
ABB MEASUREMENT & ANALYTICS

Continuous Emission Monitoring (CEM)

Easy. Cost-effective. Compliant.



Measurement made easy

Knowing what to expect from your CEMS vendor is critical to making the right choice, thereby avoiding unexpected costs and unplanned downtime after installation. With decades of experience and tens of thousands of installations worldwide, ABB is committed to exceeding your expectations.

ABB is your full-scope solution provider continuously striving for and delivering lowest measurement uncertainty, maximum equipment availability, lowest cost of ownership and most dependable service.

ABB knows what you need to remain compliant and delivers much more.

ABB's gas analyzer solutions

Experts in emission monitoring

In selecting ABB you are choosing a partner who offers the best measurement solution for your needs, enabling maximum return on your investment. When investing in ABB's measurement products and solutions you are receiving the best technology, reliability and service in the business.

Contact ABB for all your measurement needs – flow, pressure, temperature, level, flatness, tension, thickness, as well as a full-line of gas and liquid analyzers and valve automation solutions. All supported by first-class service worldwide.

**Learn more at
abb.com/measurement**

Global warming, acid rain, air, water and soil contamination are all environmental issues that must be managed. Governmental and environmental pressure to monitor and reduce pollutants introduced into the environment will continue to increase.

ABB's emissions monitoring solutions have helped a wide variety of industries for over 75 years. Our Continuous Emission Monitoring Systems (CEMS) are designed to help customers maximize profit while operating in a sustainable way through technology and expertise.

ABB Continuous Emission Monitoring (CEM) solutions provide compliance with international, national and local environmental directives for measuring and reporting.

Did you know?

ABB's analyzers are used in space to monitor greenhouse gas emissions from satellites.



The right solution

For every industry and application

—
01 LS400 in situ
laser analyzer

—
02 ACF hot/wet system
for emission and
process monitoring

ABB is dedicated to helping our customers provide cleaner and more efficient fuels, cleaner and safer drinking water, cleaner and less harmful emissions and cleaner and less costly combustion processes. As a supplier of analyzers to various space programs, we are proven and trusted in the most demanding applications.

Our full-line of in situ and extractive gas analyzers are systems are trusted by every industry with CEM applications

- Power generation
- Waste incineration
- Oil and gas
- Chemicals and petrochemicals
- Pulp and paper
- Metals and minerals
- Landfills and biogas
- Marine
- Cement production

Why are they used?

Compliance to environmental regulations

- Avoid regulatory penalties
- Support process control
- Optimize combustion to reduce fuel and lower emissions
- Increase plant efficiency for extended lifetime of equipment
- Decrease operating and maintenance costs of the plant
- Improve productivity

Safety measurement

- Filter monitoring
- Leakage monitoring
- Explosion protection

Where are they used?

- Stack emission monitoring
- Flue gas desulfurization (FGD)
- HCl scrubber control
- DeNOx (SCR and SNCR)
- Dust filter monitoring, electrostatic precipitator (ESP) or fabric filter
- Boiler control
- Turbo generator
- Coal mill and coal bin

Our offering

- Continuous gas analyzers and sample handling system
- Pre-engineered continuous gas analyzer cabinets
- Turn-key systems tailored to your needs, including third party products
- Solutions to reduce total cost of ownership
- Upgrade packages to improve your equipments' performance during the lifecycle
- Commissioning support
- Maintenance contracts
- A worldwide and reliable partner providing comprehensive support

Did you know?

ABB is the market leader for emission monitoring with 70,000 analyzers installed worldwide.

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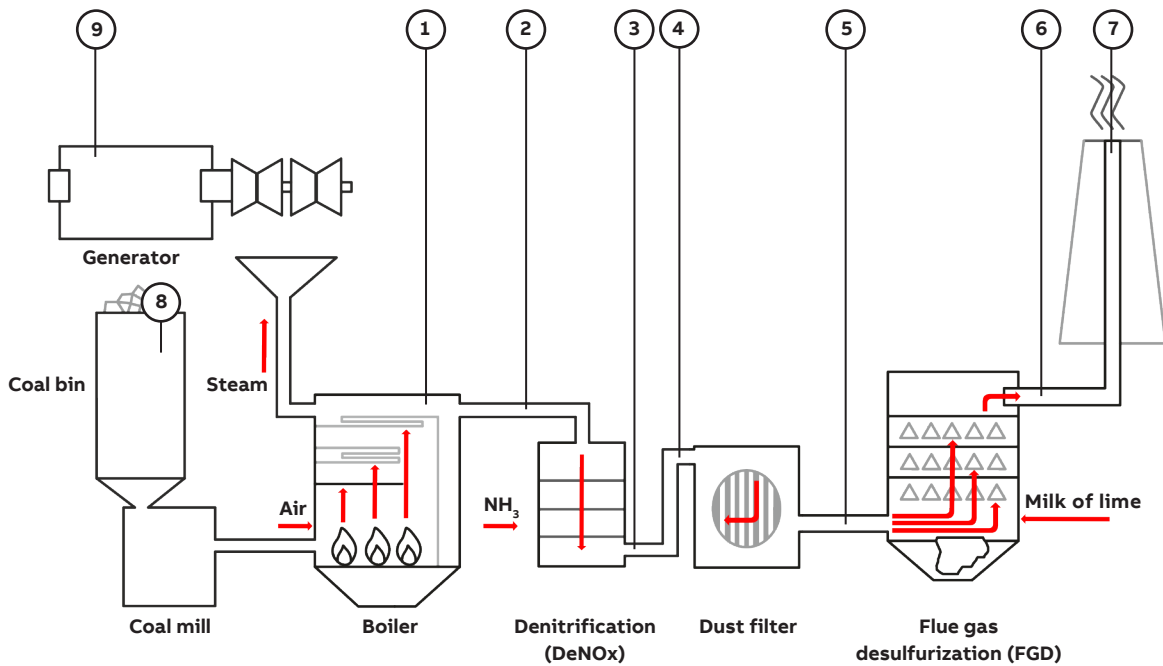


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Example 1 – thermal power plant

