

LEHDER Environmental Services

LEHDER's Capabilities for Assisting Natural Gas Fired Power Plants

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Introduction

With the recent initiatives for cleaner sources of energy, a large number of Natural Gas Fired Power Plants have been constructed. LEHDER specializes in assisting these power plants with environmental services which include:

- Turbine Tuning
 - Performance Tests
 - Certification RATA
 - Semi-annual and Annual RATA
 - CEM QA/QC Audits
 - Regulatory Reporting
 - Certificates of Approvals
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Turbine Tuning

Gas Turbine Tuning optimizes the performance of the gas turbine unit. Concentrations of O₂, CO and NO_x are measured while the turbine owner fine tunes the operating parameters in order to optimize the turbine performance.

LEHDER provides real time instantaneous O₂, CO and NO_x concentration data using calibrated analyzers in our mobile continuous emissions monitoring trailers. US EPA instrumental test methods are utilized to measure the gas concentrations.

Performance Testing

Performance guarantee tests are typically required to demonstrate contractual performance requirements are met between the equipment manufacturers and source owners of natural gas power plants. Compliance tests to meet the facility Certificate of Approval requirements may also be required.

Typical test parameters include: Combustion Gases (O₂, CO₂, CO, NO_x and SO₂), Total Hydrocarbons (THC), PM₁₀ Particulate, Ammonia Slip (if using ammonia injection) and Volumetric Flow Rate to determine pollutant emission rates.

LEHDER typically utilizes US EPA Methods to complete the performance guarantee tests. Test Protocols are submitted to the equipment manufacturers and source owners to ensure all testing is conducted using approved methodologies.

LEHDER Environmental Services Limited

704 Mara Street, Suite 210, Point Edward, Ontario, Canada N7V 1X4 Phone: (519) 336-4101 Fax: (519) 336-4311
9954 - 67th Avenue, Edmonton, Alberta, Canada T6E 0P5 Phone: (780) 462-4099 Fax: (780) 462-4392

www.lehder.com

Relative Accuracy Test Audit (RATA)

A RATA is essentially a comparison of the facility Continuous Emission Monitoring (CEM) system data and LEHDER reference method data to ensure the facility CEM meets the applicable regulatory criteria. The criteria are listed in the facility Certificate of Approval which typically refers to the Environment Canada EPS 1/PG/7 Protocol.

Typical RATA parameters are O₂, CO, NO_x and flow. These are measured by LEHDER using approved US EPA Methodology. A minimum of nine tests (a maximum of twelve tests) are completed to evaluate the plant CEM system performance. LEHDER compares the data after each test to determine the status of the CEM system. Complete pass or fail data are provided to the facility at the end of the day.

Certification RATA

A Certification RATA is completed on a newly installed CEM system. The Certification RATA is completed to ensure the facility CEM system meet the Environment Canada EPS 1/PG/7 Protocol or facility Certificate of Approval criteria.

Part of the Certification process also involves conducting a 7 Day Drift and Response Time test during the 168 hour Operational Test Period (OTP). During the OTP the CEMs must operate normally without any unscheduled maintenance. The Certification RATA is typically conducted after the OTP to ensure everything is operating properly.

Semi-annual and Annual RATA

The Semi-annual or Annual RATA is completed on a CEM system that has already been certified. The RATA is completed to ensure the facility CEM system still meets the Environment Canada EPS 1/PG/7 Protocol or facility Certificate of Approval criteria.

In the first year of operation two RATA programs should be conducted. If the CEMs meet the EPS 1/PG/7 exemption criteria after the first year, only one RATA per year is required.

CEM QA/QC Audits

As per the EPS 1/PG/7 Protocol an annual independent inspection of the CEMs QA/QC Manual must be conducted. Part of the inspection also involves inspecting the actual CEMs equipment in place. LEHDER has a broad understanding of CEM systems and the requirements to conduct the audit.

LEHDER recommends that some one other than the company performing the RATA perform the audit so that the findings are not biased.

Regulatory Reporting

Canadian Federal and Provincial laws dictate various emissions reporting requirements which impact power producers. In Ontario, these include:

- The National Pollutant Release Inventory (NPRI) which was created in 1992 to provide information on pollutants released to the environment and transferred for disposal. Reporting of NPRI is mandated under the Canadian Environmental Protection Act (CEPA) and is due by June 1 of the following year.
- The Federal Greenhouse Gas Regulation requires reporting of emissions for six greenhouse gases and related species for all facilities that meet or exceed a release threshold of **50 kilotonnes** of carbon dioxide equivalent. If a facility meets or exceeds the reporting threshold, submissions must be made by June 1, 2010.
- Ontario promulgated a Greenhouse Gas Regulation (O. Reg. 452) in December 2009. The first reports will be due June 1, 2011 and will reflect the 2010 reporting year. Calculation methodologies are very prescriptive in this regulation so it is to the facility's benefit to review their current federal reporting calculations and streamline them.
- Ontario Regulation 397 sets limits for airborne emissions of nitrogen oxides (NO_x) and sulphur dioxide (SO₂) from Ontario's larger electricity generators and defines the rules (the Code) for the creation and trading of the associated emissions reduction credits (ERCs) and allowances. Each capped emitter is required to monitor its actual emissions throughout the year and report annual and seasonal emissions amounts. By March 31, each facility must report their emissions and retire the appropriate volume of allowances to balance the emissions. Facilities must apply for emission allowances by June 1 each year. Allowances are distributed to each facility based on the estimated electricity production for the following year.

LEHDER works with our clients to provide a strategic approach to effectively complete all reporting requirements. We then complete a thorough review of data requirements and gaps, while compiling a multifaceted data management system specific to each facility. All reports outline the assumptions, calculation methodologies, conclusions and recommendations as required, and supporting documentation. LEHDER will also fully populate the data in the required on-line reporting web sites.

Certificates of Approval (C of A)

LEHDER specializes in the strategic preparation of applications for Certificates of Approval (CofA) that provide our clients with operational flexibility. Once obtained, LEHDER provides effective support in the ongoing management of CofA's and the associated conditions. LEHDER capabilities in strategically supporting our clients through the Certificate of Approval processes include:

- Development of strategic approach considering future capacity and changes
- Negotiations with MOE Approvals Branch
- Development of thorough Source and Emission Inventories
- Preparation and upkeep of Emission Summary and Dispersion Modeling Reports
- Preparation of application package
- Procedure development
- Management of change evaluations
- Compilation of annual summary reports
- Compliance reviews

Questions

For further information on all of the services we provide please contact:

Peter Pakalnis (519) 336-4101, Ext. 227 pakalnis@lehder.com

Marnie Freer (519) 336-4101, Ext. 226 mfreer@lehder.com

About LEHDER

LEHDER Environmental Services is an environmental consulting company focused on providing Excellence in Industrial Air Quality Services. Formed in 1995, LEHDER is now one of the largest Air Quality Management companies in Canada.

All Air Quality aspects – source testing, emission inventories, air dispersion modeling, data interpretation and approval applications – are managed internally.

Visit our web site at www.lehder.com

Head Office:

210 - 704 Mara Street
Point Edward
Ontario N7V 1X4
Tel: 519-336-4101
Fax: 519-336-4311

Western Division:

9954 - 67th Avenue
Edmonton
Alberta T6E 0P5
Tel: 780-462-4099
Fax: 780-462-4392

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