

**Hydrogen
Solutions Guide
of the
Electro-digital industry**



GIMELEC

**Instrumentation solutions
and
Companies directory**



About the GIMELEC Hydrogen Commission

GIMELEC Hydrogen Commission brings together more than 50 manufacturers and solution providers active across the entire hydrogen value chain, from production to transport, storage and use (industry, mobility, H₂-to-Power, etc.). Their solutions allow project developers to optimize the operation, safety, costs and environmental footprint of hydrogen installations.

<https://gimelec.fr/hydrogene>



About this guide

This publication is intended for project developers and integrators. It has been redacted by GIMELEC. [The first part](#), edited as part of its partnership with France Hydrogène is a "white paper" identifying the challenges and constraints for each link in the hydrogen value chain; **the second part presents the solutions** to meet them and is a directory of GIMELEC companies.

GIMELEC companies offer solutions for electrolyser power supply, automation and instrumentation. [This part of the guide is dedicated to instrumentation.](#) Find the two other sections at the following [link](#).



About GIMELEC

GIMELEC brings together companies from the French electronics and digital sector. Our 210 members design, manufacture and deploy electrification, automation and digitalisation solutions for industry, buildings, mobility, energy and digital infrastructures.

<https://gimelec.fr>

GIMELEC Hydrogen Guide reading grid



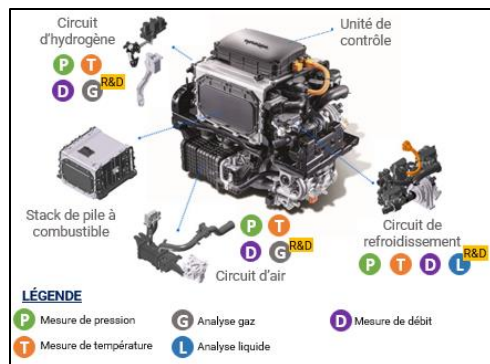
A 3-part publication to meet the challenges of hydrogen instrumentation:

White paper



White Paper: What are the instrumentation challenges in the hydrogen value chain?

Objective: To present the main links in the hydrogen chain and identify the instrumentation challenges for each of them.



GIMELEC directory (this document)



PART 1 (p. 4-24) : what equipment is needed to meet these challenges?

Objective: To provide an overview of the range of solutions offered by GIMELEC companies, classified by equipment family.



PARTIE 2 (p. 25-40) : which companies are behind this equipment?

Objective: To provide an overview of each company's portfolio of solutions and expertise.



PART 1

INSTRUMENTATION SOLUTIONS FOR THE HYDROGEN SECTOR



GIMELEC

Pictograms in this catalogue - legend



6 product families

	Pressure measurement	P
	Temperature measurement	T
	Flow measurement	D
	Liquid analysis	L
	Gas analysis	G
	Level measurement	N

8 use cases

	ELECTROLYSIS		DISTRIBUTION STATION
	THERMOLYSIS		INDUSTRIES
	TRANSPORT BY TRUCK		On-board FUEL CELL
	TRANSPORT BY PIPELINE		Stationnary FUEL CELL

Other pictograms

	AtEx		SIL
	IECEx		SIL 2
	Made In France		Bluetooth

GIMELEC members and their instrumentation solutions



 **Pressure measurement**



 Endress+Hauser

 Fuji Electric
 








PAGES 7-10

 **Temp. measurement**



 Endress+Hauser

 Fuji Electric
 








PAGES 11-13

 **Flow measurement**



 Endress+Hauser

 Fuji Electric
 






PAGES 14-16

Liquid analysis 


 Endress+Hauser
 




PAGES 17-18

Gas analysis 





 Endress+Hauser
 
 Fuji Electric




PAGES 19-20

Level measurement 



 Endress+Hauser

 Fuji Electric
 





PAGES 22-24



- **P-100**
 - Measure: Absolute/Relative
 - Range: up to 100 bar
 - Media : liquid and gas
- **P-300**
 - Measure: Relative/ Differential
 - Range: up to 1380 bar
 - Media : liquid and gas
- **2600T**
 - Measure: Absolute/ Relative/Differential/Multivariable for DP flow
 - Range: up to 600 bar
 - Media : liquid and gas
 - H-Shield nanostructured coating for hydrogen applications
 - Multi-sensor DP on the 2600T series
 - New Digital Advanced Diagnostic function on P-100 and P-300 models
 - All-Welded separator range available for transmitters



- **Pressure measurement**
 - up to 20,000 psi (1,379 bar)
- **Differential pressure measurement**
 - up to 15,000 psi (1034 bar) static pressure

Examples of available options :

- Indicator
- Integrated manifold
- SIL2 Certification
- ATEX explosion-proof approval
- Gold-plated stainless steel diaphragm (high-pressure H2 applications)
- Autoclave connection type F-250-C (high-pressure H2 applications)
- ...



Endress + Hauser
People for Process Automation



- **Cerabar PMP21**
 - Parameter : Absolute/Gauge (compact)
 - Range : up to 1000 Bar
 - Membrane : 316L & gold coated
- **CerabarPMP51B/PMC51B/PMP71B**
 - Parameter : Absolute/Gauge (with display)
 - Range : 0-700 Bar
 - Membrane : 316L & gold & ceramic coated
- **Deltabar PMD55B / PMD75B**
 - Parameter : Differential pressure
 - Ranges : up to 40 Bar
 - Membrane : 316L & alloy & gold coated
- **Heartbeat Technology**
 - On-board control of sensor operation
 - Random failure detection with probability > 95%.



- **Differential pressure transmitter FCX FKC**
 - Measurement : Differential pressure (with display)
 - Ranges : 0-1 mbar/0-20 bar SIL2 SIL3
 - Fluids : H₂, O₂, N₂, CO, CO₂, N₂, NH₃, CH₄, water, brine, air
- **Gauge high pressure transmitter FCX FKR**
 - Measurement : Gauge pressure (with display)
 - Ranges : 0-700 bar/0-1500 bar SIL2 SIL3
 - Fluids : H₂, O₂, N₂, CO, CO₂, N₂, NH₃, CH₄, water, brine, air
- **Gauge pressure transmitter FCX FKP/FKH**
 - Measurement : Absolute/ gauge pressure (with display)
 - Ranges : 0-130 mbar/0-100 bar SIL2 SIL3
 - Fluids : H₂, O₂, N₂, CO, CO₂, N₂, NH₃, CH₄, water, brine, air
- **Hydro Seal design**
Excellent protection against hydrogen permeation
- **4D™ Gyration**
High accuracy and repeatable measurements



- **Pressure transmitter GR/GA series**
 - Measurement : Relative and Absolute
 - Ranges : -1 to 600 bar
- **Stainless steel pressure switch FX series**
 - Measurement : Relative/Differential/Absolute
 - Ranges : -1 to 1000 bar Relative / 0 to 100 bar
 - Differential
- **Industrial pressure gauge M5000 series**
 - Measurement : Relative pressure
 - Ranges : -1 to 1600 bar
- **Options for all hydrogen processes :**
 - Customized connections: 9/16" UNF, JIC, ..
 - Resistance to - 40°C
 - Degreasing of wetted parts
 - Helium test
 - Accessories: diaphragm seals/valves



- **MIDAS H20 HP**
 - Measurement : Relative
 - Ranges : 0 up to + 1000 bar
 - Membrane : 316L
- **SIRAS P21 AR**
 - Measurement : Absolute/Relative (with display)
 - Ranges : 0-100 bar
 - Membrane : 316L
- **SIRAS P21**
 - Measurement : Differential (with display)
 - Ranges : -1-100 bars
 - Membrane : 316L





Schneider
Electric



Série 05S / 10S / 50S

- Type : absolute/gauge/differential
- Ranges : from 1,2 mbar to 689 bars
- SIL2 certified by TÜV as standard
- Gold plated membrane for H2 service (option)



Value Performance 05S

- Accuracy : 0,075% of span

Advanced Performance 10S

- Patented Foxcal technology
- Accuracy : 0,05% of reading

Premium performance 50S

- Patented Foxcal technology
- Accuracy : 0,025% of reading

Foxcal patented technology

- 11 integrated calibration curves
- Accuracy in % of reading (not in % of span)
- Reduces inventory up to 2/3



SIEMENS



SITRANS P320/420

SITRANS P220 H2 "Ready"

are compact single-range transmitters for measuring absolute and gauge pressure, ceramic diaphragm sensor.