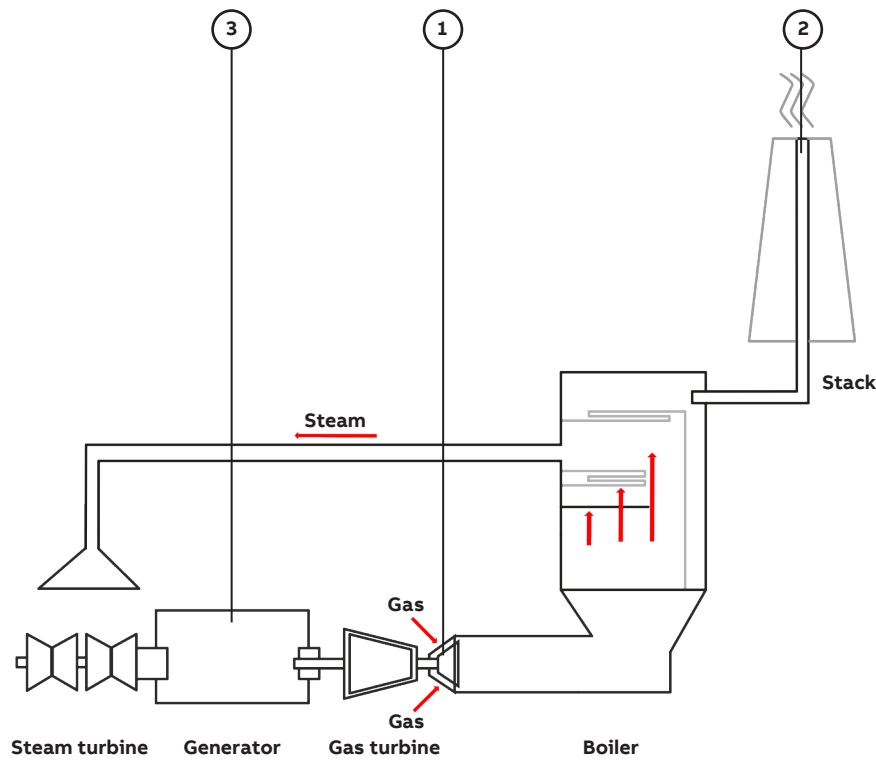
Measuring points and solutions



Measuring point	Application	Measuring task	Measuring components	Solution	Analyzers
1	Combustion control	<ul style="list-style-type: none"> Optimization of combustion Lower fuel consumption 	CO, O ₂	ACX, LS25, LS4000, AZ20	Uras, Magnos
2	DeNOx upstream	<ul style="list-style-type: none"> Monitor NOx to control treatment process 	NO, NO ₂ , NOx, O ₂	ACX	Uras, Limas, Magnos
3	DeNOx downstream	<ul style="list-style-type: none"> Effectiveness of DeNOx NH₃ slip control 	NO, NO ₂ , NOx, NH ₃ , O ₂	ACX, ACX + LS4000	Limas, Uras, Magnos
4	Dust filter monitoring	<ul style="list-style-type: none"> Safety measurement Explosion protection 	CO, CO ₂ , O ₂	ACX, LS25	Uras, Magnos
5	FGD upstream	<ul style="list-style-type: none"> Control of FGD process For example, milk of lime dosing 	SO ₂	ACX	Uras
6	FGD downstream	<ul style="list-style-type: none"> Effectiveness of FGD 	SO ₂ , O ₂	ACX	Uras, Limas, Magnos
7	Stack	<ul style="list-style-type: none"> Emission monitoring 	CO, NOx, SO ₂ , O ₂ , HCl, NH ₃ , HF, flow	ACX, LS25, LS4000, ACF5000, FPD580	Uras, Limas, Magnos, StackFlowMaster
8	Coal bin monitoring Coal mill monitoring	<ul style="list-style-type: none"> Safety measurement Detection of smoldering fire 	CO	ACX, LS25	Uras
9	Turbo generator monitoring	<ul style="list-style-type: none"> Safety measurement Leakage monitoring Inertization and filling 	H ₂ in air, CO ₂ in air, H ₂ in CO ₂	EL3060	Caldos (Ex or GP)

