

# LFE Product Overview

## Process Analytical Instrumentation

### Process Gas Analysis



#### CONTHOS 3 - TCD

Process Thermal Conductivity Gas Analyzer  
General purpose models

##### Key Features

- ⇒ Thermal-conductivity analysis of (quasi-)binary H<sub>2</sub> and noble-gas mixtures
- ⇒ Measurement ranges: from 0 - 0.5% to 99.5 - 100% H<sub>2</sub>
- ⇒ **Fast response:** T90 ≤ 3 sec
- ⇒ **Corrosion resistant** TCD cell

##### Typical Applications

- ⇒ H<sub>2</sub> & O<sub>2</sub> purity monitoring in water electrolysis
- ⇒ Metallurgical process gases (e.g. blast furnace)
- ⇒ Steel heat treatment & hardening
- ⇒ Petrochemical synthesis & reformer gas
- ⇒ Gas purity control for PSA, LEL/UEL & inert gas applications



#### CONTHOS 3 - TCD Exp | ATEX CONTHOS 3 Exd - TCD Transmitter

Process Thermal Conductivity Gas Analyzer  
Hazardous area models

##### Key Features

- ⇒ Hydrogen analysis in hazardous areas
- ⇒ Binary flammable gases
- ⇒ **Fast response:** T90 ≤ 3 sec
- ⇒ Certified for **Ex Zone 1 and Zone 2**

##### Typical Applications

- ⇒ H<sub>2</sub> & O<sub>2</sub> purity monitoring in water electrolysis
- ⇒ UEL/LEL monitoring and H<sub>2</sub> measurement in turbogenerators
- ⇒ Metallurgical - blast furnace, steel
- ⇒ Heat treatment and hardening processes
- ⇒ Synthesis and reformer gas monitoring



# Process Gas Analysis



## CONTHOS 3 - TCD HT

### High Temperature Thermal Conductivity Gas Analyzer

#### Key Features

- **High-temperature gas paths** and analyzer thermoregulated up to 180°C for handling high-dew-point gases and preventing salification
- **Long-term stable** measurement of H<sub>2</sub> in binary and quasi-binary gas mixtures
- **Fast response:** T90 ≤ 3 sec
- Corrosion-resistant TCD cell (Al<sub>2</sub>O<sub>3</sub>, glass, quartz) suitable aggressive process gases

#### Typical Applications

- Metallurgical atmospheres: nitriding, nitrocarburizing
- Heat treatment and hardening with H<sub>2</sub>, NH<sub>3</sub>, CO<sub>2</sub>
- Chemical processes involving hydrogen and acidic/alkaline components
- Monitoring hydrogen and water-vapor processes with high dew points

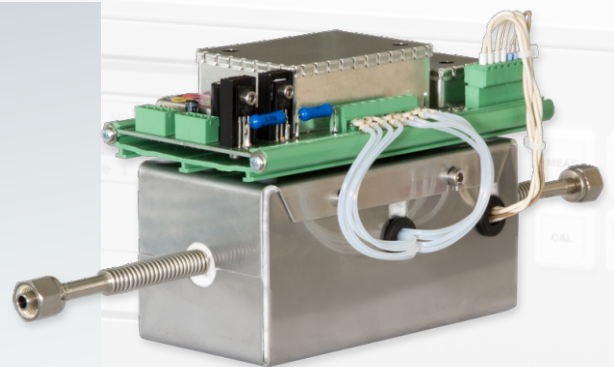
## CONTHOS OEM Thermal Conductivity Detector (TCD)

#### Key Features

- **Fast response:** T90 ≤ 3 sec
- **High range suppression** for low-level detection
- **High corrosion resistance**
- **High-temperature operation** up to 180°C
- **Robust, leak-tight containment**
- Suitable for integration into **Ex d** housings

#### Typical Applications

- H<sub>2</sub> and O<sub>2</sub> purity monitoring in water electrolysis
- Metallurgical and blast-furnace gases
- Steel heat treatment and hardening
- Petrochemical synthesis and reformer gas
- Gas-purity control for PSA, LEL/UEL, and inert-gas systems