The determined pressure is optionally converted into a 4-20 mA or 0-10 V signal.

- Range : 2,5 bar to 1050 bar gauge
- Long-term stability : $\leq 0,25\%$ / 12 months



SITRANS P320/420 H2 "Ready"

are compact single-range transmitters for measuring, differential, absolute and gauge pressure, gold diaphragm sensor.

- Smart communication HART 7
- Commissioning by 3 buttons in local
- Range : 1 mbar to 700 bar gauge
- Long-term stability : $\leq 0,04\%$ / 5 years
- SIL2/3 Developed according to IEC 61508



VEGA



• VEGABAR 28/38/29/39

- Measurement : Relative/Absolute (Compacts)
- Ranges : 100 mbar à 1000 bar
- 4...20 mA analogue & NPN/PNP thresholds
- 360° LED indication of switching status

• VEGABAR 81/82/83

- Measurement : Relative/Absolute (Industrials)
- Ranges : 25 mbar à 1000 bar
- Analogue 4...20 mA/HART or digital fieldbus
- High-pressure autoclave connections available

• VEGADIF 85

- Differential pressure sensors
- Ranges : 10 mbar à 40 bar
- Static pressure up to 400 bar



• Other features :

- Ceramic or metallic (Elgiloy®) dry cell as an alternative to gold plated membrane
- Wireless sensor configuration & diagnostics via Bluetooth
- SIL 2/3 as per IEC 61508



- **Pressure transmitter IS-3**

- Measurement : Absolute/Relative
- Range : up to 1.000 bar
- Media : H₂, N₂, water



- **Process transmitter CPT-20**

- Measurement : Absolute/Relative
- Range : up to 100 bar
- Media : H₂, N₂, O₂, water



- **Process Stainless steel pressure gauge 233.30**

- Measurement : Relative
- Range : up to 1.600 bar
- Media : H₂, N₂, O₂, water



- Unit calibration of 100% of instruments in production
- Diaphragm Monitoring System for diaphragm seal assemblies (option)
- Diaphragm seals with stainless steel diaphragms coated with gold (option for H₂ apps)



• **TSP341-N NINVA Non-invasive clamp on**

- Measure: 2x Pt100
- Range: -100°C up to 550°C
- Protection class : IP66 / IP67



• **TSP100**

- Measure: Pt100 / RTD / TC
- Range: -200°C up to 600°C / up to 300bar
- Protection class : IP66



• **TSP300**

- Measure: Pt100 / RTD / TC
- Range: -200°C up to 600°C / up to 300bar
- Protection class : IP66/IP67



• **NINVA**

- Safest non-invasive temperature measurement

• **Harsh environments**

- Transmitter for -50°C
- High vibration resistance
- Fast response variants

• **Communication protocols**

- HART, Profibus PA, Foundation Fieldbus, WirelessHART



• **Traditional solution including transmitter, Pt100 sensor and well**

- Online help tool for calculating well stress (complies with ASME PTC 19.3 TW)

• **Innovative solution: X-Well technology (no need to insert a well in the pipe)**

- Simplified installation and reduced number of potential leak points

• **Exemples of available options :**

- Advanced diagnostics (redundancy, probe drift monitoring, etc.)
- LDC indicator
- SIL2 Certification
- ATEX explosion-proof approval
- ...



Endress+Hauser



• **iTherm Moduline TM111/TM131**

- Insertion temperature sensor
- Pt100 or Thermocouple
- Ranges : -270°C to 1800°C / up to 100bar
- Protection degree : IP68



• **TST310 / TST602**

- Contact probe - non-intrusive
- Sensor Pt100
- Ranges : -50°C to 400°C



Our innovations for greater safety

iTherm StrongSens

- Vibration resistance up to 60g

iTherm QuickSens

- Fast response time of 1.5s

Dual Seal

- Process safety containment with corrosion detection and immersion leakage.

iTherm QuickNeck

- Bayonet system for quick tool-free disassembly for calibration



• Temperature sensor

- Measurement : PT100 & Thermocouple
- Range : -270°C to 600°C / until 1200 bar
- Index of protection : IP68

• Field mounted HART temperature transmitter

- Measurement : For Pt100 & Thermocouple
- Index of protection : IP67

• High pressure resistance

Excellent resistance to high pressures and temperatures



• Temperature sensors S series

- Measurement : PT100, PT1000, NI100, NI1000 or thermocouple
- Ranges : - 200 to +1200°C



• Stainless steel temperature switches FX Series

- Measurement: Remote probe/direct connection
- Ranges : - 90 to +380°C



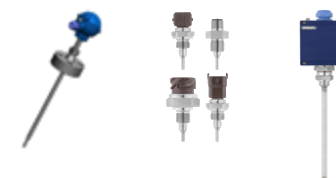
• Temperature gauges T7000 Series

- Measurement : Bimetal element
- Ranges : -70 à +500°C



• Options for all hydrogen processes

- Thermowells mechanically welded or barstock drilled
- NACE compliance
- 3.1 material certificates
- Stress calculation



• Probe FT903520

- Measurement : Probe Pt100
- Ranges : -270°C up to 600°C / up to 105 bar
- IP: up to IP69



• Probe VIBROtemp

- Measurement : Probe pt100/pt500/pt1000
- Ranges : - 50°C up to 270°C
- IP: up to IP69



• Thermostat AMTXs-Ex

- Measurement : Direct Probe
- Ranges : - 50°C up to 500°C
- IP: up to IP6X



• RTD temperature probe 903520 with range up to -270°C and offering the approvals bellow:



Schneider
Electric



PRMTA

- Temperature assemblies with or without thermowell
- Ranges : Pt100, -200 to 650°C
Thermocouple -200 to 1260°C depending on type
- MWP of thermowell tested 1,5 time the design pressure
- Material certificate for traceability purposes.

RTT80

- Temperature transmitter
- Single or double input
- SIL2/3 certification by TÜV (option)

RTT15S

- Temperature transmitter
- Single or double input
- SIL2 certification by TÜV (option)
- Local interface with buttons

Dual compartment
Corrosion detection
SIL2 Certification

SIEMENS



SITRANS TS500

SITRANS TS300



SITRANS TS300 H2 "Ready"

Clamp-on technology : advantage particularly with small pipe diameters: no welding and welding validation, no disruption to the process, pigability maintained, easy disassembly for recalibration, with a measurement accuracy that is comparable to that of the built-in sensors.

- Diameters : DN4 to DN300
- Accuracy : According to CEI 60751, class A
- Temperature range : -30...+300 °C

SITRANS TS500 H2 "Ready"

- With optional local indicator and operation
- Exchangeable during operation
- SITRANS TS thermowell : a comprehensive portfolio of thermowells
- Temperature range : -196...+1500 °C

WIKAI



• RTD TR10-B

- Range : -258 ... +600 °C
- Special feature : for liquid hydrogen
- Output signal : resistance thermometer



• Temperature transmitter T38

- Sensor : universal, 1 or 2 sensors
- Special feature : SIL
- Output signal : 4...20 mA, HART



• Thermocouple TC90

- Range : -40 ... +1.200 °C
- Special feature : applications in high pressure
- Output signal : thermocouple



• Scrutonwell thermowells

- Damping of vibrations and better resistance to bending

• T38 with True Drift Detection

- Sensor drift detection



- **CoriolisMaster FCB400 / FCD400**

- Measure : Coriolis
- Range : 0-860.000kg/h / -50 à 205°C
- Media : liquid and gas



- **SwirlMaster FSS400**

- Measure : Swirl (unique from ABB)
- Range : 0-2.500.000 l/h / -55 à 280°C
- Media : liquid and gas



- **SensyMaster FMT400**

- Measure : Thermal
- Range : 0-3.200.000 kg/h / -40 à 300°C
- Media : liquid and gas



- **More flow measurement technology**

- Other solutions are available, such as electromagnetic flow measurement for water, or vortex flow measurement for liquids and gases.