Example 2 – combined cycle gas turbine power plant

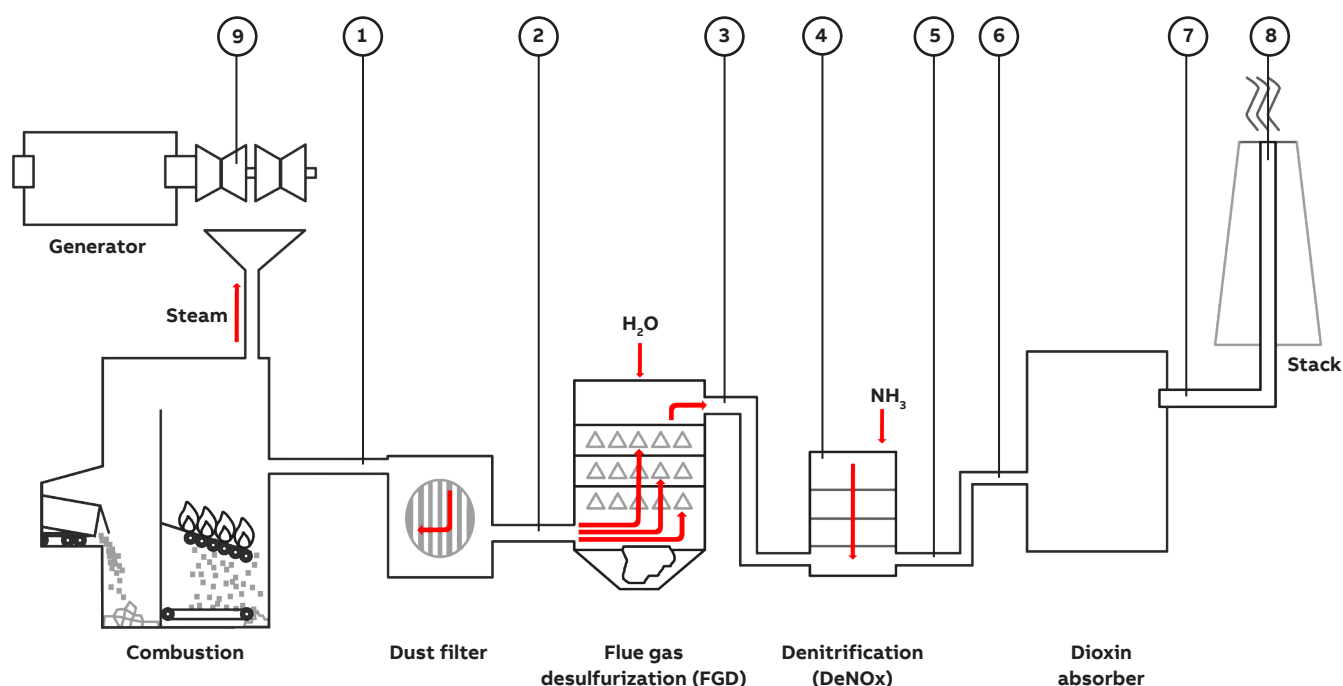
Measuring points and solutions



Measuring point	Application	Measuring task	Measuring components	Solution	Analyzers
1	Gas turbine	<ul style="list-style-type: none"> Fuel mix monitoring Process control 	CH_4 , C_2H_6 , C_3H_8 , CO_2 , H_2 , O_2		Uras, Magnos, Caldos
	Boiler control	<ul style="list-style-type: none"> Optimization of combustion Lower fuel consumption 	CO , O_2	ACX, LS25, LS4000, AZ20,	Uras, Magnos
2	Stack	<ul style="list-style-type: none"> Emission monitoring 	CO , NO_x , SO_2 , O_2 , NH_3 , flow	ACX, LS4000	Uras, Limas, Magnos
3	Turbo generator monitoring	<ul style="list-style-type: none"> Safety measurement Leakage monitoring Inertization and filling 	H_2 in air, CO_2 in air, H_2 in CO_2		Caldos (Ex or GP)

Example 3 – incinerator

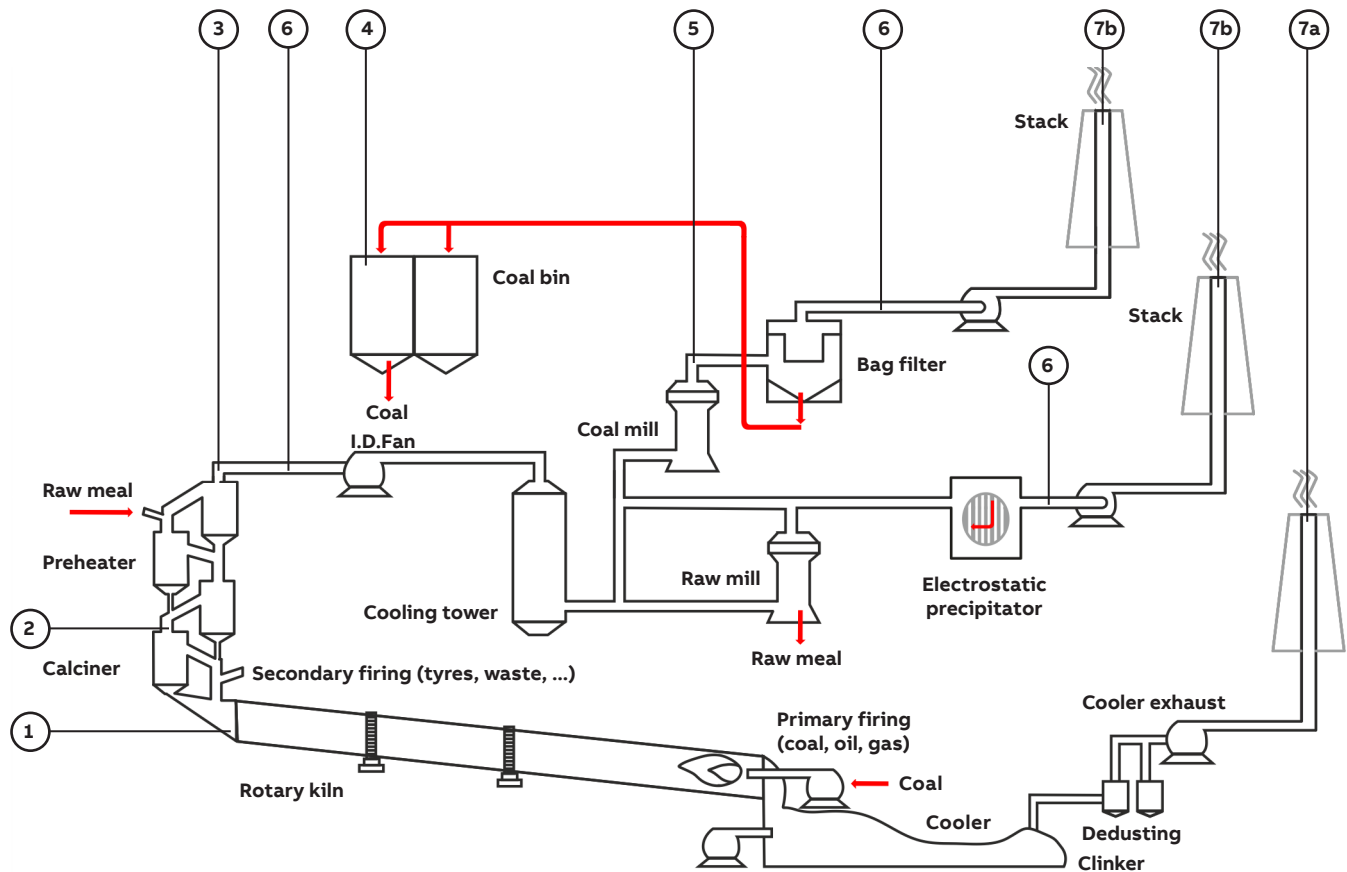
Measuring points and solutions



Measuring point	Application	Measuring task	Measuring components	Solution	Analyzers
1	Combustion and dust filter control	<ul style="list-style-type: none"> • Optimization of combustion • Dust filter explosion protection • Catalyzer protection 	CO, O ₂	ACX, LS25, LS4000, AZ20	Uras, Magnos
2	Flue gas scrubber upstream	<ul style="list-style-type: none"> • Process control • For example, milk of lime dosing 	SO ₂ , HCl, H ₂ O	ACX + LS25	Limas
3	Flue gas scrubber downstream	<ul style="list-style-type: none"> • Efficiency of flue gas scrubber 	SO ₂ , HCl, H ₂ O	ACX + LS25	Uras, Limas
4	DeNOx upstream	<ul style="list-style-type: none"> • Monitor NOx to control treatment process 	NO, NO ₂ , NOx, O ₂	ACX	Uras, Magnos, Limas
5	DeNOx downstream	<ul style="list-style-type: none"> • Efficiency of SCR/SNCR 	NO, NO ₂ , NH ₃ , O ₂ , H ₂ O	ACX + LS4000	Uras, Magnos
6	Dioxin absorber upstream	<ul style="list-style-type: none"> • CO for absorber efficiency 	CO	ACX	Uras
7	Dioxin absorber downstream	<ul style="list-style-type: none"> • Delta CO for absorber efficiency 	CO	ACX	Uras
8	Stack	<ul style="list-style-type: none"> • Emission monitoring 	CO, NOx, N ₂ O, SO ₂ , O ₂ , NH ₃ , HCl, HF, VOC	ACF5000	Uras, Magnos, Fidas
9	Turbo generator monitoring	<ul style="list-style-type: none"> • Safety measurement • Leakage monitoring • Inertization and filling 	H ₂ in air, CO ₂ in air, H ₂ in CO ₂		Caldos (Ex or GP)

