

# Sensors, Analyzers and Systems for Medical Gas

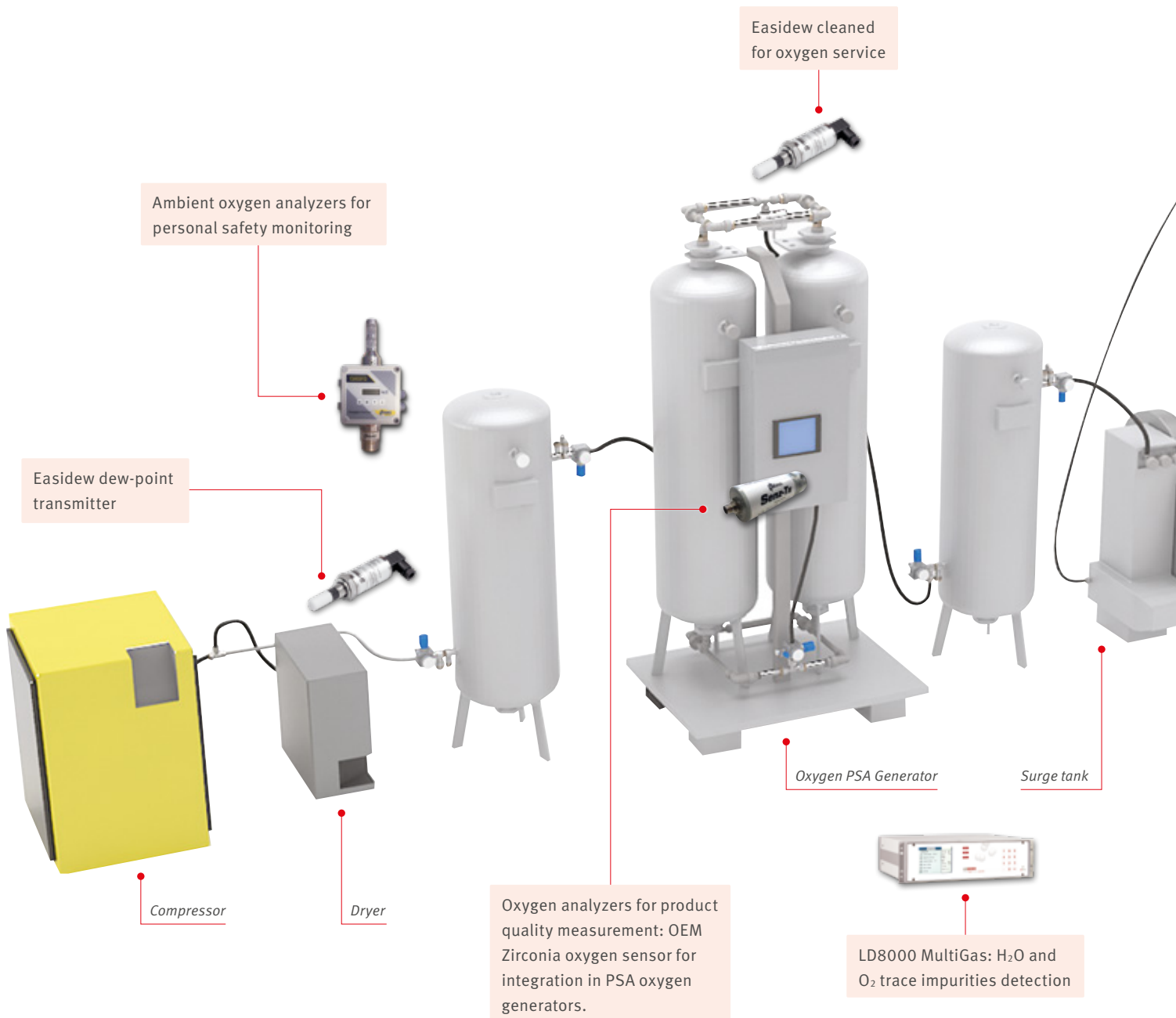
Medical use oxygen & gas monitoring

## Gas Measurement Solutions for Medical Applications

Demand for oxygen generators in medical and industrial markets has grown rapidly due to advances in air separation technology. On-site gas generation offers a cost effective, reliable and safe alternative to traditional nitrogen / oxygen gas supplies, such as cylinder or liquid.

