

# Oxygen Sensors in Power Plants

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5. Application in power plants



# 1. Oxytrans TR

## Process conditions measurement ranges:

Temperature: -5 to +98 °C

Concentration: I: 1 ppb to 2 ppm (Liquid phase) / 0 to 4,2 %O<sub>2</sub> (Gas phase)  
II: 50 ppb to 30 ppm (Liquid phase) / 0 to 50 %O<sub>2</sub> (Gas phase)

Pressure: 0 to 12 bar

## Reached accuracy:

I: +/- 1 ppb resp. +/- 0,002 %O<sub>2</sub>

II: +/- 50 ppb resp. +/- 0,03 %O<sub>2</sub>

## Communication:

- 4 - 20mA

- Profibus



## 2. Oxytrans M

### Process conditions, measurement ranges:

Temperature: -5 to +98 °C

Concentration: I: 1 ppb to 2 ppm  
II: 50 ppb to 30 ppm

Pressure: 0 to 12 bar

### Reached accuracy:

O<sub>2</sub>: I: +/- 1 ppb  
II: +/- 50 ppb

### Features:

- Data logger for up to 5000 values with date, time and measuring-point
- PC-Software
- USB-interface for PC-connection / data transfer
- Rechargeable battery



# 3. Measurement principle

- Dynamic luminescence quenching by molecular oxygen
- Collision between the luminophore (indicator molecule) in its excited state and the quencher (oxygen) results in radiationless deactivation
- Energy transfer takes place from the excited indicator molecule to oxygen
- As a result the measurable luminescence signal decreases

## 4. Advantages

- Faster response time → savings on product loss
- Measures the oxygen content selectively in gases and liquids
- Not sensitive to pressure shocks (system without membrane)
- No electrolyte has to be changed/renewed (system without electrolyte)
- No oxygen is consumed during the measurement
- Easy to maintain → no exchange of membranes / electrolyte and no polarization time / air calibration required
- Signal is independent from changes of flow velocity
- More sensitive than conventional electrodes (up to low ppb-range)
- Long-term stability and low drift

## 5. Application in power plants

- Measuring of the oxygen content to avoid damage by corrosion
- In combination with deaeration system DGS to control effectivity of DGS, prevailing Oxytrans TR
- Reference measuring device for already installed oxygen measuring devices