- **ABB Ability Verification**

- In-situ flowmeter check

- **ABB Flow computers**

- Calculation and integration of impurity profile



- **MICRO MOTION Elite / F-Series / HPC**

- Measurement : Coriolis
- Ranges : 0-3.266t/h / -254 à 523°C
- Fluids : liquid, gas

✓ H2: HPC (Dispensers) - CMF (LH2)

- **Rosemount 8700M / 8750W**

- Measurement : Electromagnetic
- Fluids : liquid

- **Rosemount 8600/8800**

- Measurement : Vortex
- Fluids : liquid, gas, steam

- **Differential Pressure Flowmeter**

- Mass flow calculation from differential pressure, pressure and temperature measurements.
- Primary element selection based on pipe diameter, acceptable permanent pressure drop, installation requirements,
- Fluids : liquid, gas, steam

✓ H2: production



Endress+Hauser
People for Process Automation



- **Promass F300 / A300 / Q300**

- Parameter : Coriolis
- DN1 to 250
- Fluids : liquid, gas

- **Prowirl D200 / F 200**

- Parameter : Vortex
- DN15 to 300
- Fluids : liquid, gas, steam

- **Promag W10 / W400**

- Parameter : Electromagnétique
- DN15 to 2400
- Fluids : conductive liquid (>5μS)

- **Deltabar PMD75B+depressant organ**

- Differential pressure flow measurement
- DN10 to 10000
- Fluids : liquid, gas, steam

- **Heartbeat Technology**

On-board for checking sensor operation without disassembly



• Flowmeter FSJ

- Measurement : Ultrasonic Clamp-on
- Range : 0-50 m/s / 120 to 180°C
- Fluids : steam



• Flowmeter Time Delta-C FSV

- Measurement : Ultrasonic Clamp-on
- Range : 0-32 m/s / -40 to +200°C
- Fluids : liquid, steam, brine



• Flowmeter V-Cone

- Measurement : Differential pressure flow element
- Fluids : liquid, steam and gas



• Ultrasonic Clamp-on technology

Installation without cutting the pipe



• FlowTRANS US W02

- Measurement : Ultrasons
- Ranges : 0 à 520l/min/ -40 à +125°C
- Fluids : liquids



• IO-Link Communication



• Bluetooth Interface



CFS600A

- Coriolis Mass flowmeter
- Ranges : 600 kg/h to 550 T/h
- Liquids and gas

84C

- Vortex flowmeter
- Sizes : DN15 to DN300
- Gas, steam and liquids

9500A & IMT30A

- Magnetic flowmeter
- Ranges : 5 l/h to 250 m3/h
- Fluids : water, conductive liquids

Coriolis flow meter Advanced functions :

- Entrained gas capability for liquid
- Custody transfer version
- Embedded Diagnostics to check the health of the meter



Flow measurement

SICK

Sensor Intelligence.



• FLOWIC600

- Ultrasonic
- Range : 85 – 65 000 m³/h
- Fluid: gas – 100 %H₂



• FLOWIC500/550

- Ultrasonic / Fiscal accuracy
- Range : 2,5 – 1 600 m³/h
- Fluid : gas
- Enriched NG up to 30% H₂
- Gas Quality Indicator : gas purity indication



• FLOWIC600XT

- Ultrasonic / Fiscal accuracy
- Range : 5 – 100 000 m³/h
- Fluid : gas
- Enriched NG up to 30% H₂
- Gas Quality Indicator : gas purity indication



SIEMENS



SITRANS Vortex FX

- Easy-to-use vortex solution for volume and mass flow of steam, gas and liquids
- Totally integrated with PCS7 DCS

SITRANS Coriolis FC

The new SITRANS FC extensive portfolio of Coriolis meters provide high performance multi-parameter measurements for all fluids and all industry sectors.

- Diameters : DN1 to DN200
- Maximum pressure : 700 bar

SITRANS Primary elements FP

With the SITRANS FP product line Siemens offers a complete solution for differential pressure flow measurements.

- Temperature range : -200...+450 °C
- Accuracy: ≤ 1%

SITRANS Ultrasonic FS

SITRANS FS clamp-on ultrasonic flowmeters have best-in-class performance: market-leading accuracy, noise immunity and reliability.

- Accuracy: ≤ 0,3%
- Diameters: 12,7mm to 10m (0.5" to 394")

WIKAL



• Electromagnetic flowmeter FLC-2200EL

- Media : conductive liquids (e.g. fresh water, ...)
- Measurement principle : Electromagnetic



• HHR FlowPak® flow meter FLC-HHR-FP/PP

- Media : liquids and gases
- Measurement principle : differential pressure
- Special feature : No need for straight upstream and downstream pipes, high accuracy, low permanent pressure losses



• Orifice plate FCO-OP & fittings

- Media : liquids, gases and steam
- Measurement principle : differential pressure
- Special feature : integrated solutions, versatility





- **400 / 400 P**
 - Measurement : Conductivity
 - Fluid : Liquid



- **3900 Series**
 - Measurement : Ph/ORP
 - Fluid : Liquid



Endress+Hauser



- **CLS16E & transmitter Liquiline CM442**
 - Parameter : Conductivity
 - Range : 0,04 $\mu\text{S}/\text{cm}$ to 500 mS/cm
 - Fluids : water, potash



- **Memosens technology**
 - Data storage in the sensor, digital transmission and contactless metal technology
- **Transmitter CM44x**
 - Allows connection of up to 8 sensors*
- **Heartbeat Technology**

On-board for checking sensor operation without disassembly



- **Measuring transducer digiLine Ci/Cr**
 - Measurement : Conductivity
 - Ranges : 0 $\mu\text{S}/\text{cm}$ up to 2000 mS/cm
 - Fluids : water



- **JUMO Digiline:**
 - Intelligent, connectable, fieldbus connection system for digital sensors in liquid analysis

METTLER TOLEDO



- **Unicond with M300water transmitter**

- Measurement: Conductivity / Resistivity
- Ranges: 1 $\mu\text{S}/\text{cm}$ to 1000 mS/cm
- Fluids: water, potash



- **4000TOCe with M300water transmitter**

- Measurement: TOC
- Ranges: 0,05 to 1000 ppb
- Fluids: water



- **2300Na Analyzer**

- Measurement: sodium
- Ranges: 0,05 to 100 000 ppb
- Fluids: water



Schneider
Electric



pH measurement loop

- Robust electrode with PEEK reinforced body
- Standard or digital version
- Enhanced immunity of the reference against pollution

Conductivity measurement

- Ranges : 0-200 $\mu\text{S}/\text{cm}$, 0-20 mS/cm
- Maximum temperature : 175°C, 17 Bar
- ATEX certified

876 transmitter

- 2 wires system
- ATEX certified
- 4-20 mA output with HART protocol

Advanced Functions :

- pH digital sensor with double junction and Nafion membrane to avoid pollution of the reference
- Rugged conductivity sensor, 175°C, 17 Bar



- **AO 2000/ EL 3000 series**
- Continuous Gas Analyzers
- Up to 6 components per analyzer
- Components measured : H₂, CO₂, NH₃, CH₄...
- Calibration cells to calibrate without test gas bottles



- **PGC 1000 /PGC 5000**
- Process Gas Chromatographs
- Measurement of H₂ in Natural Gas
- H₂ purity



OA-ICOS (Off Axis Integrated Cavity Output Spectroscopy)