# Process Gas Analysis

## CONTHOS 3-PMD

### Paramagnetic Oxygen Gas Analyzer

#### Key Features

- Oxygen specific analysis utilizing paramagnetic sensor
- Magnetomechanical measuring principle (dumbbell principle)
- Temperature controlled for increased stability and performance
- Up to 3 measuring ranges

#### Typical Applications

- Fast response process gas measurement
- Flue gas control
- Inertization plants
- Biogas measurement
- Air separation, gas purity
- Power plants, metallurgical, chemistry, petrochemistry

## pControl 2F

### Backpressure Controller for process gas analysis instrumentation

#### Key Features

- Eliminate pressure errors at the source
- Quick and precise pressure control
- Extremely wide range of gas flow
- Precise measurement at constant pressure instead of insufficient or impossible pressure correction algorithms
- A single pControl-system is suitable for use with multiple gas analyzers

#### Typical Applications

- Sample gas return into process at defined higher pressure
- Defined setpoint pressure to dispose of flammable and toxic sample gases into a flare or scrubber



# Process Water Analysis

## TOC-820

### On-line TOC Analyzer

#### Key Features

- **Optional TNb (Total Bound Nitrogen) measurement** for combined TOC/TNb analysis
- **Continuous, real-time TOC measurement**
- High-throughput, **continuous sample conditioning**
- **Fast response** to TOC load changes
- **High-temperature oxidation** for reliable TOC conversion
- **Exceptionally stable** measurement performance
- **High operational reliability** with intelligent self-monitoring
- Purpose-built for **continuous process applications**

#### Typical Applications

- Pure-water monitoring (boiler feedwater, condensate)
- Process and production water monitoring
- Drinking-water surveillance
- Mixed-drain and surface-water monitoring
- Wastewater influent/effluent control
- Airport de-icing water treatment



## USR-F

### Sample Filter System with Ultrasonic Irradiation

#### Key Features

- **Automatic ultrasonic cleaning** of filter element
- Filter element in cross-flow configuration with pore sizes from 1  $\mu\text{m}$  to 200  $\mu\text{m}$  available
- **High reliability** of the analyzer system
- Minimized filter maintenance

#### Typical Applications

- Long-term stable sample filtration for use with process water analyzers
- Sampling for analyzers such as TOC, conductivity, pH, dissolved  $\text{O}_2$ , turbidity, etc.
- Process water with high corrosion potential and degree of contamination

# Process Water Analysis

## USR-S

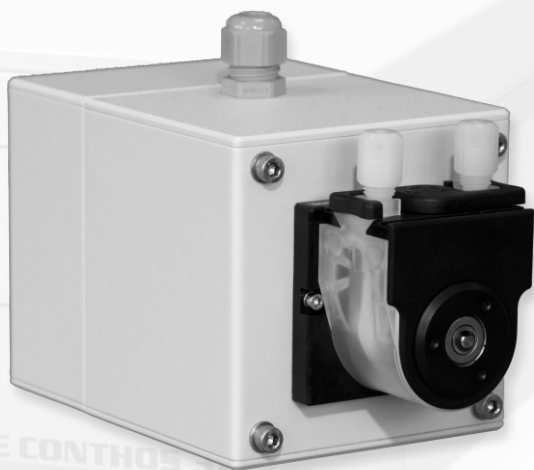
Ultrasound Cleaning System  
for process liquid analytical sensors

### Key Features

- Cross-flow vessel for up to 3 process liquid analytical sensors
- Automatic ultrasonic irradiation of the sensor vessel
- Sensor connections for diverse process liquid sensors
- Corrosion resistant transducer membrane made of Hastelloy®
- Control unit housed in a water-protected, wall-mounted enclosure

### Typical Applications

- Long-term stable sensor cleaning for use with process water analyzers
- Sampling for analyzers such as conductivity, pH, dissolved O<sub>2</sub>, turbidity, etc.
- Process water with high corrosion potential and degree of contamination
- Defined and constant cleaning



## Series 54 Peristaltic Pump

### Key Features

- Microprocessor controlled stepper motor
- User-selectable rotational speeds
- Remote digital control for high degree of flexibility
- Self-priming
- Protective housing
- Quick and easy change of tubing

### Typical Applications

- For process analytical applications
- Sample transport, dilution and metering
- Condensate transport
- Back-flushing of sample lines



**Note:**

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