Oxygen Measurement Systems

INGOLD
Leading Process Analytics

O_2 Gas Measurement

- Fast in-line results
- No sample gas conditioning
- Predictive, real-time diagnostics

Gas-Phase Oxygen Measurements

Measure In-line and Save Costs

METTLER TOLEDO

Oxygen Gas Monitoring

Why Don't you Measure In-line?

Oxygen measurement in gas phase for safety assurance and prevention of product oxidation can translate into high investment costs and tedious maintenance. METTLER TOLEDO offers a unique and easy-to-use solution for challenging applications.

Oxygen measurement in gas phase is typically driven by two requirements. One is to ensure safety of the process and protect its environment and the other is to prevent products and equipment from oxidation resulting in reduced yield caused by unwanted by-products.

Existing analytical systems mostly need intensive sampling and conditioning of the gas.

The oxygen measurement systems from METTLER TOLEDO provide the user with easy-to-use, robust and rugged measurement system for measurement at the real point of interest, inside the process.

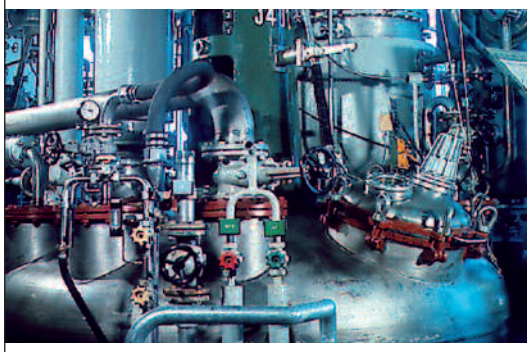
- Avoid flash fire during storage
- Establish degredation free conditions for product storage

N_2 Blanketing

- Low installation cost
- Reliable measurement
- Reduced gas consumption
- Easy maintenance

- Maintain safe conditions for processes hazardous areas
- Minimize product degredation due to oxidation

Inertization



- Optimized inertization control
- Reduced gas consumption
- Low installation costs
- Fast oxygen monitoring

- Monitor and adjust oxygen content for efficient combustion
- Guarantee oxygen values below LOC to avoid explosive atmosphere

Off-Gas Monitoring/ Vapor Recovery

- Rugged measurement
- Fast oxygen detection
- Increased safety
- Maintenance without process interruption

In-line Measurement

Bring the Sensor to the gas, not Vice Versa

Amperometric oxygen sensors from METTLER TOLEDO don't need a gas conditioning system in a wide range of applications. The robustness and high accuracy in aggressive processes allows direct installation.

Gas sampling and conditioning systems are needed if a sensor does not withstand the process or environmental conditions.

In typical installations, e.g. with paramagnetic sensors, additional sampling and conditioning systems are required but installation cost, maintenance effort and the risk of failures of one component increases significantly.

METTLER TOLEDO uses oxygen measurement system with a robust and easy-to-maintain design. No conditioning is needed in most cases and even if conditioning is required, it is significantly less complex than existing installations.

Your benefits

Plug and measure
Thanks to the ISM technology (Intelligent Sensor Management), sensors can be replaced within one minute without process interruption.

Enhanced process reliability
Thanks to ISM, gas-phase sensors monitor themselves in real-time for early signs of failure.

Better process control
Fast and direct O_2 monitoring reduces inertization gas consumption.

Minimum maintenance effort
Longer maintenance intervals due to low drift, leading to lower operation costs.

A Proven Solution for Real In-line Measurement
Case Studies

Since many years in-line O_2 measurement from METTLER TOLEDO is proven as a reliable and robust technology. Hundreds of customers are convinced that amperometric technology is the simplest and thus most reliable solution.

Company BASF
Process Polymer production
Headspace blanketing
Result In-line measurement results in a 80% reduction of N_2 consumption. Product yield and quality was increased by 10 to 20%.

Company Wacker
Process Penicillin purification, centrifugation
Result Direct installation of the sensor inside the centrifuges reduces the installation costs by 90% and the N_2 consumption by 70%.

Company DTM
Process Chemical synthesis processes off-gases
Result The rugged sensor design enables long maintenance intervals and reduces maintenance costs by 80%.

Modular System
Fulfilling Your Individual Requirements

The modular design of an oxygen gas measurement system consists of only 3 main components: Sensor, process connection and transmitter. The modular design allows for a customized setup.

Sensor

A wide range of different sensors is available in various materials for direct installation in aggressive processes.

Measurement range	0 to 100%
Detection limit	5 ppm
Sensor material	Stainless steel/ C22
O-rings	Silicone/Kalrez

ISM

Process connections

With the use of a retractable housing, sensor check and maintenance or replacement can be performed in a minute without process interruptions.

ISM/iSense

Together with iSense, a PC based asset suite, all sensor information can be monitored over the whole lifetime of the system. Calibration can be done in the lab and all relevant data are stored in a database.

AirCheck™

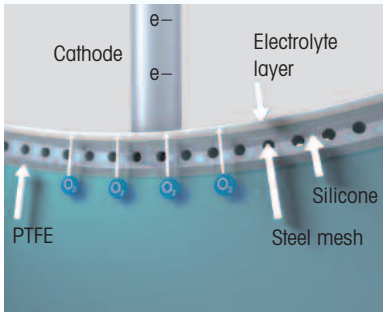
The system together with a retractable housing allows for automated sensor check to ensure best performance.