- Trace measurement
- Natural gas leak detection
- Impurities in H₂



- **ProCeas H2 PURITY**
 - Measurement : impurities in H₂, ISO 14687 NH₃, HCHO, HCOOH, H₂S, COS, CO, CH₄, etc.
 - Ranges : low concentrations (ppb / ppm)
 - Fluids : Hydrogen
- **ProCeas H2**
 - Measurement : H₂, & isotopes ortho / para
 - Ranges : 10-20.000 ppm or 0,05-100%
 - Fluids : H₂, mix with natural gas, Air, O₂
- **LASERCEM**
 - Measurement : emissions: H₂, NO_x, CO, HF...
 - Ranges : ppm et %
 - Fluids : emissions FC or industrial stacks
- **TECHNOLOGY OFCEAS (patented)**
 - IR laser spectroscopy, low concentrations multi-gas measurement (ppb/ppm/%)
 - Direct measurement of hydrogen (ppm/%)
 - Measurement of H₂ isotopes: ortho / para
 - Measurement of dry and wet gases (hot/wet)



- **X-Stream**
 - Measurement : H₂/ O₂ / H₂O
 - (5 components simultaneously)
 - Fluid : Gas
- **Laser-Cascade CT5000**
 - Measurement : Multi-component
 - Fluid : Gas
- **Chromatography Gamme 700**
 - Measurement : Multi-component
 - Range : Fluid : Gas





Gas analysis



Endress + Hauser



- **J22 TDLAS – H2O Trace measurement**

- Parameter : H2O content
- Ranges : 0-50ppmv / 0-6000ppmv
- Fluid : Gas



- **Oxy5500 – O2 Trace measurement**

- Parameter : O2 content
- Ranges : f0 to 10 ppmv / 0 to 20% O2
- Fluid : Gas



- **JT33 TDLAS – H2S Trace measurement**

- Parameter : H2S content
- Ranges : 0-10ppmv / 0-500ppmv
- Fluid : Gas



TDLAS : Tunable Laser Diode Infrared Absorption Spectroscopy
Optical measurement without moving parts

- **Quenched fluorescence (QF) : O2**

Optical measurement, no moving parts, measurement unaffected by H2S



- **700 FTIR**

- Parameters: CO, CO2, H2Ov, CH4, NH3, CHOH, CHOOH (Impurities in H2 - ISO 14687-2)
- Ranges : From ppb/ppm to % matrix depending.
- Fluids : Gas



- **700LX HFID**

- Parameters : THC (Carbon eq.) - EU 17124
- Ranges : 0-10 ppm to 10 000 ppm
- Fluids : Gas



- **GPA2000**

- Parameters : N2/H2 - EU 17124 Standard
- Rangess : 500 ppm/100 %
- Fluids : Gas



- **MMS-H2 (CVAAS + Gold Trap)**

- Parameters : Mercury (H2) - Up ti 16 points.
- Ranges : From 0-1 ng/m3 up to 50 ng/m3
- Fluids : Gas



- **Benefits of our solutions:**

- Customizable FTIR (parameters and ranges), offering application flexibility on parameters & ranges.
- Possibility of coupling a Micro-GC to cover more parameters from ISO 14687-2.



- **Hydrogen gas analyser ZAF**

- Measurement : H₂ %
- Ranges : 0-3,5% to 100% / 100-90% / 100-80%
- Fluids : N₂, CO₂, Ar, He

- **Oxygen gas analyser ZAJ**

- Measurement : O₂ %
- Ranges : 0-0,5% à 100% / 100-98% à 0%
- Fluids : H₂

- **Hydrogen purity measurement**

- Thermal conductivity technology
- Fast gas analysis with repeatability < +/- 1% FS
- Reversed range option

- **Oxygen in hydrogen measurement**

- Pressure type paramagnetic technology
- Fast gas analysis with repeatability < +/- 1% FS
- Very low influence of interferences
- No contact between sensor and hydrogen



SICK Sensor Intelligence.



- **GMS820**

- NDIR / NDUV / TCD
- Multi- components + H2 in binary gases
- Cold and dry sampling
- Modular



- **MCS300P**

- IR/Visible spectrometry
- Till 6 components
- Modular



- **System integration / Shelters**

- SICK gas analyzers with specific integration according application



SIEMENS



- **CONTINUOUS GAS ANALYZERS :
CALOMAT & OXYMAT**

- Electrolysis monitoring for H2 0-2% in O2 with TCD detector and O2 0-2% in H2 with Paramagnetic principle.
- Total Hydrocarbons with FIDAMAT



- **TDLS (Tunable Diode Laser) technology
for in-situ or extractive H2/O2 in %vol. or
ppm levels**

- Electrolysis monitoring for H2 0-2% in O2 with TCD detector and O2 0-2% in H2 with Paramagnetic principle.
- SITRANS TDL in situ measurement directly in the process
- Selective : threshold optimization, best yield
- Stable over its lifetime, no calibration needed
- Fast Measurement ideal for safety and quality
- Open platform for large variety of gases





Level measurement



• LLT 100

- Measurement: Level detection with laser.
- Ranges: -40°C to 60°C / -1 to 49.6 bar



• 266

- Measurement: Level detection with differential pressure.
- Ranges: -40°C to 121°C / 0 to 410 bar



• Other features

- H-shield coating of diaphragms prevents permeability of hydrogen ions.
- Small beam divergence of < 0.3°.



• Rosemount 5300

- Guided radar level measurement
- Liquid or solid level measurement
- Temperature: -196 to +400 °C
- Pressure: -1 to 345 bar

• Rosemount 3408 / 5408

- Non-contact radar level measurement
- Liquid or solid level measurement
- Temperature: -196 to +400 °C
- Pressure: -1 to 160 bar

• Rosemount 2130

- Level detection with tuning fork
- Liquid level detection
- Temperature: -70 to +260 °C
- Pressure: -1 to 100 bar

• Level measurements with pressure and differential pressure transmitters assembled with remote seal(s)



Endress+Hauser



• Liquiphant FTL51B / FTL64

- Level switch : vibrating forks
- Pressure : -1 to 100 Bar
- Temperature: -50°C to 280°C



• Levelflex FMP51

- Continuous level measurement : guided radar
- Ranges : rod 10m / cable 45m



• Fonction Heartbeat Technology

- On-board for checking sensor operation without disassembly
- Random failure detection with probability > 95%.



Level measurement



- **FCX FKE/B/D/M Level**

Measurement : hydrostatic level meter (with display)

- Range : 0-13mCE SIL2 SIL3
- Fluids : water, brine, H₂

- **Hydro Seal design**

Excellent protection against hydrogen permeation

- **4D™ Gyration**

High accuracy and repeatable measurements



- **NESOS R20 LT**

- Measurement : Float level converter
- Ranges : -52°C up to 180°C



- **ZELOS C01 LS**

- Measurement : Capacitive level detector
- Ranges : -40°C up to +200°C



IO-Link

NESOS R20 LT offers a wide range of approvals



VERIFIED BY DNV-GL

DNV-GL



SITRANS LR250



- **SITRANS LR250**

- Polypropylene lens and flange encapsulated antenna
- 25 GHz technology
- Suitable for nearly any liquids application
- Built to last
- Liquid level flexibility for inventory and process vessels.