Example 4 – cement production

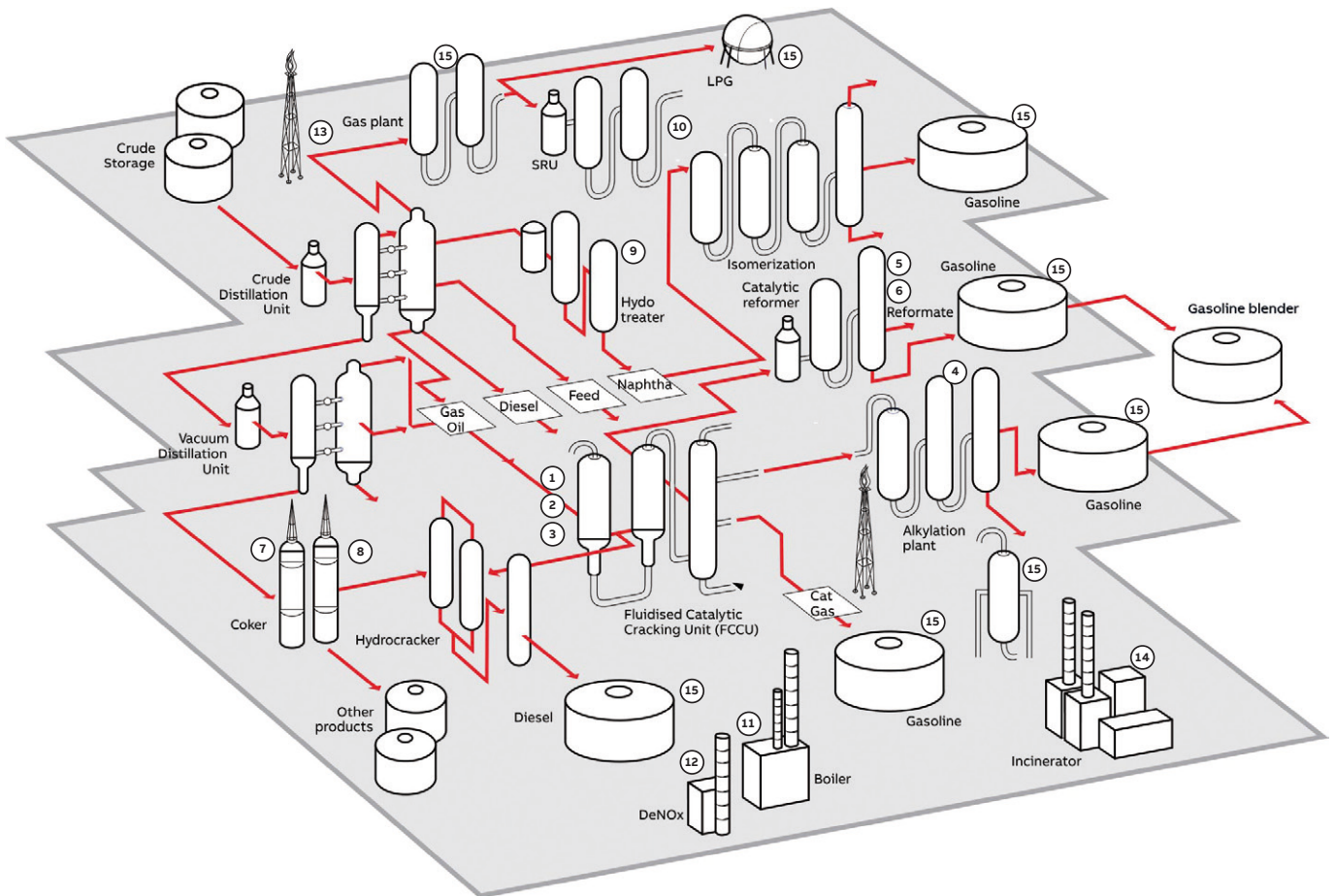
Measuring points and solutions



Measuring point	Application	Measuring task	Measuring components	Solution	Analyzers
1	Kiln gas outlet	<ul style="list-style-type: none"> • Optimization of primary firing • Lower fuel consumption • Maintain clinker quality 	CO, O ₂ , NO, CO ₂ , CH ₄ , SO ₂	ACX + SCK	Uras, Limas, Magnos
2	Calciner	<ul style="list-style-type: none"> • Optimization of secondary firing • Lower fuel consumption 	CO, O ₂	ACX ACX + SCK	Uras, Magnos
3	Preheater	<ul style="list-style-type: none"> • Safety measurement • Prevention of explosion in ESP • Control of false air in preheater 	CO, O ₂	ACX, LS25	Uras, Magnos
4	Coal bin	<ul style="list-style-type: none"> • Safety measurement • Prevention of smoldering (monitor of air entrance) 	CO, (O ₂)	ACX, LS25	Uras, (Magnos)
5	Coal mill	<ul style="list-style-type: none"> • Safety measurement • Prevention of smoldering • Monitor of air entrance 	CO, O ₂	ACX	Uras, Magnos
6	DeNOx	<ul style="list-style-type: none"> • NH₃ measurement 	NH ₃	LS4000	
7a	Stack	<ul style="list-style-type: none"> • Emission monitoring 	CO, O ₂	ACX	Uras, Magnos
7b	Stack	<ul style="list-style-type: none"> • Emission monitoring 	CO, NO, NO ₂ , NOx, SO ₂ , O ₂ , CO ₂ , HCl, VOC, HF	ACF5000 ACX + LS25	Uras, Limas, Magnos

