Faure Herman

Counting every drop


# Products and services overview — 2024

www.faureherman.com

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# Introduction

Liquid hydrocarbons & other high value liquids have always given people the power to create and develop. Today, more than ever, precise measurement of these fluids is a major economic and environmental requirement, as they are increasingly rare and precious.

At Faure Herman, we're constantly innovating to provide the most accurate flow measuring tools for all types of liquids and fluids. From the pioneers of aviation to the extreme production conditions of the Oil & Gas sector, our products and services have accompanied the greatest aeronautical and industrial feats over the last 100 years, making our brand a reference in liquids flow measurement equipment.

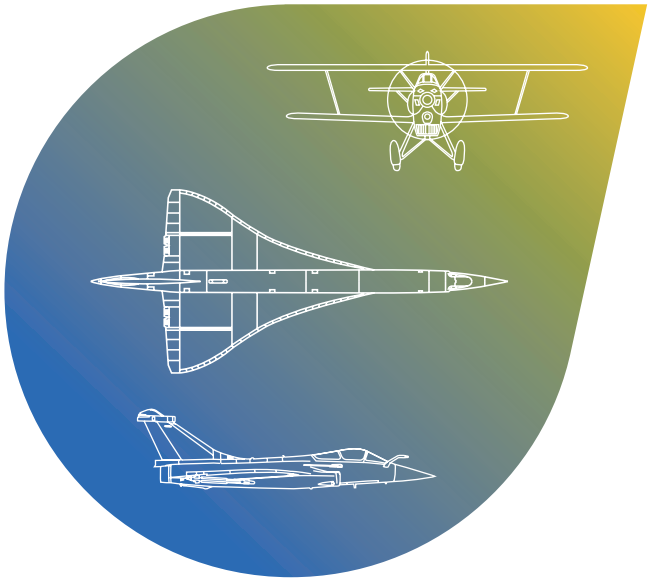
Today, our extensive innovation capabilities enable us to satisfy a wide range of liquid flow measurement needs. In direct response to the transformations taking place in your industry, we design and produce highly technical, extremely precise and highly resistant products. In this way, we support your day-to-day performance.

We also anticipate the industry's transition to less carbon-intensive production and use. From the very beginning, we have been a pioneer in developing products with a low carbon footprint. It is part of our DNA.

As an integrated company, we manage every stage from design to production and calibration of your flowmeters, as well as, installation and maintenance of your equipment. Our commitment to excellence and our international reach enable us to intervene in any field or situation guaranteeing your ultra-precise, continuous measurement.

## Because every drop counts!

# About the company



## Our brand heritage

Faure Herman is a centuries-old company, cultivating the pioneering spirit that has characterized the brand since it was founded in 1925. From the beginnings of aviation to the legends of Concorde, we have accompanied all the aeronautical and industrial revolutions of recent decades.

We are cultivating and updating this heritage by playing a key role in your industry's energy transition. To do this, we integrate and measure all the new fluids that contribute to the decarbonization of energy and transport.

So, because we have roots, but also wings, we can act with determination and confidence, and look to the future with peace of mind.

# 100 years of flowmeter excellence

## Our brand vision

Anticipating and supporting the new demands of your industry. When "off-the-shelf" solutions don't exist, we invent, design and manufacture them to offer tailor-made products that can be durably integrated into the most complex and demanding engines, systems and infrastructures.
The spirit of innovation has been one of our major assets for a century, with the same spirit of innovation and reactivity we are committed to providing solutions to the problems today and tomorrow.
**We invest above 10% of our revenue in R&D.**

## Our products

- Helical turbine flowmeters
- Ultrasonic flowmeters

## Our services

- Calibration (FH Lab)
- Repair

## Our offer and markets

As experts in fluid measurement, the Faure Herman brand operates in four key markets:

**Aerospace** **Defense** **Energy** **Water**

In all these markets, we offer some of the most accurate, reliable and durable equipment. We also offer a full range of expert services before, during and after installation of your industrial flowmeter applications. Additionally, we've created the FH Lab brand to meet the testing and calibration needs of each of these markets and beyond, on ALL available equipment and fluids.

Thanks to our high-tech calibration bench, FH Lab can calibrate 100% of your equipment, whatever its origin or manufacture, with real fuels and under actual operating conditions.

The FH Lab, high-tech calibration bench

## Our brand ambition

Constantly innovating to offer the most demanding technical solutions and services best suited to the measurement needs of our customers and their markets, whether for today's fluids (water, hydrocarbons, etc.) or tomorrow's (biofuels, liquefied hydrogen, etc).