- **SITRANS LG Guided wave radar level**

- High accuracy to ± 2 mm
- Maximum pressure : -1 to 400 bar
- Suitable for nearly any liquids application
- Built to last
- Liquid level flexibility for inventory and process vessels

SITRANS LVL vibrating level switches

- Detect high, low, and demand levels in liquid or solid applications.
- Temperature range : -196...+450 °C



Level measurement

VEGA



• VEGAFLEX 81/83

- Guided radar wave sensor (electrolyzers)
- Mounted directly on the tank or in bypass tube
- Cleanliness EIGA 33/18 & ASTM G93
- Resistant to aggressive media

• VEGAPULS 6X

- Free emission radar level sensors
- Wear-free non-contact measurement
- Mounted directly on the tank or in bypass tube
- Analogue 4...20 mA/HART or digital fieldbus

• VEGADIF 85

- Vibrating level switches for liquids
- Temperature from -196 to +450°C
- Pressure from -1 to +160 bar
- High reliability thanks to integrated self-monitoring of measuring element

• Other features :

- Wireless sensor configuration & diagnostics via Bluetooth
- SIL 2/3 as per IEC 61508

WIKAI



• Bypass level indicator BNA

- Output : analog indication
- Special feature : oil & grease free
- Options : electronic output signal



• Optoélectronique level switch OLS-2

- Output : Switch point
- Special feature : for liquid hydrogen
- Options : Ex



• Cryo cell (differential pressure gauge) 732.15



- Output : analog indication
- Special feature : for cryogenic tanks
- Options : electronic output signal



• Optoelectronic level switches suitable for extreme pressures and/or temperatures

PART 2

COMPANIES DIRECTORY



GIMELEC

GIMELEC H₂ COMMITTEE : solution providers

Company pages – summary

27	ABB		34	JUMO	
28	DURAG		35	METTLER TOLEDO	
29	EMERSON		36	Schneider Electric	
30	Endress+Hauser		37	SICK France	
31	envea		38	SIEMENS	
32	Fuji Electric		39	VEGA	
33	GEORGIN		40	WIKA	

ABB



Who we are

ABB is among the world's leading manufacturers and suppliers of smart instrumentation and analyzers. With thousands of experts around the world and high-performance digital technologies, ABB is on a mission to write the digital future and make measurement easy for our customers.

Competences & know how

ABB Measurement offering ranges from analytical products, with water and gas analyzers, to instrumentation, with pressure, temperature, level and flow measurement products.

ABB has also further developed our portfolio with features important to the hydrogen market, such as 'H-shield' for our pressure products, giving them extremely high resistance against hydrogen permeation.

Our gas analyzers are also proven on hundreds of installations around the world for ensuring the safety, efficiency and reliability of hydrogen production and downstream processes

Key product



Pressure Transmitter
ABB PGS300

Turnkey solutions

ABB can offer tailored and customized solutions that ensure easy integration and offer customized documentation and service.

Services

Service for the entire product lifecycle

ABB offers a wide range of services for its measurement technology solutions.

All services at a glance

- Engineering, planning and consulting
- Commissioning and Training
- Field service
- Maintenance including calibration
- Repair and spare parts service
- Upgrades and retrofits
- End-of-life service
- Advanced service
- Service agreements / contracts

Communication/Digital

- My Measurement Assistant, i.e advanced web application for measurement device for supporting easy self service
- ABB Ability™ Verification tool for verification of a variety of measuring devices
- ABB Ability™ SmartMaster for remote verification of accuracy and diagnostic status of measuring devices
- Digital Advanced Diagnostic feature and ensure a top-level usability experience.
- Ethernet APL protocol for flowmeters

DURAG

DURAG GROUP

Who we are

A Family company with **75 years of experience** in industrial analysis (dust, gas, nanoparticles, optical monitoring of H₂ flames, ignitors and burners, furnace cameras and VTA systems for H₂ combustion, etc.). Our factories are based in Germany, France, and the Netherlands.

Competences & know-how

AP2E, a subsidiary of the DURAG group, manufactures and integrates **OFCEAS** infrared **gas analyzers** (*Optical Feedback Cavity Enhanced Absorption Spectroscopy*). This technology allows the direct measurement of many gases, even at low concentrations. These gas analyzers can measure **H₂ quality** (ISO 14687), **H₂ concentration**, or emissions (fuel cells, CEM)

Return of experience

OFCEAS gas analyzers are a **reference in Europe for measuring impurities in hydrogen** for mobility (ISO 14687), with more than 50 laboratories and manufacturers equipped and supported in controlling the quality of hydrogen (offline measurement and online process).

Our analyzers are also used in **research and development** to qualify **fuel cells** and new H₂ processes.

Key products



Mesure qualité H₂
ProCeas H2 PURITY



Mesure concentration H₂
ProCeas H2



Mesure émission PAC et
cheminées **LaserCEM**

Turnkey solutions

We provide complete solutions:

- analytical cabinet for hydrogen purity
- ATEX / IECEx gas analyzers for process control

We customize the monitoring solutions function of your H₂ production processes:

- Electrolysis (O₂, H₂O, CO₂)
- Steam methane reforming (SMR: CO, CH₄, H₂S)
- Thermolysis of biomass (CO, CH₄, CO₂, H₂S), etc.



Services : DURAG GROUP provides a local support and at site

Project
management and
Commissioning

- Project management
- System integration
- Commissioning

Service Support
and training

- Remote support
- Trainings

After sales services
and Calibration

- OnCalibration
- site service repairs
- Maintenance

The DURAG Group supports each of its customers locally through its extensive network of subsidiaries and partners.

Communication / Digital

Our gas analyzers can be connected remotely. This provides you with fast maintenance support and quick solutions.

Contact

DURAG FRANCE

147 Av. Paul Doumer, 92500 Reuil-Malmaison, FRANCE

Info.fr@durag.com | +33(0)1 41 29 04 60

EMERSON



Who we are

Emerson is an American international company with a strong presence in France. With sales of over **\$17 billion** and **74,000 employees**. We have the broadest automation portfolio on the market.

Our **18,000 active patents** and new innovations are at the service of sustainable development and the fight against global warming.

Competences & know how

We work on a daily basis with **process industries** to implement their **projects** and **decarbonize** their operations worldwide (Oil & Gas, Chemicals, Industrial Gases, Nuclear & Renewables, Metallurgy)

Our expertise lies in the automation of continuous, batch and hybrid processes, ensuring the control and safety of installations, personnel and the environment.

Experience feedback

With over **400 MW** of **green hydrogen** projects under construction, Emerson is the ideal partner to help you achieve your carbon neutrality goals. Emerson has **numerous operational references** across the **entire hydrogen value chain**.

- Measurement, Detection, Control & Safety
- Hydrogen gas, liquids, LOCH and derivatives (NH₃, e-methanol etc.)

Product highlights



Pressure
3051S
Gold Plate



Temperature
X-well
Non-intrusive



Flowmeters
HPC015 & HP020
High pressure
HighFlow



Analyseur X-Stream
Laser-Cascade CT 5000
Chromato 770XA

Turnkey solutions

To build a new, **renewable, low-carbon hydrogen industry** on schedule, it's crucial to work with modern, proven solutions and technology. **Emerson** is a **strong automation partner**, mastering the entire H₂ value chain and delivering significant benefits. In particular, with the **broadest portfolio of solutions, software and services** to accelerate your projects' implementation (CAPEX) and profitability (OPEX)

Emerson can help you meet your challenges by **reducing project complexity, optimizing operations**, increasing installation lifecycles and **accelerating the learning curve** for every segment of the hydrogen value chain, from mass production to distribution and mobility.

Services

In addition to the **most comprehensive portfolio** on the market, ranging from instrumentation to regulators, valves and control and safety valves, Emerson has more than **80 service technicians** in mainland France and the French overseas territories, complementing an international team:

- Installation and configuration of your equipment
- On-site or remote diagnostics and maintenance
- Collaborative Hub - secure remote diagnostics center
- Scheduled shutdown management.
- We can also build **integrated solution packages** in skids, shelters or plates, **made-in-France**, for your **hydrogen installations**.

Communication / Digital

Protocols: Hart, WirelessHart, Profibus, Ethernet APL, etc ...

Emerson instrumentation natively includes **advanced diagnostic functions** for each device (SmartMeter verification, cell integrity, communications, electronics, etc.).

Emerson's instrumentation range is the basis of the **"Floor to Cloud"** concept and the modern **"Boundless Automation"** approach now essential to the most efficient plants.