Example 5 – refinery

Measuring points



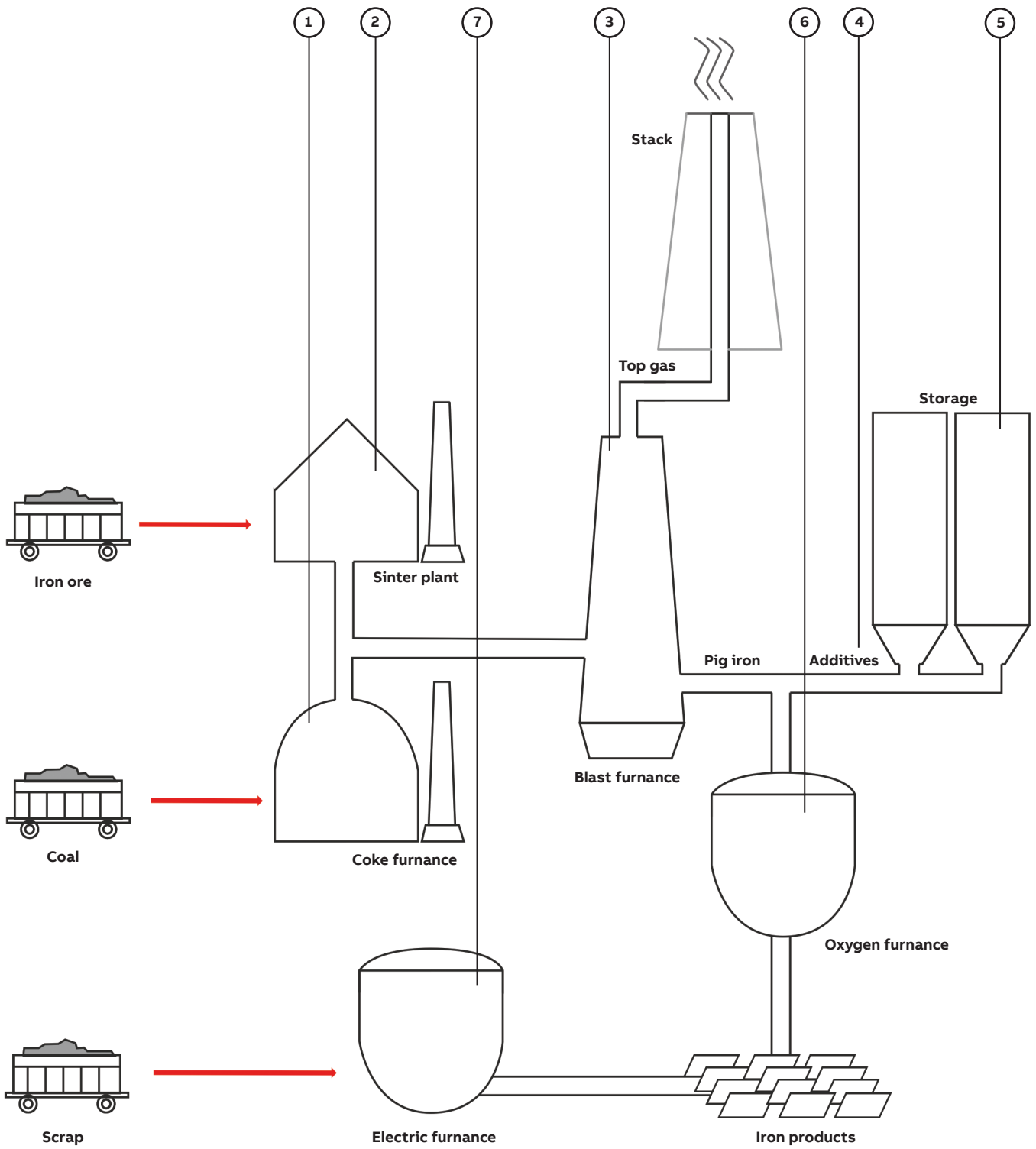
Example 5 – refinery

Measuring points and solutions

Measuring point	Unit – application	Measuring task	Measuring components	Solution	Analyzers
1	Catalytic cracker • Gas abatement after regenerator	• Emission monitoring • Flue gas effectiveness	NO, NO ₂ , SO ₂ , CO, CO ₂	ACX	Uras, Limas
2	Catalytic cracker • Regenerator flue gas	• Combustion optimization	CO, CO ₂	ACX	Uras
3	Catalytic cracker • Off-gas	• Catalyst efficiency to minimize waste and improve fuels yield	CO, CO ₂ , O ₂	ACX	Uras, Magnos
4	Alkylation unit • Stack	• Emission monitoring	NO, NO ₂ , SO ₂ , CO, CO ₂ , HF	ACF5000 ACX + LS25	Uras, Limas
5	Catalytic reformer • Wet scrubber	• Scrubber effectiveness	CO ₂	ACX	Uras
6	Catalytic reformer • Furnace	• Combustion optimization	CO ₂ , O ₂	ACX, LS25 LS4000	Uras, Magnos
7	Coking unit • Coke calciner	• Green coke calcinations	NO, NO ₂ , N ₂ O, SO ₂ , CO	ACX	Uras, Limas
8	Coking unit • Flue gas coker	• Combustion optimization	CO, O ₂	ACX, LS25 LS4000	Uras, Limas, Magnos
9	Hydrotreater • Flue gas	• Combustion optimization	CO, O ₂	ACX, LS25 LS4000	Uras, Magnos
10	Sulfur recovery unit • Stack	• Emission monitoring	SO ₂ , O ₂	ACX	Limas, Magnos
11	Boilers • Process furnaces • Gas turbines	• Combustion optimization	NO, NO ₂ , SO ₂ , CO, CO ₂	ACX	Uras, Limas
12	DeNOx • with SCR/SNCR	• Denitrification optimization	NO, NO ₂ , NH ₃ , N ₂ O	ACX + LS4000	Limas, Uras
13	Flares	• Safety monitoring	O ₂	LS4000	
14	Incinerators	• Emission monitoring	NO, NO ₂ , SO ₂ , CO, CO ₂ , N ₂ O	ACX	Uras, Limas
15	• Gas separators • Storage facilities • Oil/water separators • Fugitive emissions points • Vents	• Safety • Explosions prevention	O ₂ , VOCs	ACX	Magnos, Fidas

