

# Process Gas Analysis Solutions



Visualize > Analyze > Optimize

**ROSEMOUNT**<sup>®</sup>  
Analytical

  
**EMERSON**<sup>™</sup>  
Process Management

# PROCESS GAS ANALYSIS SOLUTIONS

## VISUALIZE

*a more simplified, flexible, and cost efficient solution to meet your most challenging gas processing needs in an increasingly complex and demanding industry.*

## ANALYZE

*your gas processes with greater speed and accuracy using innovative technologies to safely and confidently measure a wide range of components in various applications.*

## OPTIMIZE

*production performance and reduce operating costs by partnering with an industry expert capable of supporting your local and worldwide gas processing needs.*

Every day, around the world, Emerson Process Management helps companies achieve higher quality, greater reliability, and faster time to market, while steadily advancing productivity and profitability. Emerson's Rosemount Analytical brand of instrumentation offers unmatched real-time measurement, resulting in a new level of plant optimization. We go far beyond simple data collection to offer proven analytical solutions, including systems expertise, analytical products, and worldwide installation and service. Emerson can help you:

- > **Improve product quality and increase throughput**
- > **Lower process variability and improve process diagnostics and safety**
- > **Reduce energy, installation, and maintenance costs**
- > **Meet or exceed regulatory requirements**

## Proven Quantifiable Results

As part of Emerson's PlantWeb™ network architecture, Rosemount Analytical analyzers can help increase your overall plant efficiency. Through predictive intelligence diagnostics, PlantWeb enables you to detect process and equipment problems before they occur, giving you advanced warning to respond and correct these, avoiding unplanned shutdowns, and maintain a safe working environment.



With nearly 40 years experience servicing the gas and liquid analysis industry, Emerson's Rosemount Analytical has grown to become a leading global provider of process gas analyzers, gas chromatographs, combustion analyzers, liquid and gas sensors and complete analysis systems delivering greater accuracy and maximize performance while increasing productivity and reducing your overall costs.

As a premier supplier of analytical instrumentation and systems for process and environmental gas analysis, Rosemount Analytical offers a wide range of process solutions capable of measuring hundreds of components in hazardous and general purpose areas across multiple industries and applications. For a complete list of products and services or to learn how we can improve your gas processing needs, visit

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

## Typical Industries Served:

- Chemical Processing
- Hydrocarbon Processing
- Food & Beverage
- Metals & Mining
- Biogas & Bio-Technology
- Pharmaceutical & Medical
- Waste & Wastewater
- Pulp & Paper
- Semiconductor
- Automotive
- Power
- Textiles

## Typical Application Solutions

### Chemical / Petrochemical

- General inert gas blanketing control
- Hydrogen plant
- Ammonia, urea, and fertilizer production
- Ethylene and propylene production
- Acetone, alcohols, chlorine, nitric acid, phosgene, sulfuric acid, toluene, and other processes

### Gas Processing

- LNG
- Ammonia
- Vinyl chloride
- Syn gas
- Hydrogen
- Carbon dioxide

### Refining

- Naphtha isomerization
- Hydrocracking
- Catalytic reforming
- PSA Units
- Hydrocarbon compressor
- Marine unloading and vapor recovery

### Air Separation / Liquefaction

- Nitrogen, oxygen, and argon separation and bottling plants

### Power and Alternative Energy

- Hydrogen cooling of gas turbines
- Coal gasification

### Oil and Gas

- Pipeline monitoring

### Metallurgical

- Furnaces
- Heat treating
- Blast furnaces
- Direct reduction processes

### Cement / Ceramics

- Kilns

### Environmental

- Biogas
- Carbon bed scrubbers
- Continuous emissions monitoring



## > ANALYZE

### X-STREAM Process Gas Analyzers

The X-STREAM process gas analyzer is perfect for multi-component analysis. It uses non-dispersive infrared, ultraviolet, and visible photometry (NDIR/UV/VIS), paramagnetic and electrochemical oxygen (pO<sub>2</sub>/eO<sub>2</sub>), and thermal conductivity (TCD) sensor technologies, as well as trace oxygen (trace O<sub>2</sub>) and trace moisture (trace H<sub>2</sub>O) for consistent, precise process gas measurement.