Emerson also offers the **"MyEmerson"** portal for simplified access to your installed base, the Emerson Multi-BU portfolio catalog and your orders

<https://www.emerson.com/fr-fr/automation/home>
info.fr@emerson.com

Endress+Hauser



Endress+Hauser

Who we are

As a family-owned Swiss company, we keep our know-how in Europe. Our production centers are located in Switzerland, Germany, Italy and France. Manufacturer of measurement instrumentation and turnkey solutions. Services ranging from commissioning to on-site calibration of flowmeters and other quantities.

Skills & know how

Production and sales of flowmeters, level measurement and detection, physico-chemical analysis (pH, conductivity, etc.), pressure and temperature sensors. Raman and TDLAS analyzers for gas quality analysis. For several years now, we have been manufacturing sensors adapted to hydrogen processes, in gaseous or liquefied form.

Use cases

- Electrolyzer manufacturer Enapter : analysis of hydrogen purity (99.999%) with our J22 gas analyzers for H₂O and Oxy5500 for O₂.
- Long Ridge River Energy : measurement on a natural gas/H₂ mixture - Coriolis flowmeter for flue gas quantity and Raman Rxn5 analyzer for gas composition.
- Wild Fire Energy: pyro-gasification process using waste materials - supply of pressure, flow and temperature sensors for the hydrogen produced.

Key products



Capteur de pression
Cerabar PMP71B



Mesure de conductivité
CLS82D avec
transmetteur CM42



Débitmètre
Coriolis Promass Q



Analyseur de trace
H₂O TDLAS J22



Turnkey solutions

Complete solution for gas measurements

- A dedicated project team
- Tailor-made solutions
- Support from design to commissioning



Raman analyzer for
hydrogen quality



Services

On-site services to support you

50 technicians at your service

- | | | | |
|--|---|--|---|
| Project & commissioning services <ul style="list-style-type: none"> • Project management • Engineering project • Site project • Commissioning | Support & Education services <ul style="list-style-type: none"> • Support • Training | Maintenance services <ul style="list-style-type: none"> • Repair • Calibration • Maintenance | Performance & Optimisation services <ul style="list-style-type: none"> • Managed Services • Consulting |
|--|---|--|---|

Communication/Digital

- Netilion: cloud solutions for access to data at any time and information on sensor obsolescence
- Heartbeat Technology: on-board diagnostics function to check correct operation without stopping the process.
- Profinet over Ethernet APL: new physical layer for Ethernet protocols.



envea



Who we are

An international group based mainly in Europe, Asia and America; we specialize in providing analytical solutions dedicated to environmental protection. Our areas of activity are air quality monitoring, including health and safety, industrial emissions control and process optimization.

Expertise & know how

As a manufacturer, we have product expertise, integration know-how, training capacities and the ability to serve our partners and customers. With over 45 years of experience in the field of analysis, we offer a wide range of technologies (FTIR, GC, NDIR-GFC, CLD, FID, PAS, TDLS...etc.).

We offer technological building blocks for measuring impurities in H₂ (in compliance with ISO-14687-2 or standard 17124).

Feedback & Experience

Compliance with ISO-14687-2:

- Messer via APT (Air separation - H₂ production for vehicles)
- Haffner Energy via Anagaz - H₂ production from Biomass.
- Ballard Power via ASTI - H₂ quality certification for laboratories.
- Norsk Analyse - H₂ quality measurement solution ATEX version EU 17124 compliant:

- Everfuel - THC/O₂ & N₂ measurement in H₂ produced by Electrolysis.

Product highlights



700FTIR Series
Multigas FTIR analyser



700LX Series
HCT FID analyser



GPA 2000
Gas purity analyser

Turnkey solutions

We are first and foremost an analyzer manufacturer and work mainly with specialized integrators. Nevertheless, for specific projects or applications, we also offer turnkey solutions.

- 4 dedicated sites (FR/UK/USA/INDIA)
- Design office.
- Associated project teams.
- Dedicated integration teams.
- Complete turnkey projects
- Systems projects (cabinets)



Services

All over the world, we provide the key services that our customers expect from a manufacturer of analytical solutions.

From factory acceptance and integration support, to commissioning, on-site assistance and factory repairs, our teams guarantee data availability.

In France, we have more than 35 regional technicians being as close as possible to our customers. Worldwide, we have more than 200 persons dedicated to customer service.

ENVEA service means:

- Training teams with levels adapted to users/customers
- Workshop teams
- Field teams close to our customers and their sites.

Communication / Digital

All our analyzers are connected, enabling remote diagnostics and communication with common industrial protocols such as Modbus. New-generation analyzers feature HTML pages, an Ethernet port and WiFi, and therefore don't require any specific software to log on to. They can thus be operated from a smartphone, tablet or computer.

Contact : info.fr@envea.global



Fuji Electric



About us

As French manufacturer of measuring instruments and gas analysers, we help our customers by providing products and systems that use energy efficiently and are tailored to meet the specific needs of hydrogen industry. Our goal is to create **measurement solutions** that contribute to the **resolution of energy management problems**, through the pursuit of **technological innovation in electric and thermal energy**.

Skills & know how

For over 25 years, we have been providing **measurement instrumentation solutions** (pressure, level, temperature, flow) to optimize industrial processes to save energy and help industries to produce clean energy for the global energy transition.

We provide **gas analysis solutions** to monitor and reduce the industry's gas emissions to reach the net-zero goals to preserve the environment.

Feedback

- **Technical challenge:** H2 gas analysis in a complex gas matrix.
Solution: Multi-gas cabinet, H2 analyser (ZAF), CO CO2 analyser (ZPA), compensation calculator
- **Technical challenge:** H2 pressure measurement at a compressor manufacturer.
Solution: FCX pressure transmitter with gold-coated stainless steel membrane.
- **Technical challenge:** H2 gas analysis at a high temperature of 1,300°C in an industrial furnace.
Solution: control of hydrogen in a binary N2 H2 mixture.

Product highlights



Hydrogen analyser ZAF



Sonde de température



FKC hydroseal membrane

Turnkey solutions

- A dedicated project team
- Tailor-made solutions
- Support from design to commissioning



Services

We support our customers throughout the entire product life cycle: planning, system design, automation, engineering, manufacture of measuring instruments, factory acceptance, installation, commissioning, operation, maintenance contract, repair of equipment and metrology of your instrumentation and training.



Communication/Digital

Flexible, scalable solutions to optimise operations and simplify asset management

HART communication protocol

- o Easy configuration and self-diagnostic functions
- FBOX remote management controller "Machine-to-Machine » (M2M)**
- o Remote control and management of technical installations



Contact

sales.dpt@fujielectric.fr

GEORGIN



Who we are

Founded in 1939 by Marcel Georgin, our company has established itself as a major player in two areas of expertise: industrial instrumentation and signal interfacing for hazardous areas.

With an unwavering commitment to **quality, innovation and safety**, our solutions are used across all industrial sectors.

Skills & know-how

We stand out for our **expertise in the design and manufacture of instrumentation devices and interfaces for measurement signals in environments at risk of explosion**, enabling us to offer adapted and reliable solutions to guarantee the safety of sensitive industrial installations. Georgin also has proven **expertise in the field of industrial instrumentation**, reinforcing our ability to provide complete, high-performance solutions for our customers.

Feedback

Georgin excels in pressure management and industrial temperature measurement. **Our innovative solutions ensure precise monitoring** in distribution facilities, tanks and transport equipment, contributing to the safety and efficiency of industrial operations.