Example 6 – iron and steel

Measuring points



Example 6 – iron and steel

Measuring points and solutions

Measuring point	Unit – application	Measuring task	Measuring components	Solution	Analyzers
1	Coke furnace	Process optimization	CO, CO ₂ , O ₂	ACX	Uras, Magnos
		Safety monitoring	O ₂	LS4000	
2	Sinter plant	Kiln optimization	CO, CO ₂ , O ₂	LS25, LS4000	Uras, Magnos
		Oxygen leakage	O ₂	LS25, LS4000	
3	Blast furnace	Transverse probe (above burden/under burden) blast furnace optimization	CO, CO ₂ , H ₂ , (O ₂)		Uras, Caldos, (Magnos)
		Riser tube measurement Oven symmetry	CO, CO ₂ , H ₂		Uras, Caldos
		Top gas measurement • Gas very dirty	CO, CO ₂ , H ₂		Uras, Caldos
		Top gas measurement • Gas semi clean	CO, CO ₂ , H ₂ , H ₂ O	LS25	Uras, Caldos
		Cowper waste gas Burner optimization	CO, O ₂	LS4000, LS25	Uras, Magnos
		Cold blast • Process optimization	O ₂	LS4000	
4	Additives	AOD converter off-gas Process control	CO		Uras
5	Storage Hot Metal Desulphurization (HMDS)	Calcium carbide silo • Safety monitoring	C ₂ H ₂ , O ₂		Uras, Magnos
		Magnesium silo • Safety monitoring	O ₂		Magnos
6	(Basic) oxygen furnace	Converter off-gas Process control & safety monitoring	CO, CO ₂ , H ₂ , O ₂		Uras, Caldos, Magnos
		Process control & safety monitoring, short T ₉₀ lower temperature	CO, CO ₂ , H ₂ , O ₂		Uras, Caldos, Magnos
		ESP ¹ , flare or consumer – safety monitoring	CO, O ₂	ACX fast, LS25, LS4000	Uras, Magnos
		Leakage detection	H ₂ O	LS25	
7	Electric (arc) furnace	EAF off-gas monitoring Process & safety monitoring	CO, CO ₂ , O ₂	LS4000, LS25	Uras, Magnos
Others 1-7	Stack/off-gas	Emission monitoring	CO, NO, NO ₂ , NOx, SO ₂ , O ₂ , NH ₃ , HF, HCl	ACF5000, ACX LS25, LS4000	Uras, Magnos, Limas
	Hot strip mill – slab reheating Steel rolling – pickling line	Monitoring	SO ₂ , NO, NO ₂ , NOx, O ₂ , NH ₃ , HCl	ACF5000, ACX LS25, LS4000	Uras, Magnos, Limas

¹ Electrostatic precipitator

ACX cold/dry extractive system

Complete. Configurable. Consistent.

—
01 ACX cold/dry system
for emission and
process monitoring

ACX is a pre-engineered system solution for continuous gas analysis, including everything from probe, sample lines and sample conditioning to reliable and certified analyzers of the Advance Optima series.

The system can be operated from a keypad and display in the front door without opening the cabinet. The system is available with various options to be tailored to your measuring tasks. It is especially designed for easy service and maintenance.

ACX is suitable for non water-soluble components – typically NO, NO₂, NO_x, CO, CO₂, SO₂, CH₄, O₂, VOC.



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ACX offers

- Certified analyzers with proven measuring technology: IR and UV photometers, paramagnetic oxygen analyzer, electrochemical oxygen sensor, FID analyzer
- Up to six gas components, measured by up to four analyzers with corresponding sample conditioning
- Convenient and easy operation from front door panel
- Communication interfaces: Modbus, PROFIBUS and Ethernet to connect to a PC or process control system
- Integrated self-monitoring functions and easy remote service & maintenance
- Free licensed AnalyzeIT Explorer software for asset management and worldwide access for remote maintenance via Ethernet

ACX benefits

Complete. From sampling to measurement.

- World leading AO2000 series analyzers
- Physically and digitally integrated sample handling
- Three installation variations to choose from: steel cabinet, mounting plate, fibre glass cabinet.

Configurable. Tailored to your needs.

- Pre-engineered for known applications
- Adaptable to even the most challenging applications

Consistent. The quality you expect.

- Produced in Germany
- Easy operation via front door
- Familiar and service-friendly internal layout

Did you know?

The ACX system can also integrate ancillary device signals for example, dust, p, T, V and mercury to transmit to DCS.

ACF5000 hot/wet extractive system

The benchmark in FTIR based CEMS

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02 ACF5000
hot/wet system
for emission and
process monitoring

ACF5000 is a fully certified analyzer system to accurately monitor the composition of exhaust gases.

- A completely pre-engineered CEM system for easy operation
- With longest maintenance interval in the market
- Worldwide certified support

ACF5000 offers

- Measurement of 15 gas components
- Hot/wet extractive measurement
- Powerful FTIR technology
- Proven FID and ZrO₂ sensors to measure the unburned hydrocarbons and the oxygen content
- Completely pre-engineered system with a compact and modular design
- Communication, control and maintenance via Modbus and Ethernet/TCP or modem
- Technical drawings digitally available by emailing on the day of quoting

International certifications

- TÜV certification according to the German and European requirements, EU Directive 2010/75/EU and EN 14181
- MCERTS certified in United Kingdom
- Compliant to US and Canadian EPA requirements

—
ACF5000 measures typically NO, NO₂, N₂O, NH₃, SO₂, HCl, CO, CO₂, CH₄, H₂O, HF, O₂, VOC, including water soluble components.

ACF5000 benefits

Reliable

- More than 25 years experience with FTIR spectrometers in gas analysis and more than 1600 installations worldwide
- Fully compliant to European and international legislations
- Worldwide support through certified service engineers

Flexible

- Ready for operation – electrical power, instrument air and hydrogen supply are needed
- Easy adding of further measuring components – no additional hardware needed
- Extra gas port to connect other analyzers – no need for a separate probe

Profitable

- Saving time and money with automatic validation through built-in validation cell without need for test gas cylinders
- Longest maintenance interval in the market
- Maintenance-free sample transportation through aspirator pump
- Cost reduction for routine maintenance through remote control and diagnosis



Advance Optima

Innovative modular analyzer technology

—
01 Advance Optima
series gas analyzers

Advance Optima gas analyzers combine advanced technologies with more than 75 years of experience in processing and environmental analysis. They are the innovative solution for the demands of today and the challenges of tomorrow. Being tailored to satisfy the requirements of various industries, the Advance Optima series can be used in almost every form of production and has proven itself in the toughest processing environments – worldwide.

The advantages to you – Advance Optima offers advanced and reliable technology

Unrivalled economy

- Cost-effective operation, service and maintenance over the entire life cycle
- High quality design with a long lifetime
- Lower training and documentation expenses
- Simple user friendly operation
- packaging that fits right in
- reliable and powerful

Integrated system solutions – for added flexibility

- Basic version consists of a central processing unit and one analyzer module
- Standardized modules can be adapted to your measuring tasks and combined to systems tailored to your individual requirements
- Designed to integrate flexibly with each other – from analyzer modules, housings, from displays to control units and from power supplies to sample conditioning
- Integrated control and monitoring
- Unlimited access to analytical data

Multi-analyzer systems

- Up to four analyzer modules can measure six different components
- The sample gas feeding units and coolers can also be integrated
- The modules are operated by the central processing unit – and can even be installed up to 350 m away



EasyLine

Continuous gas analyzers

01 EasyLine series
gas analyzers

EasyLine is both a powerful and affordable line of instruments for the monitoring of gas concentrations in numerous applications. EasyLine is based on the proven and reliable analyzer technology of ABB for extractive continuous gas analysis. EasyLine is available in two versions, which are optimized for the various installation requirements of the respective location.