X-STREAM measures up to five components in various combinations and its versatile design allows physical benches to be installed in their own compartment, separate from the electronics.



X-STREAM Process Gas Analyzers

### X-STREAM Enhanced Process Gas Analyzers

Rosemount Analytical sets new standards of ease of use with the X-STREAM *Enhanced* process gas analyzer. With a unique web browser interface that securely enables remote diagnostics without additional software installation and provides a host of convenient new features and user capabilities, the X-STREAM *Enhanced* simplifies the analytical experience.

The X-STREAM *Enhanced* features:

- Simplified functionality and usability
- Lowest total cost of ownership
- Lowest span drift and temperature dependency
- Broadest total operating temperature range
- Highest protection classes
- 3 Year Standard Warranty

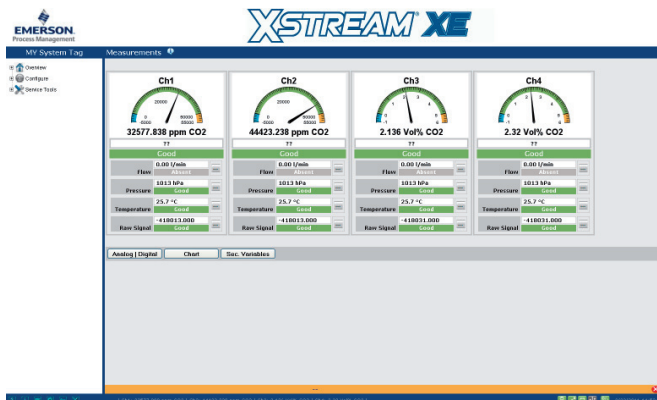
### X-STREAM Enhanced Specifications

	X-STREAM <i>Enhanced</i>	Competitive Best
Span Drift	1 % / month	1 % / week
Temperature Error	0.5 % / 10 K	1 % / 10 K
Measurement Frequency	150 Hz	10 Hz
Zero Drift	1 % / week	1 % / week
Reproducibility	0.5 %	0.5 %
Linearity	1 %	1 %
Detector Seal	Glass Soldering	Glue

## X-STREAM User Interface

The unique web browser interface of the X-STREAM *Enhanced* process gas analyzer allows users to securely log in to calibrate parameters and manage alarms from any Ethernet connection. The ability to remotely monitor and manage these greatly simplifies diagnostic capabilities. Additional features include:

- The ability to remotely manage the analyzer greatly simplifies diagnostics, speeds the troubleshooting process and reduces the number of trips into the field by an estimated 50 %
- Powerful processing capabilities and innovative new built-in engineering tools
- Programmable logic controller (PLC) that enables automation of the sample handling system and online programming through the web browser
- Enhanced data logger offers improved data tracking, including a NAMUR status indicator, improved event logging, and a new cal log file
- **IntrinZ** advanced photometric measurement technology

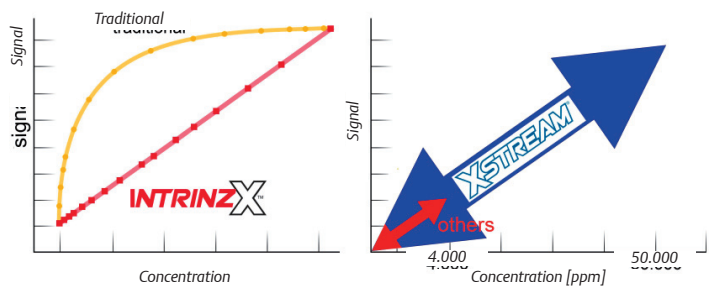


X-STREAM Enhanced Web Browser Interface

## X-STREAM Photometric Technology

Rosemount Analytical process gas analyzers feature IntrinZ intrinsically linear photometric technology, which provides high sensitivity, large dynamic ranges, and long-term span stability.