The further development of pressure swing adsorption (PSA) technology has led to a rise in gas generators which are capable of supplying high quality medical-use oxygen at source.

### Schematic diagram for PSA medical-use oxygen generator



Medical gas analyzers – Designed to comply with the requirements of Pharmacopoeia directives for the measurement of oxygen, carbon monoxide and carbon dioxide for medical applications.



Storage tank



Transportable analyzer for the measurement of % oxygen.

### Microx and Microx-OL Oxygen Analyzer

The Microx is a compact and robust oxygen analyser that utilizes zirconia or electro-chemical technology to give a reliable measurement of oxygen concentration.

- OEM solution for integration into PSA and Membrane gas generators
- Measuring ranges from 0 to 96% O<sub>2</sub>
- Flexible panel, wall or din rail configurations
- 4-20 mA and RS232 modbus communication



Output range of 0 to 96% Oxygen

### MoGas Medical Gas Purity Analyzer

The MoGas is a wall mounted medical gas purity analyzer and is designed for use in medical oxygen generation systems for checking the purity of the oxygen produced.

- Validation of medical oxygen generators
- Measures O<sub>2</sub>, CO, CO<sub>2</sub> & H<sub>2</sub>O concentrations
- Monitors up to four parameters simultaneously



Designed to monitor medical oxygen

### SenzTx Oxygen Transmitter

A compact and robust O<sub>2</sub> transmitter that gives reliable measurements of oxygen concentration. Outputs include RS485 and two 4–20 mA

- Solid state zirconia technology, long sensor life and no drift
- Measures oxygen purity up to 96%
- Multiple process connections for easy installation



Output range of 0 to 10 ppm

### Yellow Box Portable Oxygen Analyzer

A transportable oxygen analyzer for spot-checks for high-purity oxygen applications.

- Compact and robust
- Zirconia oxygen sensor for fast response and virtually no drift
- Simple to use



Up to 3 oxygen sensors to cover ppm to 96% O<sub>2</sub>



Flexible panel, wall or din rail configurations

### Microx-OL Oxygen Monitor

The Microx-OL wall mounted instrument designed to measure oxygen concentration in medical gas supplied from an oxygen generator.

- OEM solution for integration into PSA oxygen generators
- Measuring ranges from 0 to 96% O<sub>2</sub>
- 4-20 mA and RS232 modbus communication



Up to 18 months continuous operation

### All-2000 Handheld Oxygen Analyzer

All-2000 series handheld oxygen analyzers provide a very easy way to verify oxygen and other medical gases used in medical or veterinary clinics. These FDA approved inexpensive medical gas analyzers use maintenance-free advanced galvanic oxygen sensors and will operate for up to 32 months.

- Integral or remote sensor options
- 0-100% O<sub>2</sub> range
- Easy to operate

Sensor exchange programme for easy maintenance



### Easidew Dew-Point Transmitter

Simple to install and maintain dew-point transmitter measures dew point and moisture content across a broad moisture range.

- Measurement range from -110 °C to 20 °C dew point 0-3000 ppm<sub>v</sub>
- Wide range of process connections for easy installation
- Cleaned suitable for oxygen service option

Lightweight and easy to use



### MDM300 Portable Dew-Point Hygrometer

Fast response and recovery time allows for a greater number of measurements per day than comparable instruments.

- Wide measurement range from -110 °C to 20 °C dew point
- Repeatedly fast measurements at low pressure from less than 15 minutes for T95 to -60 °C
- Long battery life: up to 48 hours of typical use between charges

Combined trace moisture and oxygen measurements



### LD8000 MultiGas Analyzer

For combined measurements of trace oxygen and moisture in a single compact rack mount enclosure. Features high-purity sample flow controllers and a 5.6" touch screen display.