Product highlights



Programmable
universal
converter
UI series



Digital IS display
GeXi07



Pressure switches for
nuclear/defense/trans
port **Série P**



Pressure switches for
nuclear/defense/trans
port **Série P**

Certifications



ATEX
Protection modes
Ex ia, Ex de, Ex d, Ex h



SIL compliance
SIL2/3 capability



DESP Certification
Catégorie IV safety
accessory

Services

Project dpt

- Tailor-made solutions
- Engineering and Project Studies
- Qualification according to specifications

Maintenance dpt

- Setting
- Calibration
- Repair

Our commitments



Contact

14-16 Rue Pierre Semard, 92320 Châtillon France
regulateurs@georgin.com | +33(0)1 46 12 60 00

JUMO



Who we are

Moritz Kurt Juchheim founds the company M. K. JUCHHEIM - (named after the founder of the company) - now JUMO GmbH & Co KG in Fulda and starts out with six employees producing glass thermometers and contact thermometers. Right from the start, its philosophy was to manufacture high-quality, high-precision instruments and to provide the best possible after-sales service.

Competences & know how

JUMO is a leading supplier of systems and solutions in the field of industrial sensors and automation. Our innovative product range spans the entire measurement chain from sensor to automation system, including temperature, pressure, fluid analysis, level and humidity. Our aim is always to offer our customers around the world the optimum solution in terms of process safety, energy efficiency and cost optimisation.

Return of experience

- JUMO is the first manufacturer to have developed and commissioned an ATEX sensor for measuring H₂ at -270°C
- Original equipment pressure sensors for compressors
- Conductivity measurement on mobile electrolyzers

Main products



Pressure sensor
MiIDAS H20HP



Temperature sensor
ATEX FT903520



Conductivity measurement
digiLine Ci/Cr



Level measurement
NESOS R20 LT

Engineering solutions

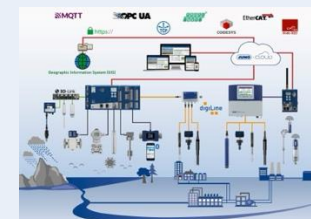
In addition to a wide range of products in the field of measurement and control, JUMO also acts as a systems supplier, developing complete solutions. Our engineering services are part of this holistic and at the same time personalised approach. The JUMO engineering team brings together the know-how that our engineers have acquired over decades



Services

JUMO offers a full range of services:

- Project management
- Development of specific sensors
- Engineering
- Training
- Commissioning
- AFTER-SALES SERVICE
- On-site and laboratory calibration



Communication/Digital

- CLOUD Solutions
- SPE (Single Pair Ethernet)
- IO Link
- digiLine
- Ethernet
- Modbus/Profibus/Profinet



Contact

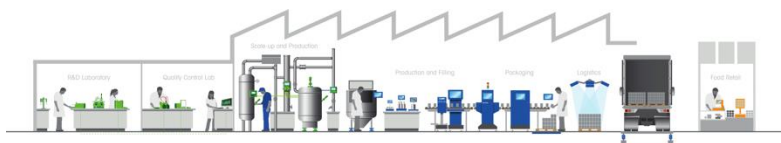
Hydrogène | JUMO
info.fr@jumo.net

METTLER TOLEDO

METTLER TOLEDO

Who are we?

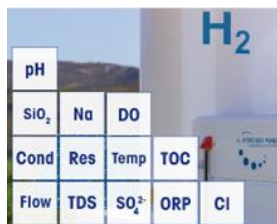
We offer precision instruments and services for many applications in research and development, quality control, production, logistics and retail to customers around the world.



Our Process Analytics division has **a complete portfolio of all needed water analytics to verify the quality of electrolyze feed water.**

Competences & know how

Process Analytics division focuses on the production and marketing of instrument for measuring critical gas and liquid analytical parameters. We offer, among other, sensors for pH, conductivity and resistivity, total organic carbon, and analyzers for silica, chlorure / sulfate and sodium.



Return of experience

Mettler Toledo's Process Analytics division has sixty years of experience in pure water online analysis through its Thornton business unit. We developed the first concentric conductivity probes and continuously improved our portfolio with innovative solutions.

Solutions clés en main

- A dedicated sales, service and support team
- Support from design to commissioning

Hot products



Conductivity sensor
Unicond with M300
transmitter



Total Organic Carbon
4000TOCe with M300
transmitter



Silica Analyser
2850Si



Chlorure / Sulfate Analyzer
3000CS

Services

Support and service of your equipment through its entire life cycle, from installation, preventive maintenance and calibration to equipment repair.



Maintenance & Optimisation



Calibration & Quality



Training & Consulting



Repair & Support

- Professional installation
- Preventive maintenance
- Upgrade and refurbishment
- Setup and configuration

- Calibration and certificates
- Equipment qualification
- Performance verification
- GWP verification

- User training
- Consulting and business support
- Documentation
- Good measuring practice

- Repair service
- Spare parts and kits
- Remote service

Communication / Digital

Intelligent Sensor Management (ISM) diagnostics data can be accessed on control systems to provide an overview of the performance of all measurement systems from one point

Transmitter Configuration Tool (TCT) software for fast, simple and consistent transmitter programming

Contact

<https://www.mt.com/fr/fr/home/products/Process-Analytics.html>
mtpro-f@mt.com

Schneider Electric



Who we are

Our mission is to be your digital partner for Sustainability and Efficiency. We drive digital transformation by integrating world-leading process and energy technologies, end-point to cloud connecting products, controls, software and services. More than 130,000 employees in 100 countries.

We are the most local of global companies and we are focused on :

- Buildings
- Datacenters
- Industries
- Infrastructures

Expertises & know how

Process Automation division manufactures and sells pressure, flow, temperature and analytical (pH and conductivity) transmitters . Our devices are available for hydrogen measurement (gold plated membrane for our pressure and our vortex flowmeter, SIL and ATEX certification).

Experience feedback

Thanks to the long existence of Foxboro and Eckardt company, Schneider Electric has many years of experience. This is particularly the case for hydrogen pressure or flow measurement as well as for conductivity.

Key products



84C vortex flowmeter



CFS600A coriolis flowmeter



S-Series pressure transmitters

Turnkey solutions

Capacity to deliver turnkey projects directly or via a partners network.

Commissioning and support services



Services

Services all along life cycle : Our expertise helps you to maintain and monitor your assets and your systems for safe operations 24 h/24 et 7 j/7.

Based on innovation, our consulting services helps you :

- Being more efficient
- Achieving your sustainability goals
- Decreasing your opex with our solutions



Communication / Digital

Software solutions for asset and field devices management

Devices available on request with Hart, Modbus, Fieldbus or Profibus communication

Embedded diagnostics to help spots problems early



SICK France



Who we are

SICK France is the French subsidiary of the SICK group. Over 75 years, SICK has become a global leader in providing sensors and solutions for regulation, process control and emissions monitoring in industry. With more than 12,000 employees spread across more than 50 subsidiaries, SICK provides local commercial and technical service.

Skills & know how

Production and sales of turnkey solutions:

- gas and dust analysis, flow measurement for process control and industrial emissions.
 - UV/IR/Laser/FTIR and FID/TCD spectrometry, etc...
- Ultrasonic custody metering of natural gas and industrial gases

Engineering and project monitoring / After-sales services

Feedback

- 15 years of experience for H₂ counting in petrochemicals and oil & gas
- > 2,500 process and flare flow measurement installations with hydrogen
- Certified solution for transactional metering of a mixture of natural gas and hydrogen since 2021
- Analysis of impurities and in particular CO₂ in industrial gases

Featured products



Flow metering product range

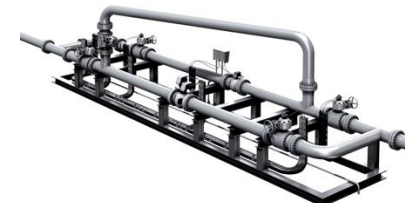


Gas analysis systems and modular solutions

Turnkey solutions

A wide range of products but also integrations and installations tailor-made designed and produced by our factories.