Transmitter

A transmitter delivers the measurement value, system status and sensor diagnostics and offers different communication options to the DCS. Mettler-Toledo Ingold offers an extended portfolio in loop- and main-powered solutions, also for hazardous area applications.

Do you know how it works?

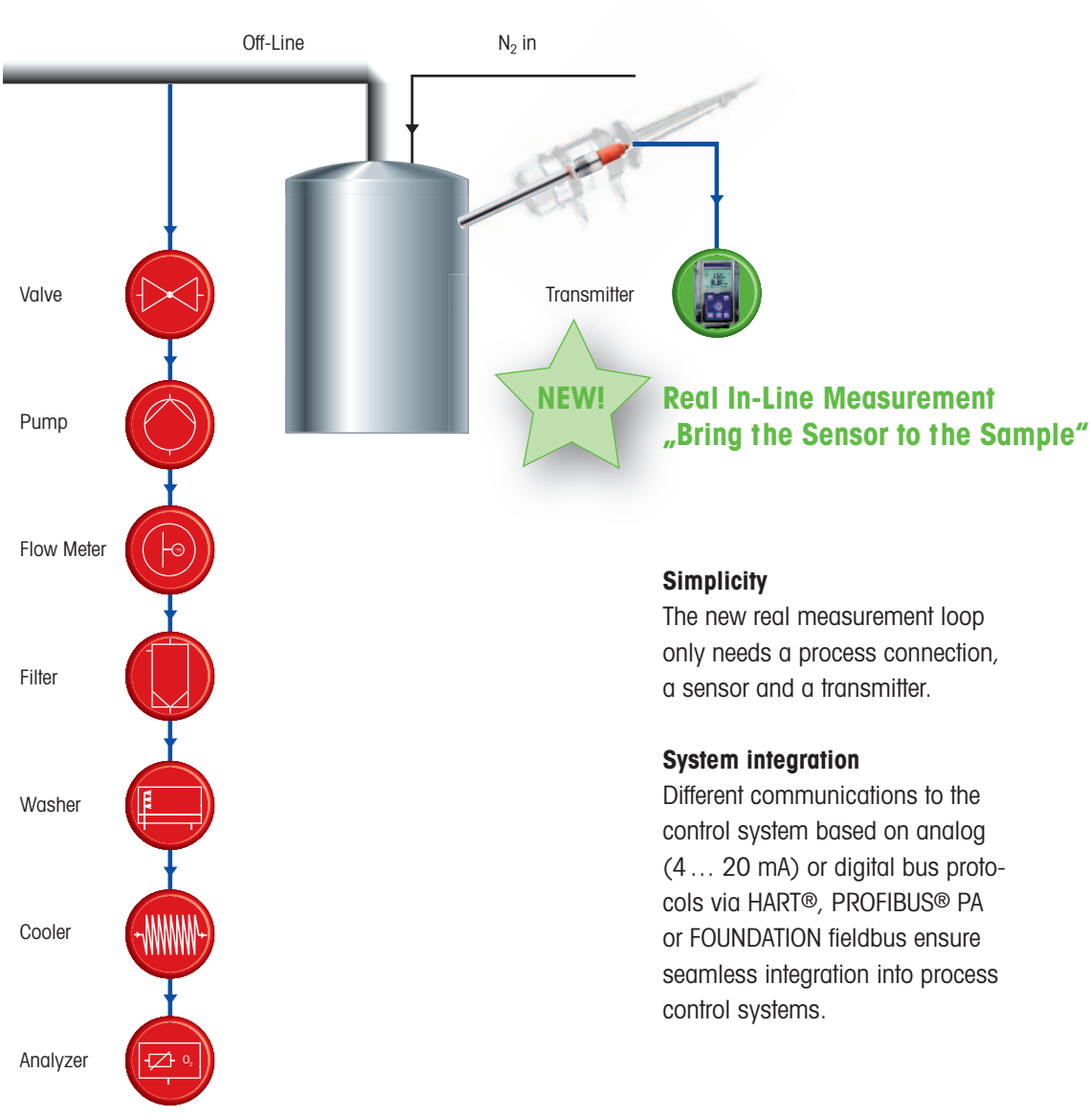
Amperometric oxygen measurement
The oxygen measurement system is separated from the sample gas by oxygen permeable membrane. Most components with potential interferences can not pass the membrane.
At the cathode, oxygen is chemically measured as a current to calculate the oxygen partial pressure.



METTLER TOLEDO's Solution

Imagine: Oxygen Measurement Without Sampling

The simplicity of METTLER TOLEDO's oxygen gas solution offers a new level of reliability in oxygen monitoring. Without complicated and maintenance-intensive conditioning sytem, the advantages of direct measurement can be turned into tangible results.



Conventional Process Installation

Simplicity
The new real measurement loop only needs a process connection, a sensor and a transmitter.

System integration
Different communications to the control system based on analog (4 … 20 mA) or digital bus protocols via HART®, PROFIBUS® PA or FOUNDATION fieldbus ensure seamless integration into process control systems.

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