

**A global monitoring systems offering.
A world of advantages.**

**Thermo Scientific
Continuous Emissions
Monitoring Systems**



The complete solution

Clean Air commitment.

Since 1970 and the original Clean Air Act, Thermo Fisher Scientific has been serving industry needs and protecting the environment with crucial monitoring solutions to help keep plants running safely, efficiently and in compliance. We offer the industry's most comprehensive line of air quality instrumentation and Continuous Emissions Monitoring Systems (CEMS) for detecting a broad range of gaseous and aerosol pollutants.

Thermo Fisher Scientific has devoted nearly forty years to perfecting the design and execution of demanding operational and environmental system requirements. Our State of the art technologies along with long term, distinguished industry performance are qualities incorporated with each delivered system. Operating continuously in extreme monitoring environments, Thermo Scientific CEMS offers the unsurpassed precision and reproducibility critical monitoring applications depend on.

Equipped with the engineering know how, technical capabilities and the application experience to deliver an optimized and custom configured CEMS, we offer and deliver not just hardware, but complete solutions including integration, installation support, commissioning, certification, and training services.

Standard, Custom, Direct

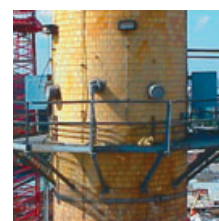
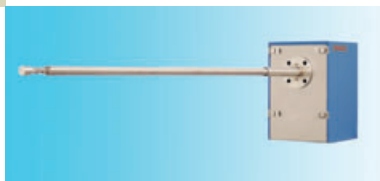
Thermo Fisher Scientific manufactures a wide range of gas analyzers, probes, opacity monitors, and other critical components required for unattended, long term reliability. Our integrated systems come standard with the essential connectivity options necessary for seamless communication between Thermo Scientific CEMS and plant data acquisition or distributed control systems.

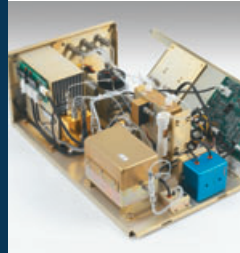
In addition to supplying compliance, we also offer custom systems tailored to meet specific needs such as process control CEMS. As part of your custom system, we'll provide any additional components you require, whether they are part of our larger Thermo Fisher Scientific family or manufactured by another provider.

The process

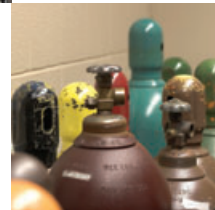
Servicing our customers isn't just part of the process. Service is the building block for our entire process. From the start of the project through installation on to training and beyond, you'll have a designated project manager that will be responsible for the overall coordination and organization of your build. In addition, a team of Thermo Fisher employees will work with you throughout the process including representatives from Engineering, Operations, Finance, Sales, Marketing and Service.

integration





solutions



support



Global compliance Technologies

As your partner in compliance we ensure that your system is accessible, representative, and capable of passing performance testing in accordance with regulatory standards such as Part 75 or 60 in the US as well as its international equivalents.

Applications include:

- Electric Utilities
- Power Generation
- Cement
- Pharmaceutical
- General Industrial
- Chemicals
- Refineries
- Pulp & Paper
- Waste Incinerators
- Metals
- Turbines
- Boilers
- Sulfur Recovery Units
- Landfills

Utilizing various technologies, Thermo Fisher provides the most innovative options for system components.

FTIR - Fourier Transform Infrared

Spectroscopy suited to resolution of numerous components and is used in multi-gas analysis systems for the measurement of source emissions.

NDIR - Non-Dispersive Infrared

A form of spectroscopy used for the measurement of CO, CO₂, HCl, and other infrared absorbing gases.

Chemiluminescence - This is the industry standard technology for the measurement of nitrogen based compounds such as NO, NO₂, and NH₃.

Pulsed Fluorescence

Pioneered by Thermo as the most reliable, sensitive, and accurate method for the determination of SO₂.

FID - Flame Ionization Detection

The most common method of measuring hydrocarbons to meet the criterion of the USEPA's Method 25A and 25B.

Atomic Fluorescence

This technology is the basis of the Thermo Scientific, highly successful, Mercury Freedom system.



compliance





Integration

Our integration process is designed to put you at ease at every step. Each stage begins with listening and carefully analyzing your specific needs, applying our experience to the next step, then getting your approval or changes before proceeding further.