**Hydrogen**

**Sustainable Aircraft Fuel (SAF)**

## Our brand advantage

**Lower your total cost of ownership and your carbon footprint for custody transfer measurement**

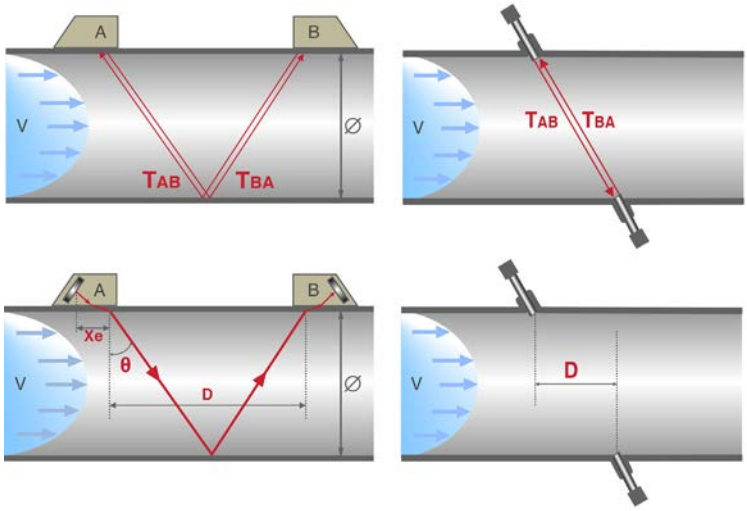
## Designed, manufactured & calibrated in France

# Measurement technologies

## Ultrasonic

The Ultrasonic Flowmeter line can be intrusive or non-intrusive. Probes are externally mounted and use ultrasonic sound waves to measure the flowing fluid in a pipeline. The flow system operates on the principle of transit time difference.
An acoustic signal (ultrasonic) is transmitted from one sensor to another. The time (transit) that the signal requires to arrive at the receiver is then measured.

According to physical principles, the signal sent against the direction of flow requires longer to arrive than the signal in the direction of flow; therefore, the difference in the transit time is directly proportional to the velocity of flow. The transmitter converts the measured values supplied by the sensors into standardized output signals. Once installed, the sensors can be replaced without interrupting the process.

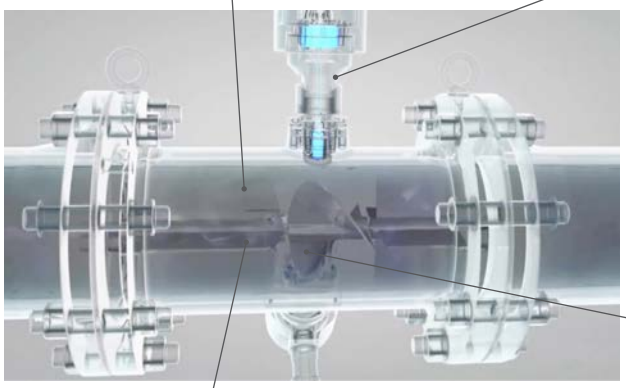




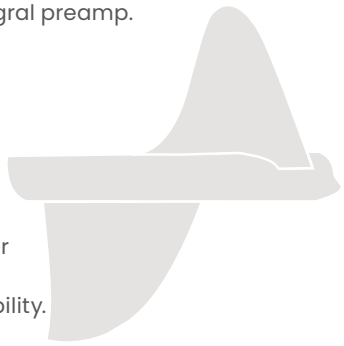

## Helical turbine

Every Heliflu™ measures your product accurately. Fluid flowing through a helical turbine meter turns the rotor at a speed directly proportional to the flow. Each revolution corresponds to a precise and constant volume. Magnets mounted in the rotor induce electrical pulses in an adjacent pick-up coil. The resulting pulses are directly proportional to the volume passing through.

Removable calibrated cartridge.

