to detect sensor failures and set appropriate alarms. This versatile system utilizes existing sensors to generate a model of all sensors in the process. This allows data validation to continue accurate emissions predictions

during a sensor failure, providing for near 100% uptime. In addition, Software CEM has the versatility to predict emissions even in the extreme operating ranges of unit operations. When Lockheed Martin initially considered a hardware CEMS, they were concerned about low fire-rate and near zero NO_x values. They understood the challenges that exist with high signal-to-noise levels on analyzers, resulting in poor measurements of NO_x. With Software CEM, these problems are alleviated since there are no hardware analyzers required to predict emissions in extreme operating environments.

Single Source Solution for Integrated Monitoring & Reporting

Lockheed Martin is also taking advantage of the benefits of the Real-time Environmental Management (REM) application from Rockwell Automation, which offers improved reporting. The Rockwell Software REM application gives Lockheed Martin a powerful environmental compliance and reporting system for continuous “active compliance” in real-time. Sophisticated data validation and a secure metadata repository help

ensure that all reporting information is accurate and auditable to meet even the most stringent regulations. Additionally, REM provides a flexible, scalable solution to meet a wide range of predictive emissions, emissions monitoring, and compliance reporting requirements. Lockheed Martin now has the ability to automatically collect, validate and aggregate data to meet their reporting requirements. REM provides rich, real-time visualization and on-demand reporting in a role-based, contextual format within an intuitive browser-based user interface.



Browser-based, real-time visibility of emissions performance

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