SIL2 Rated

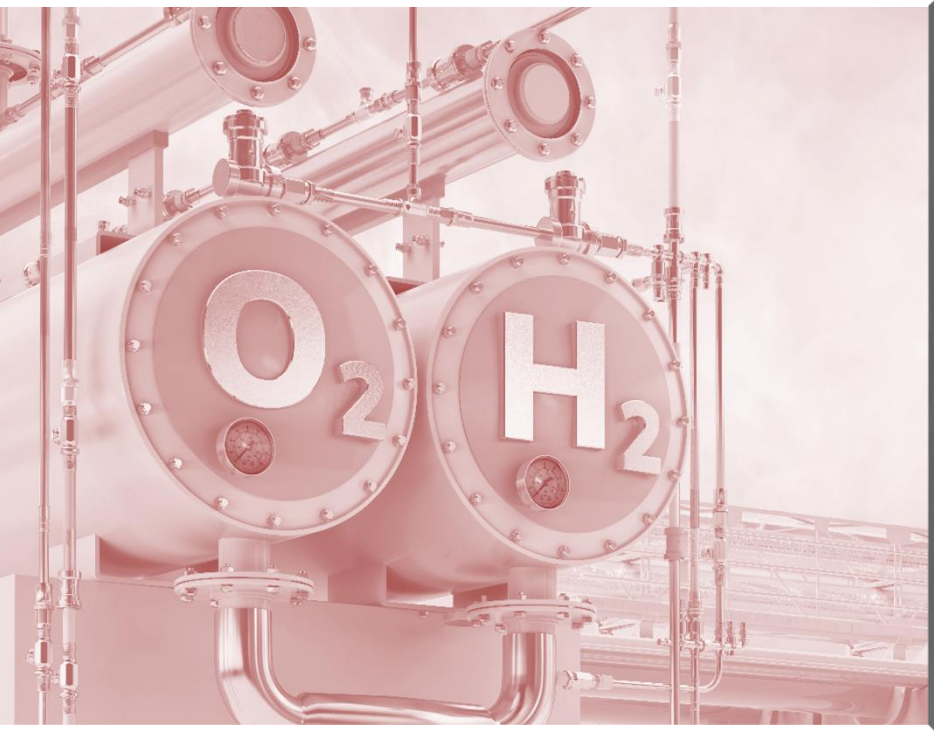
MECHATEST
VYDRAULICS GROUP

OXYGEN MEASUREMENT

Safety for Electrolyser

Mechatest designed a pre-engineered SIL-2 rated analyzer solution for oxygen in hydrogen measurement suitable for water electrolysis process. Electrolysis is the process of using electricity to split water into hydrogen and oxygen. This reaction takes place in a unit called an electrolyser. Due to safety reasons, after splitting the streams of hydrogen and oxygen must be measured for purity and on safety explosion limits. The mixture of oxygen in the hydrogen stream can cause a dangerous situation, and vice versa.

GREEN HYDROGEN SHALL MAKE AN IMPORTANT CONTRIBUTION TO THE ENERGY TRANSITION AND CO_2 REDUCTION



OXYGEN ELECTROLYSER MEASUREMENT

Green hydrogen, also known as 'renewable Hydrogen', is Hydrogen that is produced with sustainable energy resources. Electrolysis is the process of using green electricity to split water (H_2O) into Hydrogen (H_2) and Oxygen (O_2).

The output after the electrolyser splitting method (Polymer Electrolyte Membrane (PEM), Alkaline or Solid Oxide) is pure Hydrogen and Oxygen as a gas composition but saturated with water vapor.

Measuring a reliable Oxygen concentration in a wet gas can be complex because laboratory analysis and most analyzer sensors are not suitable to measure in wet gases. To get around this problem Mechatest developed a sample conditioning system with a custom designed probe. This works together with a hydrophobic filter to block liquids and prevent the analyzer from free water droplets. The free water is returned to process through the probe automatically. Maintenance will be rare, but the system can be blocked from the process when needed or for calibration purposes.

- Pre-engineered complete solution (sample conditioning & analyzer)
- Explosion proof, Sil-2 rated
- Fast response and High accuracy
- Low drift
- Minimal and easy maintenance
- Optimized safety for electrolyser, operator, and environment

More product details ›

RELIABLE SENSOR TECHNOLOGY

Oxygen is a paramagnetic gas, which means that it is attracted by a magnetic field. Thermo-paramagnetic sensor technology is one of the best for Oxygen measurements, it combines the paramagnetic and thermal conductivity technologies to accurately measure oxygen. The new sensor has no internal moving parts, is insensitive to mechanical shocks and will operate efficiently under a wide range of environmental conditions. It is suitable for installation where vibration or movement could pose a problem for other sensor types. This Oxygen analyzer measure linear and stable specific in a Hydrogen background gas application. The analyzer displays confidence-inspiring stability of measurement, this is particularly important in safety applications such as Oxygen in Hydrogen measurements at electrolysis.

O2 Analyser	Specifications
Measuring range	: 0-5 % O2 in H2 Available ranges from 0-0.5% to 0-100%
Response time	: ± 15 sec. T90 (from take-off to analysis)
Accuracy	: Better than ± 1 % of full scale
Repeatability	: ± 0,2 % of range or 0,02 % O2
Linearity	: ± 0,5 % of range or 0,05 % O2
Stabilization time	: 5 minutes (start/warm up 25 minutes)
Stability	: ± 0,5 % of range per month
Sample flow rate	: ± 300 ml/min
Outputs	: 2x 4-20 mA, Modbus RTU over RS485
Alarms	: 2 off single pole relays
Display	: Backlit LCD Touch Screen, Touch-screen display allows calibration or adjustment
Temp. Rating	: Process from +5 °C to +45 °C Ambient from +5 °C to +60 °C

Mechatest is an independent organization that focuses on analyzer solutions to support the decarbonization of the economy. We offer a range of analyzers for measurement of binary gas mixes such as Hydrogen in Oxygen, H2 purity or Carbon Dioxide in Methane (Biomethane) applications, sampling and analyzing solutions that can improve the safety and efficiency.

MECHATEST SAMPLING SOLUTIONS

Mechatest (statutory name: Doedijns BV) is a certified industrial sampling systems division with 30 years of experience in design and manufacturing of sampling and analyzer systems for gas and liquid applications. Mechatest became part of the Vydraulics Group, is merged into Doedijns B.V. and relocated in Doedijns' premises in Zoetermeer.

Sampling group contact details:
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www.mechatest.com

Pressure Rating
Design pressure max. 55 bar(g)

Wetted Parts
Standard SS316, Viton
(borosilicate glass, platinum)

Hazardous Area Rating
ATEX, II 2GD Ex d IIB +H2 T6 Gb
IECEx, TC TR Ex & cCSAus rated
IEC61508 - SIL2

Power Supply
24 Vdc, 1,5 A max.

Connections
Bulkhead fitting 1/4" or 6 mm OD
Flange connection on request

Dimensions (HxWxD)
600 x 400 x 250 mm (cabinet model)
550 x 400 x 180 mm (plate model)

Weight
Approx. 50 kg (cabinet model)
Approx. 40 kg (plate model)

HS-Code
90....

WE LIKE TO HELP TO ACCELERATE THE DEVELOPMENT OF HYDROGEN SOLUTIONS AS PART OF A CLIMATE-NEUTRAL ECONOMY

MANUAL SAMPLERS HYDROGEN GAS - HYDROGEN ANALYSER SYSTEMS - AUTOMATIC SAMPLING SYSTEMS