A start-to-finish proposal

After determining your specific needs, we submit a detailed proposal for your system – to be installed in an existing structure or an environmentally-controlled shelter that we provide.

A full set of drawings

Block, rack, plumbing and electrical drawings will be created and submitted for your approval to serve as a foundation for the integration process.

Smoothing the way for startup

A Pre-Installation Checklist will be reviewed together that outlines the necessary advance on-site preparation to facilitate a smooth, timely installation process.

Factory Acceptance Test

Following factory assembly, if desired, your representative and ours will conduct a Factory Acceptance Test (FAT) encompassing calibration and operation of the system, spanning approximately one day. Detailed checklists are jointly reviewed followed by signing an acceptance agreement. Requested changes will be made and shipping arrangements and any special delivery requirements will be finalized.

On-site or factory training

Classes on your premises or at the factory assure that your operations and maintenance personnel have in-depth technical training on the system from day one. Our training course provides the knowledge needed to maintain equipment to factory specifications. A lecture portion includes an overview and theory of operation, plus hands-on training covering instrument disassembly and assembly, set up and installation. The lab portion addresses check out and calibration. Participants will learn to troubleshoot and calibrate the analyzer and perform routine preventive maintenance. Each course typically consists of no more than five students. Copies of all relevant course materials will be given to each attendee. The duration and the location of the classes are tailored to your specific needs.

Installation and startup

Installation and startup is a cooperative process, with a Field Service Engineer from Thermo Fisher assisting your support staff. Services include the verification of proper mechanical installation, correct signal wiring and tubing terminations, and power connections as well as:

- Power-up and alignment of the sample-conditioning probe
- Power-up and alignment of the analyzer rack
- Complete system calibration
- Review of system operation and maintenance requirements
- Verification and setup of requested analog signal outputs

Performance testing and startup assistance

In conjunction with the actual certification of the unit, a Thermo Fisher Field Service Engineer will arrive at your site at least one day prior to the test team to check out the fully functional system and to calibrate each component prior to starting the performance test. The Field Service Engineer will remain on site during the test to assist the certification team.



At the stack

Opacity Monitors

Thermo Fisher Scientific offers two models of transmissometer for the measurement of opacity in stacks or ducts. From a single unit using LED technology to one in which four transmissometers can be connected to one remote control unit, the flexibility is there to meet your monitoring requirements.

Monitors

The measurement of flow of the gas stream is monitored using the ultrasonic measurement technique. The standard cross stack/duct model is designed to handle most applications. For places where access is difficult, we offer a model that can be mounted from one side.



Probes

Thermo Fisher offers durable, long-life probes to maximize sampling efficiency while delivering precise, continuous operation. Our family of probes includes both full extractive and dilution extractive systems and has a proven track record in harsh effluent environments, including high temperature, moisture and particulate loading.

Dilution Extractive

We have successfully implemented dilution extractive systems ranging in dilution ratios from 20:1 to over 400:1. Simple in design, our dilution systems don't require extensive maintenance or additional sample conditioning, keeping you off the stack. Thermo Fisher manufactures dilution probes to report on a wet or dry basis, either in-situ or with all routine maintenance components located in a cabinet for easy access.

Full Extractive

Our full or straight extractive probes provide a representative sample transported via a heated sample line. The sample can then either be conditioned in a thermoelectric cooler (chiller) to provide a cold/dry sample or directly to analyzers that require a hot/wet sample.

In the shelter

Thermo Fisher Scientific provides light-weight, fully insulated, climate controlled shelters to house our CEMS. The shelters are built using a highly efficient panel structure that uses aluminum alloys for most applications but can be constructed of fiberglass for more severe environments. Doors are fully gasketed to provide both air and water tight seals. Besides housing the CEMS, the shelters can be designed with work stations complete with benches, cupboards, and file cabinets. These shelters have been proven in many applications and global climate conditions. Some features of the shelters include:

- Air Conditioning/Heating
- Power Panels
- Voltage Stabilizers
- Hazardous Gas Monitors
- O₂ Depletion Monitors
- UPS
- Telephone/Network Connection

Gas Analyzers

Thermo Fisher Scientific offers a broad range of measurement technologies. The *i*Series platform is engineered with a simple design layout providing easy operation, open compartments for simplified on-site maintenance, and enhanced interface capabilities.