IntrinZ allows the use of split cell, single source, dual beam photometry and constant comparison of the reference signal and measurement signal to achieve an intrinsically linear response to changes in concentration. This enables sensitivity as low as 0–10 ppm CO or 0–5 ppm CO<sub>2</sub>, a span drift of less than 0.023 ppm per week, and dynamic ranges as large as 0–50 to 100,000 ppm CO.



IntrinZ not only improves measurement performance of your process gas analysis but also reduces maintenance and overall operating costs through:

- High dynamic ranges which cannot be obtained with standard photometric technology
- Reduced temperature dependency
- High sensitivity to the lowest measuring ranges
- Long-term span stability
- Fewer number of benches and cells
- Extended span calibration intervals
- Quick adjustment of low measuring ranges in the fields
- Easier field repair and replacement parts

## > OPTIMIZE

### MLT, CLD & FID Process Gas Analyzers

Rosemount Analytical's MLT, CLD, and FID series of gas analyzers offers multi-component, multi-method analysis utilizing non-dispersive infrared, visible, ultraviolet (NDIR/UV/VIS), thermal conductivity (TCD), paramagnetic, and electrochemical sensor technologies ( $pO_2/eO_2$ ), as well as the combination with chemiluminescence (CLD) and flame ionization (FID) detectors. The MLT series of analyzers measures up to five gas components. MLT analyzers can be designed as single stand-alone analyzers or as a central interface for multiple analyzer modules. Analyzer modules feature all listed methods, but do not have own displays or keyboards.

### Typical Applications

- Internal combustion engine emissions
- Engines and exhaust gas catalyst development
- Continuous emissions monitoring systems (CEMS)
- Control of denitrification and desulphurization equipment
- Trace monitoring in gas purity and air separation measurements
- Chemical process and control
- Metallurgical process gas monitoring
- Furnace atmosphere measurements in hardening gas applications
- Process monitoring in coal and wood gasification
- Ambient air monitoring solutions



MLT Series Analyzers



## Analytical Systems

Emerson Rosemount Analytical analysis solutions range from single gas analyzers including sample handling options to complex, multipoint systems with sample conditioning, data acquisition, analyzer cabinets and complete walk-in analyzer houses to meet customers requirements. For applications in hazardous areas, complete analyzer houses can be pressurized. Our leading-edge instruments and application expertise, customer service and worldwide support will help you to maximize process performance, productivity and profitability.

We manufacture analyzers with a wide range of leading-edge technologies from NDIR/UV/VIS to pO<sub>2</sub>, TCD, CLD, FID, electrochemical sensors and GC as single to multi-component measurements. Our analyzers and systems can measure hundreds of components in both hazardous and general purpose areas with worldwide certifications. Rosemount Analytical analyzer systems are specifically designed for continuous emissions monitoring (CEMS) and process control,



and provide much more than only data.

Gas analysis is our business, but our expertise also includes sample handling. Often process gas

cannot be taken directly from the process to the analyzer. Most systems demand a level of application specific sample handling. Smart sample handling systems, not affecting the sample gas composition, enable samples to be safely taken from the process, prepared for analysis, and returned to process or approved disposal point. Whether your design philosophy favors close coupled field mounting of analyzers, or a centralized air purged, air conditioned shelter approach, Rosemount Analytical turn-key analyzer systems can be tailored to your exact needs - without compromise and with proven versatility.

## Continuous Emissions Monitoring Systems (CEMS)

With over 3,000 CEMS installations in the field worldwide, Rosemount Analytical combines expertise and field-proven technologies with the most rugged sample conditioning and extraction systems in the industry to provide superior measurement accuracy and repeatability. Designed in consideration of CEM regulations as specified in clean air laws around the world, including U.S. EPA 40 CFR Part 75 and 40 CFR Part 60, we help you meet data reporting requirements, maintain emissions compliance, and ensure certification and compliance with your local regulatory agencies.