The advantages to you

Proven and reliable measurement technology

- Infrared photometer
- Ultraviolet photometer
- Magnetomechanical oxygen analyzer
- Thermomagnetical oxygen analyzer
- Electrochemical oxygen sensor
- Thermal conductivity analyzer
- Trace oxygen analyzer
- Flame ionization detector analyzer

The efficient alternative

- EasyLine offers an excellent price-performance ratio
- Extensive self-diagnosis functions with output of error messages
- Optionally with integrated gas feed
- Automatic calibration without test gas cylinders for most applications
- Measurement of flammable and non-flammable gases without purging
- Available in a 19 in. slide-in housing or in a wall-mount housing

Convenient operation and configuration

- Simple intuitive operation, menu-driven via five buttons
- Information presentation in several languages
- Individual configuration of the inputs/outputs

Interface to external controllers

- Ethernet interface with Modbus TCP/IP. Also used for configuration, software update and QAL3 data transfer
- Modbus or PROFIBUS protocol for networking with a PC, PLC or process control system
- Modbus DDE driver for integration into a Windows environment for simple reading, archiving and visualization of data

Internal quality control and reporting (QAL3 function)

- Integrated QAL3 reporting according to EN 14181
- Data storage for one year minimum
- Standard web browser access and Ethernet interface



Unique qualities

Calibration cells and Dynamic QR Codes

02 Application in cement industry

03 EasyLine display with Dynamic QR Code

Calibration cells

Calibration is necessary for all gas analyzers but the frequency varies significantly between different devices. The time and costs can increase substantially depending on the approach taken. Regulatory aspects can also have a big impact (e.g. daily validation required according to US EPA emission regulations), especially when you consider the real cost of gas cylinders.



Manufacturing

- Gas-filled calibration cell
- Tightness guaranteed by proprietary manufacturing technique
- 30 years' manufacturing experience

Suitability

- Alternative to flowing test gas
- Available in both Uras and Limas photometers
- Compliant with EN 14181 and US EPA 40 CFR 60

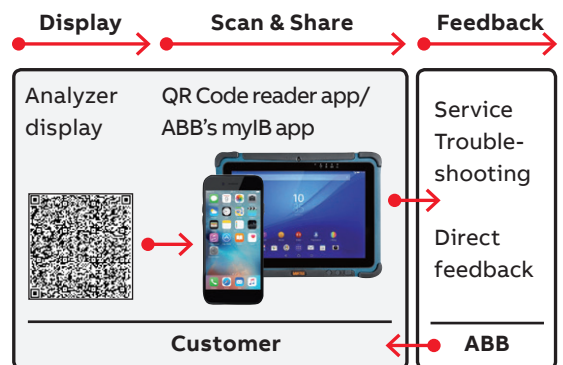
Proven technology

- Tested by TÜV for over 10 years
- Stability superior to many test gas cylinders
- Drift < 0.5% per year
- Certified according EN 15267

Up to 95% lower calibration costs!
Ask your local contact for more info

Dynamic QR Codes

ABB's Dynamic QR Code is a unique feature to display dynamically generated QR codes on the analyzer display for easy communication. In addition to static information for system identification, it contains also dynamic information on system configuration and analyzer health status. In combination with mobile devices, the Dynamic QR Code represents an innovative way of customer's communication which allows, for instance, improved case-specific support by ABB resulting in an increased availability of analyzer assets. It is compatible with standard QR code reader applications as well as ABB's application 'my Installed Base (myIB)'.



Generally applicable for all installations across all industries, especially interesting for

- Measurements with high availability requirements (for example CEMS)
- Remote installations
- Installations with constraint remote access due to information security guidelines

02



03



FPD580 StackFlowMaster



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01 FPD580
StackFlowMaster

StackFlowMaster

FPD580 StackFlowMaster, the CEM solution for emissions flow monitoring is an ideal complement to CEM packages, meeting regulatory requirements and offering a total CEM solution from ABB.

The challenge of quantifying the pollutants emitted

The challenge of quantifying the pollutants is subject to legislation on the metering of the concentration and quantity of pollutants introduced to the environment.

The solution is a robust flow metering system

StackFlowMaster is an averaging pitot tube flowmeter which incorporates a multivariable transmitter for compensated gas flows. Available with flanged or threaded stack connections, StackFlowMaster measures the flow in stacks both small and large, with alternative materials available for high temperatures. A special design and a probe with a greater diameter is available for large diameter stacks. A choice of materials is available to handle both the corrosive properties of the gas and its temperature. Where particulates in the gas could cause blockages, an optional automatic air purging system is available. To simplify compliance with legislative requirements for meter verification, an automatic zero and span calibration facility is available, enabling verification to be carried out without the need for either external test equipment or partial dismantling of the meter.



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CEM-DAS

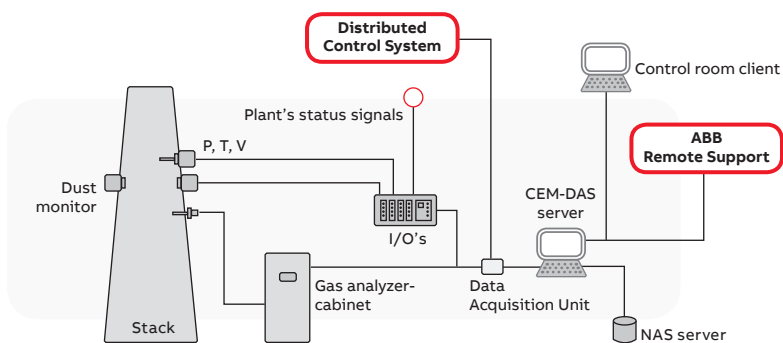
Reporting made easy

01 CEM-DAS
Process flow diagram

02 CEM-DAS on a
mobile device and
on screen

CEM-DAS is a PC-based data acquisition and handling system for continuous emission monitoring. It is a complete, networkable system for continuous recording and evaluation of emission data in all industries.