Integrated systems solutions



Gas metering skids

Services

Expert local service teams to carry out your projects and monitor your equipment

- Engineering / Consulting
- Realization / Monitoring of your project
- Factory Acceptance Test
- Commissioning / Training
- Industrial progress monitoring
- Modular service contracts
- Digital service solutions



Communication / Digital

SICK Condition Monitoring

Real-time monitoring via WEB interface of sensor status for predictive and conditional maintenance

SICK Meeting Point Router

Remote diagnosis and support via secure connection for better responsiveness and cost optimization



Contact

Info@sick.fr

SIEMENS

SIEMENS

Who we are

Siemens Process Instrumentation offers you innovative, single-source measurement solutions to increase plant efficiency and enhance product quality. Our intelligent instruments are also designed for seamless interplay with the larger world of industrial automation and control systems – enabling greater process transparency and smarter decisions for your business.

Competences & know how

We have knowledge in pressure, temperature, flow, and level measurements. We are leader of gas analyzers.
Our main factory is based at Haguenau (France)

Return of experience

HYFLEXPOWER: The world's first integrated power-to-X-to-power hydrogen gas turbine demonstrator

- Green hydrogen project launched in May 2020
- Decarbonizing a paper factory by modernizing an existing combined heat and power plant in France

Turnkey solutions

We have in Karlsruhe and Aix en Provence, project manager for define the best solution in instrumentation and gas analyse.
We have network of European suppliers to realize special featuring
For example :

- Shelter for analyse solution
- Integrate DP flow measurement
- Coriolis skid with automation and HMI

Main products



SERIES 6, ULTRAMAT 23, SIPROCESS GA700
(ULTRAMAT, CALOMAT, OXYMAT, ...) et LDS 6, SITRANS SL, SITRANS TDL (Spectroscopic laser)
→ Continuous gas analyzers extractive & in situ technology



SITRANS FS200-300 et 380
→ Clamp-on ultrasonic flowmeter

SITRANS P320 & 420
→ Smart pressure transmitters

SIPART PS100
→ Smart positionner valve

Services

We have technician department support thought the world for commissioning, training, calibration on site ...etc.

In France, our customers can use free "support line"

0821-801-122 ou support.france.automation@siemens.com

Communication / Digital

What if production plants could talk? The data through which they communicate tells us a lot about their condition. With our digitalization portfolio SITRANS IQ we enable you to securely understand this data and optimize your processes - simply through connectivity and apps. This allows you to optimize your processes.
SITRANS IQ - Fully exploit the potential of your data.

Sales Contact

In France, if quotation needed spi-contact.fr@siemens.com

VEGA

VEGA

About us

VEGA is a world leader in the field of level and pressure measurement. This strong position is the result of consistent and targeted development of innovative, cutting-edge products. Founded in 1959 in the Black Forest, VEGA now employs more than 2,500 people worldwide. Solutions for the most demanding measurement needs are offered in many industrial sectors, from simple applications to the most complex processes.

Competences & know how

VEGA sensors for level and pressure measurement and level switching guarantee optimum performance at every stage of hydrogen production, storage and distribution. Users will benefit from effective monitoring and control of their installations thanks to these measuring instruments.

Experience feedback

Hydrogen management requires maximum reliability and precision due to extreme temperatures and pressures and the risks of embrittlement or diffusion. VEGA offers instrumentation that is perfectly suited to level and pressure measurement, and has been tried and tested for many years, particularly by leading manufacturers of electrolyzers and hydrogen refuelling stations.

Main products



VEGABAR 82 is a universal pressure transmitter for measurement up to 72 bar. Its dry ceramic cell offers very high long-term stability. Highly resistant process fittings in PVDF or PEEK make it the ideal sensor for pressure measurement on electrolyte tanks in alkaline electrolyzers.



VEGABAR 83 is a pressure transmitter designed for measurement up to 1200 bar. It has excellent long-term stability thanks to the metallic measuring cell made of hydrogen-resistant steel. Reliable measurement is provided by the dry, thin-film measuring cell, which does not need to be gold-coated to reduce diffusion. It is available with high-pressure "Autoclave" connections.

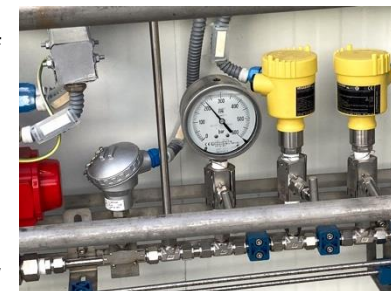


VEGAFLEX 81 guided wave radar can be used to measure the level of all type of liquids. It is ideal for level measurement of ultrapure water in PEM electrolyzers or electrolyte tanks in alkaline electrolyzers.

- Reliable measurement even in the smallest measuring ranges
- No interference from internal tank obstructions
- Meets EIGA 33/18 and ASTM G93 cleanliness requirements
- High resistance to aggressive caustic potash

Services

- Expertise/advice on choice of instrument
- Project management
- Assistance with commissioning
- Hotline or on-site technical support
- On-site metrology
- In-company and inter-company training



Communication / Digital

Wireless sensor configuration & diagnostics via Bluetooth
O-Link

Ethernet APL

Personalised MyVEGA customer portal for :

- 2D/3D drawings & documentation
- PIN codes backup for VEGA sensors
- Backup of sensor settings

VEGA Inventory System visualisation and data backup on VEGA Cloud



Contact

info.fr@vega.com

+33(0)3 88 59 01 50

WIKA

WIKA

Who we are

WIKA has been a **family-owned company** for over 75 years and is a **global leader in pressure and temperature measurement** and calibration technology. We have also become a benchmark in level, force and flow measurement and offer **instrumentation solutions for all sectors** of the process industry and technical equipment manufacturing.

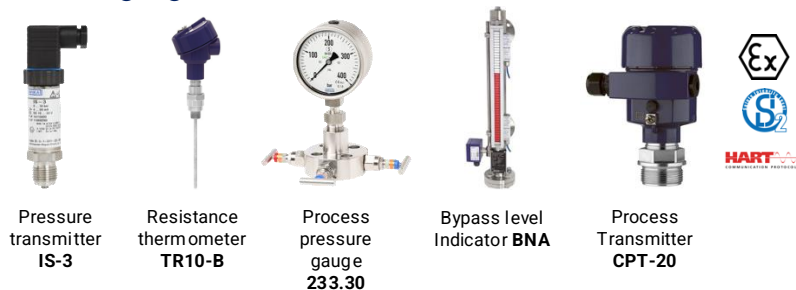
Skills & Expertise

WIKA has been a **partner to the hydrogen industry** for instrumentation-related solutions **for a long time**. With a proven track record, WIKA is **geared up to resolve any new challenges** ahead. WIKA understands the metallurgical challenges and utilises suitable materials to prevent hydrogen embrittlement.

Experience feedback

Whether the hydrogen is produced by conventional methods or based on renewable energies, WIKA offers **solutions for the entire hydrogen value chain**, for operating conditions **from -258 °C to 1700 °C** and from **-1 bar to +1,050 bar**. Specially designed sensors guarantee the **longevity and accuracy of the instruments** and minimise the risk of loss of containment.

Product highlights



Turnkey solutions

Ranges of pressure, temperature and flow level measurement instruments, combined with calibration equipment and services.

Support from our teams of experts
Specific equipment such as helium leak test units (individual cells or integrated in our customers' systems)



Services

A whole range of specific services

- Calibration services both in our laboratories and on site
- Analysis & support
- Inspection & testing
- Installation and commissioning (temperature solutions)
- Repair (diaphragm seal assemblies / highly accurate calibration instruments)

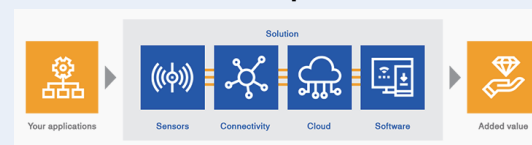


Communication / Digital

WIKA supports and accompanies the digital transformation of its customers :

- Plant monitoring
- Wireless networking
- Predictive maintenance
- Process optimisation

WIKA is a holistic IIoT solution provider:



WIKA is a founding member of the mioty alliance and supports industrial standards e.g. LoRaWAN® and OPC UA