Rosemount Analytical CEMS solutions range from pre-engineered, packaged systems to more complex custom-engineered systems that measure multiple gases using data acquisition and handling. They are designed to perform the required daily zero and span checks automatically and unattended automatic calibration makes it less costly and time consuming to meet the environmental requirements for daily validation of the system. Our systems monitor:

- Sulfur Dioxide (SO<sub>2</sub>)
- Carbon Monoxide (CO)
- Nitrogen Monoxide (NO)
- Total Hydrocarbon (THC)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Hydrogen Sulfide (H<sub>2</sub>S)
- Carbon Dioxide (CO<sub>2</sub>)
- Opacity
- Oxygen (O<sub>2</sub>)

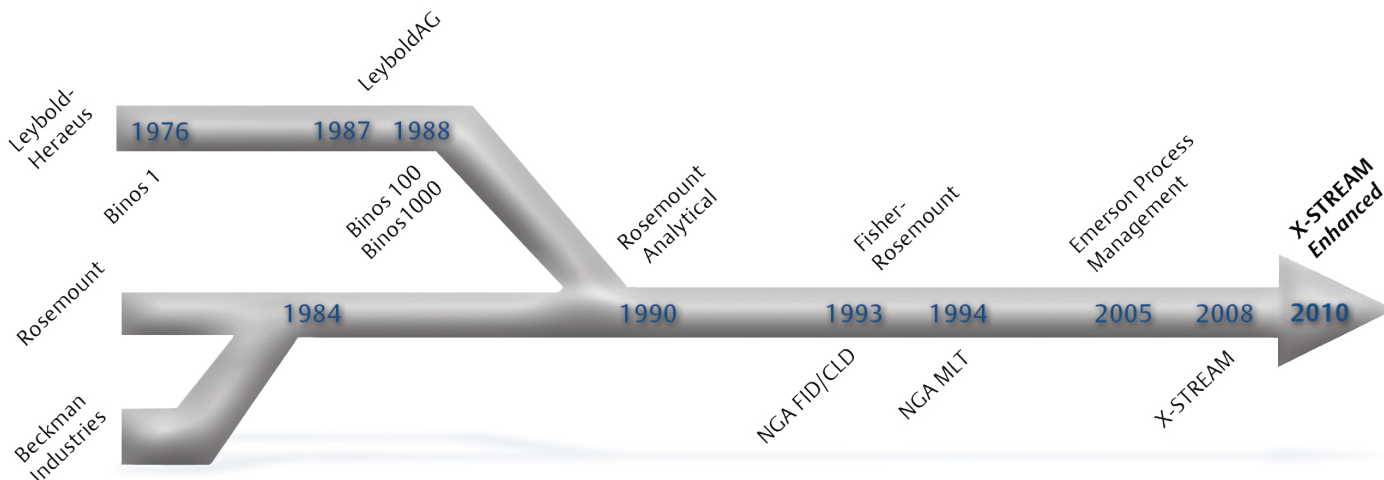
## Systems Engineering and Project Management

Rosemount Analytical's global systems experts manage and implement full-scale analytical systems projects of all sizes and scope. We use detailed processes to ensure that systems are delivered on time and on budget.


Our project management process includes:

- Project Identification & Scope
- Initial Engineering & Design
- Implementation & Testing
- Commissioning & Startup
- Training
- Maintenance
- SureService Contracts

## History of Process Gas Analyzers at Emerson Process Management



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

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

 [www.twitter.com/RAIhome](http://www.twitter.com/RAIhome)

 [www.youtube.com/user/RosemountAnalytical](http://www.youtube.com/user/RosemountAnalytical)

 [www.facebook.com/EmersonRosemountAnalytical](http://www.facebook.com/EmersonRosemountAnalytical)

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