CEM-DAS is scalable to support smallest stack installations up to multi-block plants with numerous measuring points.



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CEM-DAS key features

- Compliant to all plants covered by the Industrial Emission Directive 2010/75/EU
- For data security all relevant data is saved in an internal database exclusively accessible via the graphic user interface of CEM-DAS
- Integral values (e.g., half hour or hourly averages) and other reports documenting the systems availability and compliance can be automatically transferred via e-mail to third parties (f.e. authorities)
- Bar charts and line charts displaying all pertinent information for on-line monitoring
- Simple output of all relevant data (minute values, half hour averages, daily averages, reports of all emission limit violations, etc.)
- Client/server architecture allows access to CEM-DAS via standard browser from any device
- Modbus TCP/IP connection for minimum cabling effort to ABB analyzers
- Can be administered via remote access
- Multi-user password management for different users groups with tailored access rights
- Analog data acquisition (0...20mA and status signals) or Modbus TCP/IP connection to reduce wirings from/to AMS/DCS

Certified quality

- QAL1 certified according EN 14181, EN15267-1/-2
- German Uniform Practice in monitoring emissions
- German emission data remote transmission (EFÜ – analog or FTPS)
- MCERTS Performance Standards and Test Procedures for Environmental Data Management Software
- VDI 4201-3 for Modbus TCP/IP interfaces
- Prepared for European DAHS standard EN 17255

02

LS25, LS4000 tunable diode laser analyzers

Highest precision for harshest conditions



—
03 LS4000 in situ
laser analyzer

Solution suitable for measurement directly in the process. Typically O_2 , NH_3 (+ H_2O), HCl (+ H_2O), H_2O or CO , CO_2

LS25 and LS4000 are in situ cross-duct analyzers for measuring gas component concentrations. Both apply the highly selective, optical measuring principle of tunable diode laser (TDL) absorption spectroscopy.

The laser is selected for a single wave length in the sample gas absorption spectrum, where no cross sensitivity from other gases occurs. The absorption line is scanned and the receiver detects the absorption caused by the measuring component and calculates the gas concentration.

LS25

As an integrated part of the Advance Optima series, the LS25 can be combined with further analyzer modules and completely operated remotely in Ethernet networks. The LS25 holds ATEX and CSA certificates for hazardous locations. Depending on the application, LS25 is suitable for measurements at elevated 1500 °C and pressures up to 10 bar.

LS4000

The LS4000 is a stand-alone system and is approved for use in hazardous areas according to international standards. The device consists of a transmitter unit with a laser light source and a receiver unit with a photodetector. The two units are mounted opposite each other on the process pipe or stack and are connected via a junction box.

Typical applications

- Process control and safety monitoring
- Combustion control
- Control of flue gas abatement equipment for example, ammonia slip measurements
- Emission monitoring

Typical industries served

- Chemical and petrochemical industry
- Power industry
- Iron and steel industry



AZ series zirconia oxygen analyzers

Optimizing combustion efficiency



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01 AZ20 combustion
gas oxygen analyzer

Efficient fuel combustion in any industrial process is essential in cutting operating costs while reducing pollution to enable compliance with environmental legislation.

The challenge of finding the right air/fuel mix

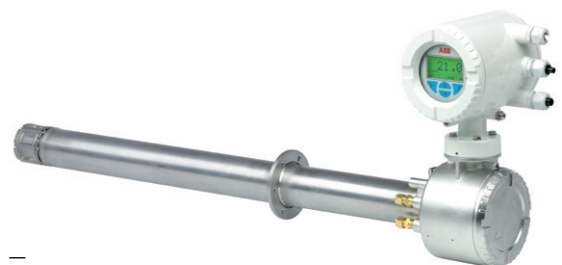
The ratio of air to fuel is a critical factor in efficient combustion. Where there is just sufficient oxygen to ensure complete combustion, this ratio is known as the stoichiometric mixture, and lambda equals one. This is a theoretical value which cannot normally be achieved in industrial combustion processes. Lambda values about 1.1 and above are usual.

Controlling the air supplied to the combustion process is a fine balancing act. Insufficient air will mean incomplete combustion of fuel, resulting in fouling of heat transfer surfaces and emissions of soot, smoke and carbon monoxide. If air levels are too high, heat efficiency is reduced as the extra air carries more heat away in the flue gas, reducing overall boiler efficiency.

The solution is to measure flue gas oxygen

The level of oxygen present in the combustion waste gas is a key indicator of the amount of excess air supplied to the process. Oxygen measurement is therefore critical when optimizing combustion control for maximum efficiency.

ABB offers a range of combustion gas analyzers to accurately measure the oxygen concentration in a wide range of combustion processes. The analyzers can be used in conjunction with ABB's Sensyflow thermal mass flowmeters to regulate the amount of air supplied to the burner.



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The added value

What you can expect from a market leader

As one of the world's leading suppliers of analyzer technology, we offer our customers additional benefits and services other manufacturers can not provide. ABB Analytics helps to improve performance and reliability at work with added values.

Best choice of analyzers tailored to your needs

We offer the broadest selection of measuring principles under one roof. All types of analyzers share a common operation to reduce the need for training and spare parts.

Certified sales and service partners wherever you are

Our 'Manufacturer Certified Service' program involves more than 300 service specialists with many years of experience and comprehensive know-how working for our clients on-site worldwide. Our engineers are your professional partners dedicated to finding the best solutions for your measuring tasks. They regularly undergo manufacturer training and certification.

Long-term security in your investment

Our comprehensive and transparent life cycle plan for each of our products covers the service of spare parts and service support for their entire lifetime. Our products are extendable with upgrade programs keeping them technologically up-to-date at all times.

Most powerful software solutions

Full remote control and maintenance access to the system inside a protected network and quality monitoring (QAL3) are available for ABB analyzers. Integrated controllers with PLC functionality provide monitoring while controlling the measurement from sample taking right up to analysis.

Unique time and cost saving calibration concepts

ABB has 30 years of unrivalled experience in producing gas-filled calibration cells, allowing internal calibration without test gas cylinders for photometers. Single-point calibration with ambient air as the standard gas is also possible.

Unrivalled options for connectivity

ABB gas analyzers and systems excel in Ethernet network abilities and Modbus or PROFIBUS interfaces. This enables the analyzer data to be easily read, archived and visualized on a PC, PLC or process control system.

Assured quality through independent certification

ABB provides all major international certificates for CEMS, hazardous area installations, metrological approvals, electrical safety and quality and environmental management.





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