- Choice of zirconia and electrochemical oxygen sensors
- Choice of ceramic metal oxide and quartz crystal moisture sensors

Excellent stability and accuracy under stringent applications



### Medical Oxygen Sensors

PST offer a range of sensors using various sensor technologies complying to the IEC60601-1 standard for the essential performance of :

- Optical
- Zirconia
- Electrochemical

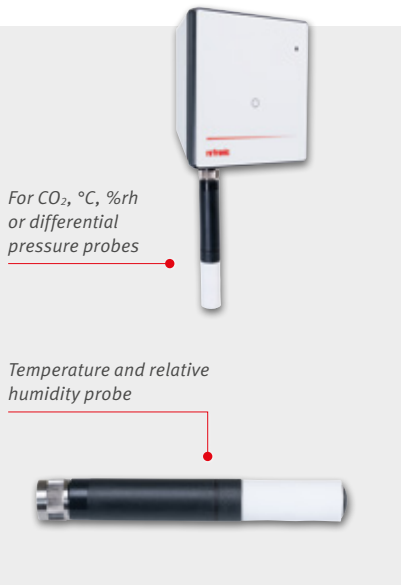
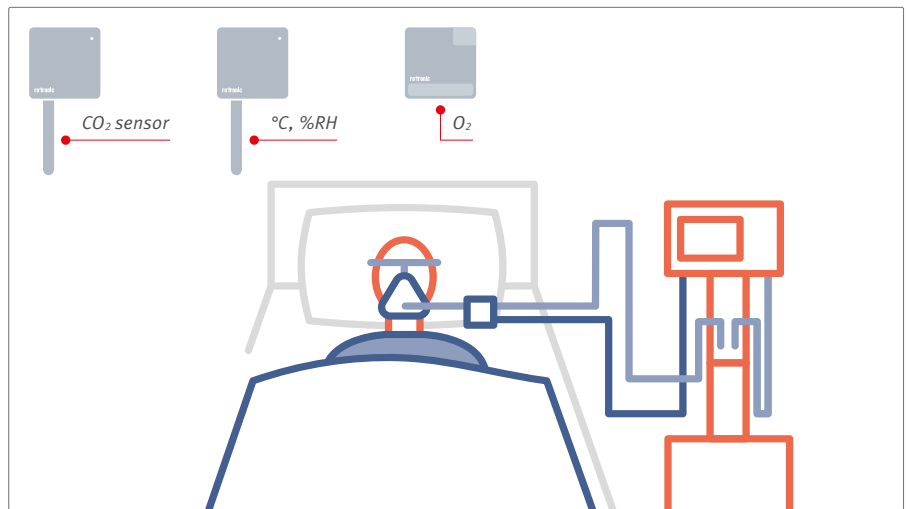
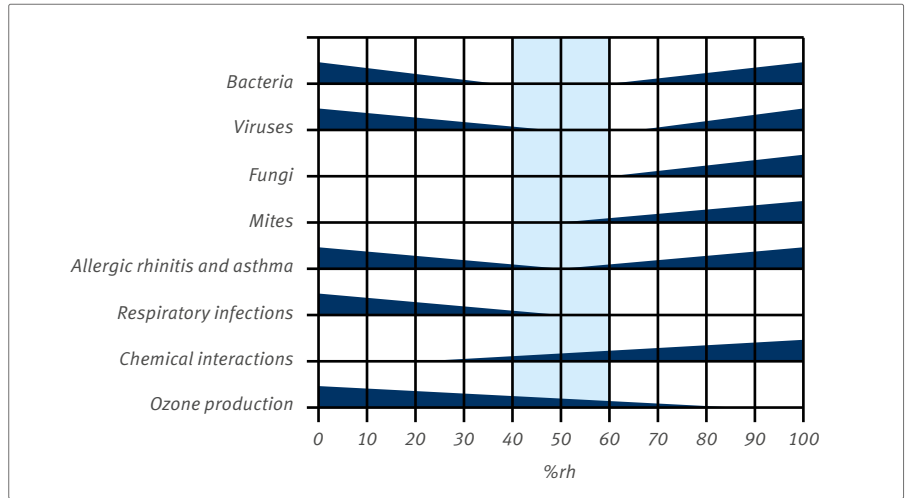
## Safety, Comfort & Regulations

Environmental control and monitoring is crucial within hospitals. In the wards, where the oxygen is used, monitoring of the gas is required for safety purposes. For infection control, comfort and cost saving purposes, the monitoring of the CO<sub>2</sub>, temperature and relative humidity levels throughout the hospital is beneficial. The effect of relative humidity on biological and chemical factors is graphically summarized within the Sterling chart opposite.