In the control room

Monitoring a complete spectrum of gases, including but not limited to:

SO ₂	NOx	CO	CO ₂
H ₂ S	TRS	THC	Hg
O ₂	HCl	Total Sulfur	

User interface

Featuring fast, intuitive navigation and simple, menu-driven programming, our application-tailored software keeps you informed and in control.

Probe controller

Depending on the type of probe used, the probe controller is used to monitor and control critical probe temperatures, pressures, and flow paths.

Calibration

Application specific calibration equipment is provided to deliver known quantities of target gas for precise daily calibration, periodic linearity tests, and audits.

Air Clean-up System

Every CEMS includes an air clean-up system to ensure that the plant air supply is properly conditioned to be moisture, oil and contaminant-free. It can then be used with confidence for dilution air to the probe, purge air for probe blow back, or as zero air to a calibration system for sensitive, accurate analyzer or system calibration.

Powerful & Capable

Management of regulatory requirements for CEM systems demands integrative, adaptive and authenticated data acquisition and handling systems. Network expanded I/O functionality and flexible connectivity allow for seamless integration into just about any plant operation and data flow.

I/O

We specialize in products that include all the connectivity options you need to integrate your monitoring data into your facility's data management or distribution control system and software packages that work to meet your needs.

- Ethernet Port (TCP/IP)
- Modbus
- RS-232/485 Serial Connectors
- Analog Outputs
- Digital Inputs
- Digital Output Card (Standard)
- I/O Expansion Card (Optional)
- Analog Signals



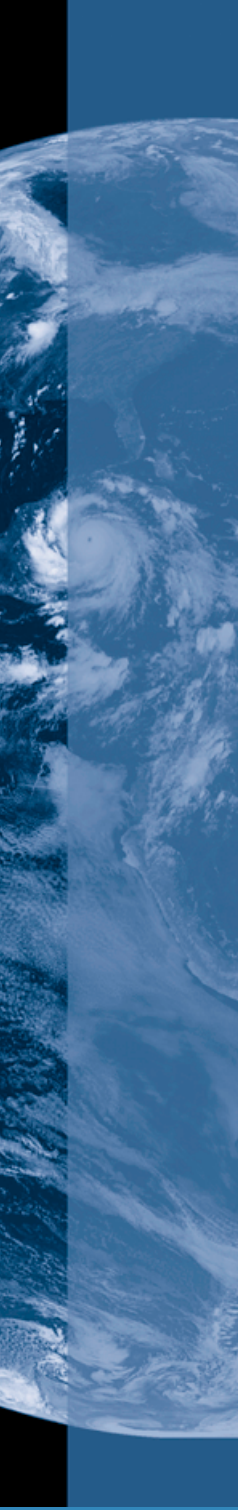
An ongoing partner

An ongoing partnership

Following integration, we maintain an ongoing partnership with our customers. Technical support, factory-trained technicians and genuine factory parts are always a phone call away. A feature-rich one-year product warranty provides substantial peace of mind.

Extended warranty options, preventive maintenance and on-site service contracts are available at the time of sale to lock in costs and provide priority access to factory expertise and service.

connectivity



TECH SUPPORT

Our highly trained and experienced technical support team is ready to provide application expertise and work with you to troubleshoot instruments and are now available 24 hours a day, 365 days a year with spare parts available on weekends. 1-866-282-0430.

CUSTOMER SERVICE

Our customer service team processes orders, provides status of current orders as well as pricing and availability of product. Our international customer service team is export-compliant trained and extremely experienced in shipping to all regions of the world.

TRAINING

Training services are a key part of our systems package. With any system installation our experienced service engineers are available for all the necessary training you and your team need to get started whether it's on-site or in-factory.

SERVICE CONTRACTS

The Standard Service Contract allows you to lengthen the feature-rich one year product warranty for an additional one, two or three years. The Standard Service Contract can also support your instruments outside the original product warranty* for the same terms (inspection process may be required). In addition to offering predictable support expenditures we also offer access to the original manufacturers unparalleled product expertise and repair facilities.

CALL US

1-866-282-0430 or 508-520-0430. Or fax us at 1-508-520-2800.

For more information about Thermo Scientific Continuous Emissions Monitoring Systems, components, service or support, please visit www.thermo.com/air.

For ordering information, please contact your local dealer or Thermo Fisher Scientific representative.