

On-line Process Analysers for the Determination of

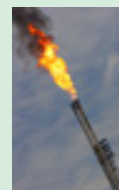
- **Air Demand and Wobbe-Index in combustion gases with the RHADOX™ system**
- **Oxygen in flue gases with the Zirconia probes AMS 3211**
 - **Oxygen in flue gases of gaseous fuels and simultaneously the CO₂-equivalent**

Off-gases as energy source

Air Demand and Wobbe-Index of gaseous fuels are determined on-line with the **process analyser RHADOX™** extendable for the measurement of the Specific Gravity and the Calorific Value.

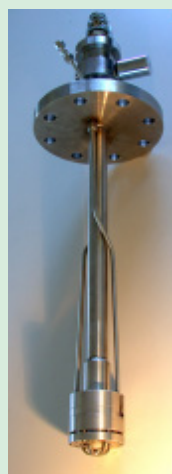


ATEX



Application areas :

- Natural Gas-fired boilers
- Off-gases from furnaces and in facilities for power generation
- Off-gases from sewage digesters and bio-gas plants
- Off-gases from chemical plants and refineries



ATEX



In-line measurement of Oxygen in flue gases with the **Zirconia probes AMS 3211** -

also in corrosive atmospheres and temperatures until 1700°C.

Zirconia probes for the simultaneous measurement of Oxygen and CO₂-equivalent.

EEx-approved versions for zone 1 and zone 2 are also available.

On-line Process Analysers

- **Oxygen analysers PAT 3100** for the **ppm- and vol-%-range** in process gases
- **Multi-component analysis** in process gases with analyser **FTTCA 1100**

Oxygen analysers PAT 3100

for the ppm- and vol-%-range - with electrochemical or ZrO₂-sensor

Using the electrochemical sensor not only well-known standard applications are routinely feasible, but also the analysis of aggressive gases or very complex composition. Long life time and sturdy design are the main features of ZrO₂-sensors.

Trace Oxygen measurement is a frequent necessity for process control and product quality monitoring. Analysers PAT 3100, featuring a ZrO₂-sensor for in-situ measurements, responds to **very low levels of Oxygen** and additionally offer reduced maintenance (no need for electrolyte change, ambient air is reference gas).

Controlling wide concentration ranges is a typical request in heat treatment, welding and inertisation processes.

In the chemical industry and in thermal engineering processes precise measurements of trace Oxygen as well as of vol-% Oxygen in gases with **combustible components** is a frequent analysing challenge.

Both tasks are successfully performed with the PAT 3120 featuring an electrochemical sensor. Portable and field systems as well as EEx-approved systems are available.



Multi-component gas analysis with the Fourier-Transformed Thermal Conductivity Analyser FTTCA 1100



Application areas :

- Cross interference-free measurement of Hydrogen and other gas components.
- Bio-gases (fermenter-gases) in the three component mixture N₂-CO₂-CH₄, up to now requiring an additional measuring system, in most cases an IR-analyser.
- Mixtures of N₂-H₂-CO₂ frequently used in the chemical industry.
- Mixtures of N₂-He-H₂, which could not be analysed employing the classic TC-sensor.



Brief description of our main products

AMS Analysen-, Mess- und Systemtechnik GmbH

We offer our customers high quality process gas analysers for a broad range of applications :

- Wobbe-Index analysers for air demand, specific gravity and calorific value of fuel gases;
- In-situ flue gas probes for Oxygen and for Carbon-Monoxide (CO) in stack gases;
- Thermal conductivity analysers - not only the conventional Hydrogen Analyser, but also a new technology for multi-component analysis;
- Trace Oxygen analysers for high purity gases and for process gas applications, based upon a variety of sensor principles (electrochemical sensors, Zirconia based and catalytically inactive sensors and paramagnetic measuring cells) to offer the best suitable for your application;

Most analysers are available with TUEV approval and/or an ATEX certificate for installations in zone 1 or zone 2 classified areas.