Here is an overview of some of the various regulatory levels for temperature and relative humidity within recommended by international standards:

	Temperature (°C/F)	Relative humidity (%)
DIN1946-4 [5]	16-26 / 61-79	30-60
ASHRAE 170 [9]	20-24 / 68-75	30-60

- **DIN 1946-4:** Ventilation and air conditioning - Part 4: Ventilation in buildings and rooms of health care
- **ASHRAE 170-2017:** Ventilation of Health Care Facilities
- **ASHRAE:** HVAC Design Manual for Hospitals and Clinics
- **ASHRAE:** Advanced Energy Design Guide for Large Hospitals
- **ASHRAE:** Advanced Energy Design Guide for Small Hospitals and Healthcare Facilities



### RMS-LOG-L/868/915 Data logger

The data logger is the flexible component between the probe and the database in the Rotronic Monitoring System.

- Stores 44,000 pairs of measured values
- Fail-safe, thanks to internal battery
- 3 years battery lifetime
- LAN Interface

### RMS-HCD-S Humidity and temperature probe

The RMS-HCD-S digital probe is characterized by its high performance.

- Measures relative humidity and temperature, calculates the dew point
- With new HYGROMER® HT-1 sensor
- Outstanding accuracy and repeatability
- Accuracy ±0.8 %RH
- Excellent long-term stability <1 %RH / year

## Process Sensing Technologies

Process Sensing Technologies (PST) provides an unmatched suite of instruments, analyzers and sensors for precision measurements and monitoring in highly demanding end markets. These range from pharmaceutical/ life sciences, speciality gases, semiconductors, O&G, petrochemicals and power to gas detection, food and beverage and building automation.

*Using our products, customers save millions of dollars each year through increased energy efficiency in their processes and reduced process disruptions.*

The quality of food, medicines, semi-conductors and thousands of manufactured goods depends on reliable measurements of critical parameters such as humidity, oxygen, CO, N<sub>2</sub>, H<sub>2</sub>, hydrocarbons, pressure or CO<sub>2</sub> during production, storage and transport. Our products directly improve the profitability of our customers and help them to stay compliant with stringent industry regulations. We own and manufacture the sensing technologies used in the majority of our products. This allows us to remain in a strong leadership position and pass on the benefits of our innovation to our customers.

### PST Leading Brands

- **Analytical Industries** – Electrochemical oxygen sensors and gas-analysis
- **Dynamant** – Infrared gas sensors
- **LDetek** – Ultra low range online analyser
- **Michell Instruments** – Moisture and oxygen sensing and instrumentation
- **Ntron** – Oxygen sensors and analysers
- **Rotronic** – Humidity and temperature instruments, monitoring systems
- **SST Sensing** – Oxygen sensors and liquid level switches

### Group Facts

- ((first bullet variable to fit the application described on the document))
- 22 Service and sales subsidiaries
- 8 global engineering and manufacturing locations
- 100+ authorized distributors
- 14 proprietary technologies



Humidity



Temperature



Dew Point



Water Activity



Differential Pressure



Oxygen



CO<sub>2</sub>



Impurities



Flammable Gases



Level

#### North America

Thetford Mines, QC, Canada  
Hamilton, ON, Canada  
Hauppauge, NY, USA  
Pomona, CA, USA

#### Asia

Tokyo, Japan  
Osaka, Japan  
Beijing, China  
Shanghai, China  
Singapore

#### EMEA

Coatbridge, Scotland, UK  
Mansfield, UK  
Ely, UK  
Crawley, UK  
Navan, Ireland  
Oosterhout, Netherlands  
Frankfurt, Germany  
Ettlingen, Germany  
Lyon, France  
Zürich, Switzerland  
Milan, Italy  
Dubai, UAE

#### South America

Rio de Janeiro, Brazil

Global direct sales and service support