

Continuous Emissions Monitoring (CEMS) for Cogeneration Facilities

Cogeneration facilities produce electrical energy as a by-product of their steam production. The steam is produced either for heat or as a requirement of a manufacturing process.

Cogeneration facilities can utilize multiple and varied fuel sources. These fuels can include natural gas, oil, coal, wood, various forms of bio-solids, and even tires. Combined cycle cogeneration facilities are becoming popular in meeting increasing energy demands. A typical facility will include a gas turbine, heat recovery steam generator (HRSG) and a steam turbine. The size of cogeneration facilities can vary greatly from small hospitals to large petrochemical complexes.

Monitoring Requirements

Cogeneration facilities vary significantly in size, fuel burned, pollution abatement equipment installed, and geographic location. As a result, the continuous emissions monitoring (CEM) requirements placed upon a given facility will also vary from plant to plant.

The primary federal regulations defining continuous emissions monitoring requirements are found in 40 CFR 60 and 40 CFR 75. The latter is also known as the Clean Air Act Amendments of 1990. However, state and local agencies do have the ability to impose additional and/or stricter requirements for the monitoring and control of pollutants.

The federal regulations, based upon the fuel(s) utilized and the generating capacity of the facility, may require the monitoring of sulfur dioxide (SO_2), oxides of nitrogen (NO_x), opacity, a diluent [carbon dioxide (CO_2) or oxygen (O_2)] and stack flow.

In addition to the above requirements, state and local agencies may also call for the monitoring of carbon monoxide (CO) and, in those plants where SCR or SNCR is utilized for NOx reduction, may require monitoring of ammonia (NH_3) as well.

A Modular Solution

Emerson Process Management provides process analyzers and continuous emission monitoring systems (CEMS) designed to effectively meet the needs and requirements of cogeneration facilities.



Manufactured at Emerson's Rosemount Analytical ISO 9001 - certified facilities, these pre-engineered CEMS can measure up to five gases and opacity, to the more complex systems measuring multiple gases using data acquisition and handling systems.

Emerson CEMS guarantee EPA certification and are point-of-impact information sources that help keep you in compliance with complex environmental regulations and fine-tune your processes for greater efficiency and increased profitability.

Process Analyzers

X-STREAM Flameproof Gas Analyzer (X2FD)

The X-STREAM flameproof gas analyzer provides single and multi-component gas analysis in a severe service, explosion-proof housing. Coupled with a remote-mounted sample conditioning system and flow distribution/system controller, an X-STREAM X2F-based CEMS becomes a truly modular emissions monitoring system. This configuration allows sample extraction and conditioning anywhere along the sampling train, reducing costs for heated sample lines, equipment racks and instrument shelters.

X-STREAM Enhanced General Purpose Gas Analyzer (XEGP)

The X-STREAM Enhanced series of gas analyzers features multi-channel analysis utilizing infrared, ultraviolet and visible (NDIR/UV/VIS) photometry, paramagnetic and electrochemical oxygen, and thermal conductivity sensor technologies.

X-STREAM analyzers can measure up to 4 components and the measuring principles may be ordered in various combinations. The physical benches can be installed in their own compartment separated from the electronics. A purge is added for handling corrosive and toxic gases to protect the electronics and to provide operator safety. Optional thermostatic control enables measuring lower sample gas concentrations and measurements at higher dew points.

MLT Series Multi-Component Gas Analyzer

The MLT Series is capable of measuring up to 5 components. The MLT uses a combination of nondispersive infrared (NDIR), ultraviolet (UV), and visible (VIS) spectroscopy and electrochemical or paramagnetic oxygen sensors to measure hundreds of gas components. General-purpose and purged enclosures are available.

OPM 3000 and 4000 Opacity/Dust Density Analyzer

The OPM series offers a unique, patented system of glass liquid crystal windows (LCWs) that modulate the light beam without mechanical choppers or other moving parts greatly enhancing reliability.

This feature, coupled with the use of a single light source and detector, establishes the OPM Series as the only truly digital, solid-state transmissometer.

NGA 2000 CLD NO/NO_x Analyzer

The NGA 2000 CLD uses the chemiluminescence methodology to accurately measure oxides of nitrogen (NO and NO_x). The CLD is ideal for measuring emissions from combustion of fossil fuels in vehicle engine exhaust (meets EPA regulations for heavy duty gasoline and diesel engine testing per 40 CFR, Part 86), incinerators, boilers, gas appliances and turbine exhaust.

Model 951C NO/NO_x Analyzer

The Model 951C uses the chemiluminescence methodology to deliver reliable measurements of NO and NO_x in engine exhaust and stack emissions.

Cogeneration facilities present a unique set of requirements for compliance monitoring. Typically, federal regulations require these facilities to monitor SO₂, NO_x, CO₂, O₂, opacity and flow. Other agencies may also require monitoring of CO and NH₃.

Emerson's Rosemount Analytical CEMS can be designed specifically for each cogeneration facility and use field-proven analyzer technology for accurate, cost-effective compliance solutions.

www.RosemountAnalytical.com

EUROPE

Emerson Process Management GmbH & Co. OHG

Rosemount Analytical
Process Gas Analyzer Center of Excellence
Industriestrasse 1
63594 Hasselroth, Germany
T +49 6055 884 0
F +49 6055 884 209
www.RosemountAnalytical.com



ASIA-PACIFIC

Emerson Process Management

Asia Pacific Private Limited
1 Pandan Crescent
Singapore 128461
Republic of Singapore
T +65 6 777 8211
F +65 6 777 0947
analytical@ap.emersonprocess.com
www.RosemountAnalytical.com

MIDDLE EAST AND AFRICA

Emerson Process Management

Emerson FZE
P.O Box 17033
Jebel Ali Free Zone
Dubai, United Arab Emirates
T +971 4 811 8100
F +971 4 886 5465
analytical@ap.emersonprocess.com
www.RosemountAnalytical.com

AMERICAS

Emerson Process Management

Rosemount Analytical
Gas Chromatograph Center of Excellence
10241 West Little York, Suite 200
Houston, TX 77040 USA
Toll Free 866 422 3683
T +1 713 396 8880 (North America)
T +1 713 396 8759 (Latin America)
F +1 713 466 8175
gc.csc@emerson.com

©2012 Emerson Process Management. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. Rosemount Analytical is a mark of one of the Emerson Process Management family of companies. All other marks are the property of their respective owners.

The contents of this publication are presented for information purposes only, and while effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.