

# Rockwell Software Environmental Solution

Software CEM Application

Accurate emissions and compliance information at a significantly reduced cost to operate and maintain compared to hardware-based Continuous Emissions Monitoring Systems (CEMS)

## Benefits:

- Lower installation costs
- Lower maintenance costs
- Improve accuracy, consistency and reliability
- Reduce emissions compliance record-keeping and reporting costs
- Reduce personnel safety risks
- Minimize financial risks associated with late reporting, errors or monitor downtime

## Rockwell Software Solutions

Our solutions leverage Rockwell Automation's 100+ years of CEM innovation, experience and global support. Industry best practices are incorporated into every application, which is built upon a composite application framework that leverages a Service Oriented Architecture (SOA). This scalable solution, when combined with library-based content, offers personalization options that promote faster user adoption and time-to-value.



## The Challenges

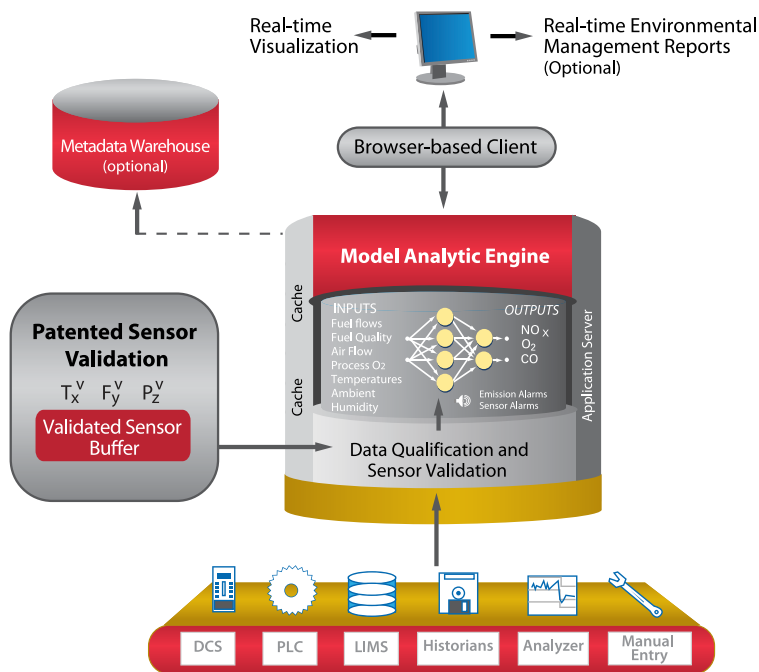
Manufacturers are required to meet the continuous emissions monitoring requirements of local, state, national and global regulations and emissions trading programs. These requirements include periodic accuracy verification as well as near 100% monitor uptime. As regulations become more stringent, many industries and processes that were once exempt are now required to account for their impact on the environment.

When a monitoring system is implemented, the challenge for manufacturers is that the system must meet these various regulatory demands yet be cost-effective to operate and maintain.

Rockwell Software recognizes these challenges and offers an application that delivers valuable emissions and compliance information to meet regulation requirements at a reduced cost.



LISTEN.  
THINK.  
SOLVE.™



## Sources

- Boilers
- Turbines
- Duct Burners
- Dryers
- Thermal Oxidizers
- Reciprocating Engines
- Process Heaters
- Olefin Furnaces
- Crude Heaters

## Fuel Types

- Natural Gas
- No. 2 Fuel Oil
- Other Fuel Oils
- Refinery Gas
- Process Gas
- Combined Fuels

# A software solution to a hardware challenge

## Software CEM Application

Software CEM<sup>®</sup> is a patented, model-based Predictive Emissions Monitoring System (PEMS) that provides a certifiable, cost-effective solution and alternative to hardware-based Continuous Emissions Monitoring Systems (CEMS). Software CEM provides a reliable emissions monitoring solution that meets worldwide regulatory requirements. This application combines powerful process analytical models with real-time sensor validation to provide predictive emissions values with unsurpassed accuracy.

### Model-based Approach

The Software CEM Application continuously monitors emissions by means of an online model using historical and real-time data. Hybrid modeling technology incorporates non-linear empirical models as well as first principles knowledge to provide the most accurate prediction models available in the industry. These models are executed online, providing real-time predictions of emissions from a wide range of sources and fuels. The effects of the process and ambient conditions on emissions are incorporated to offer a robust compliance monitoring system.

### Patented Sensor Validation

In order to achieve the regulatory agency-mandated up-time for continuous compliance, the PEMS is required to operate in the event of sensor failure. This requires a methodology for detecting sensor failures, and if possible, compensate for those failures. This requirement is easily achieved with Software CEM's patented sensor validations modeling capability.

### Market and Industry Leadership

Rockwell Software's first-to-market introduction of Software CEM in 1992 is a prime example of its commitment to innovation. With more than 250 installations, each requiring yearly certification, Software CEM has achieved a track record of 100% compliance. Our company maintains a leadership position in mandated emissions monitoring through exceptional experience, knowledge and value-based environmental solutions. Real-time emissions monitoring can also be an input to Rockwell's Model Predictive Control and Optimization applications as an additional dynamic process constraint

[www.rockwellautomation.com](http://www.rockwellautomation.com)

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