Analysers for Wobbe-Index and calorific value of fuel gases :

The RHADOX™ analysers provide a fast measurement of the air demand for complete and safe burning of gaseous fuels, the Wobbe-Index and the specific gravity and Lower Calorific Value (LCV) of gaseous fuels.

Key features of the analysers are

- the instruments are independent from the ambient temperature : therefore, no calorimeter-room is necessary;
- Fast response with a few second T90-time lag
- Specific gravity meter can be integrated, if the measurement of LCV is required;
- The use of the flameless catalytic converter makes it possible to measure fast very widely varying gases and also gases with extremely low calorific value.
- All analysers are also available ATEX certified for installation in classified areas.

Main applications are the fast forward control of burners fed with Natural Gas, with gases from blast furnaces, steel converters or coke ovens, or fired with off-spec gases from chemical and petro-chemical production;



RHADOX 3000 analyser for Wobbe-Index, Air Demand, Specific Gravity and LCV : certified to ATEX 3G IIB+H₂ T4

In-situ probes for O₂ and CO-e for monitoring and optimising burner efficiency :

Those analysers – either as in-situ probes or as semi-extractive systems - provide direct and fast measurement of Oxygen in flue gases or the combined measurement of O₂ and CO, resp. CO_{equivalent} in stack gases.

Key features of the analysers are

- special design for ease of maintenance and sensor exchange;
- probes for very high temperatures (up to 1.750°C / 3.200°F)
- materials for highly corrosive gases (HCl, SO₃,...)
- The Oxygen probes are TUEV approved for large power plant boilers, for industrial boilers and for waste incinerators and bear a QAL-1 certificate.
- All probes are also available in ATEX certified versions for installation in zone 1 and zone 2 classified areas.

Main applications are the monitoring and control of boilers for a safe and complete combustion and to improve boiler efficiency; Special applications are the humidity concentration either in flue gases or in other atmospheres.



AMS in-situ flue gas probe for O₂ or for O₂+CO_e-measurement -- certified to ATEX 2G IIB+H₂ T3

Thermal Conductivity Analysers

This analyser comes not only in the classical version for

binary gas mixtures, especially for the analysis of Hydrogen

in other gases.

A specialty is our patented multi-component analyser with thermally modulated sensor and Fourier-analysis of the sensor signal.

Key features of the analysers are :

- Extremely fast response of the sensor (because of it's very low thermal mass)
- Thermal modulation of the sensor membrane and thereby performing a 3-4 component analysis
- This analyser is also available in an ATEX certified version for installation in zone 1 classified areas

Main applications are...

- measurement of H₂, CH₄, CO₂ in other gases;
- measurement of H₂, CO₂ and air in the cooling gas of turbine generators;
- monitoring of complex gas mixture like Natural Gas, Landfill Gas or similar Bio-Gas applications.



Multi-component Thermal Conductivity Analyser FTTC 1100 : ATEX 2G IIC T4

Monitoring of high purity industrial gases and other process gases :

AMS makes a series of Trace Oxygen Analysers, based either upon electrochemical micro-fuel cells, a ZrO₂-sensor with classical Pt-electrodes or with catalytically inactive electrodes. For purity of Oxygen, we offer the PAROX analyser with a special paramagnetic sensor.

Key features of the analysers are

- a variety of sensor principles and materials ensures the selection of the best one for your application;
- thermostatted sensors for low noise and for applications below 1 ppm are available;
- Portable and ATEX-certified versions complete the range

Main applications are....

- Purity of Nitrogen, Argon, Hydrogen, Ethylene
- Purity of Oxygen
- Impurities of Hydrogen in Nitrogen or Oxygen
- Oxygen levels in Natural Gas pipelines
- Monitoring the atmosphere in automatic soldering;
- Monitoring of heat treatment or welding atmospheres;



AMS 3110 : portable Trace Oxygen Analyser, certified to ATEX 2G IIC T5