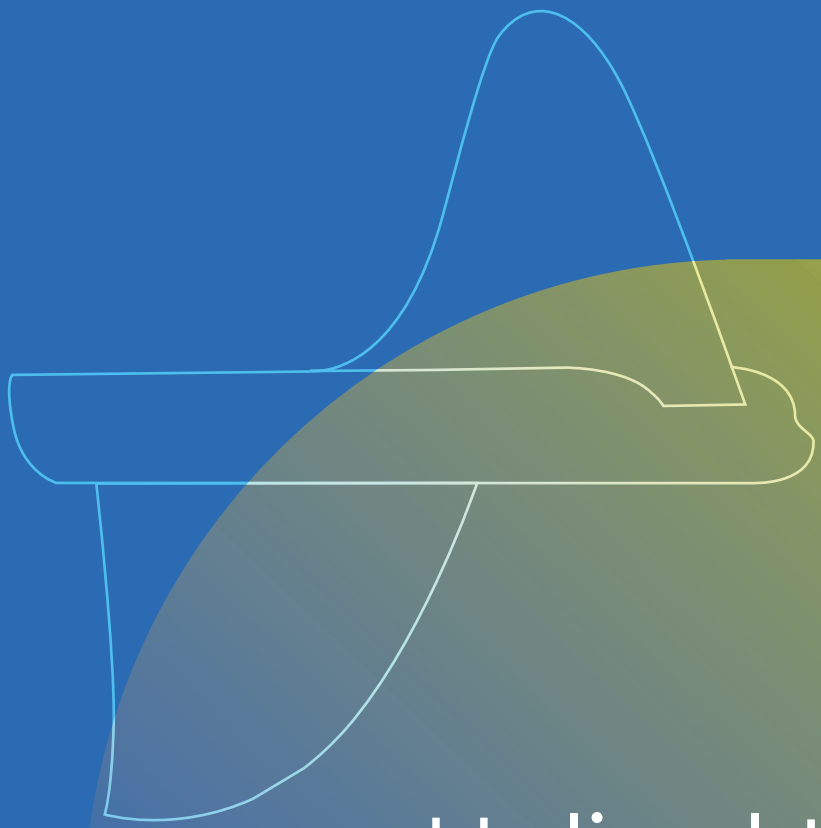


Explosion proof or intrinsically safe pick-up coil (1, 2 or 3 depending on application) available with integral preamp.



Special helical rotor offering superior linearity / repeatability.

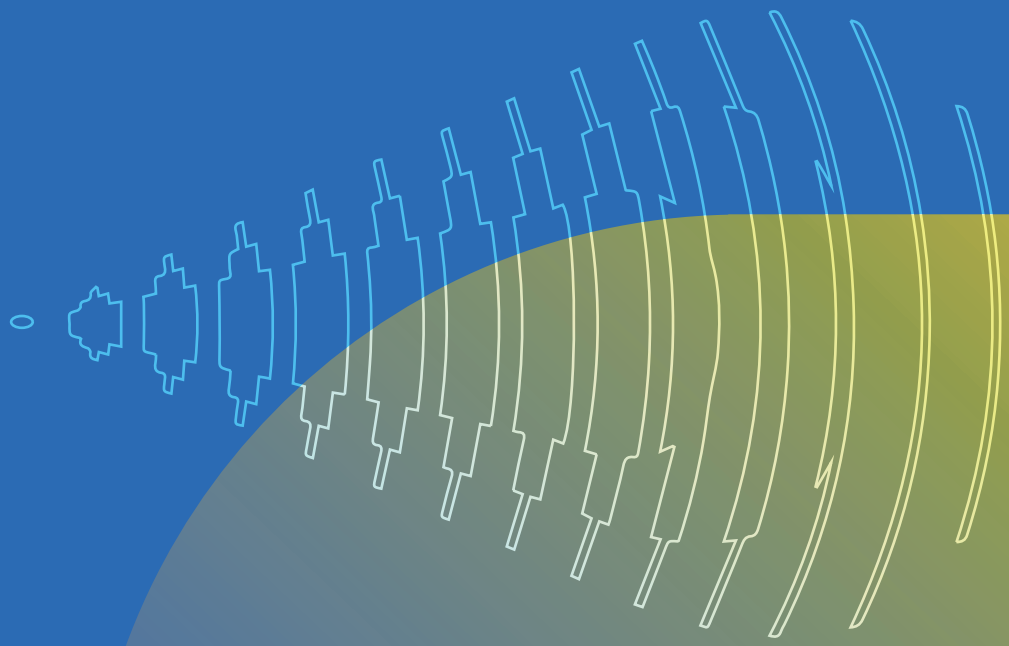
Robust tungsten carbide bearings or other material. Body is constructed in Carbon Steel, Stainless Steel or other as required.



# Helical turbine flowmeters

# Helical turbine flowmeters for custody transfer measurement

| Product name | Heliflu - TZN | Heliflu - TLM |
|---|---|---|
| |  |  |
| | **Materials of construction** | |
| **Body and Flanges** | Carbon Steel or Stainless Steel<br>Options: Low Temp Carbon Steel or Duplex (Other upon request) | Carbon Steel or Stainless Steel |
| **Internals Cartridge** | 316L Stainless Steel , Titanium (optional) | 316L Stainless Steel |
| **Rotor** | Titanium or Aluminum | Aluminum |
| **Bearings** | Tungsten Carbide or Graphite | |
| **Electrical Enclosure Options** | 316 Stainless Steel or Aluminum / Compliance to NORSOK, NACE | |
| | **Meter Specification** | |
| **media measured** | Liquids | |
| **Measured values** | Transactional volume measurement | |
| **Meter Size Flange Rating** | 1/2'' to 20''<br>ANSI 150 to ANSI 2500 (ASME B16.5) | 3'' & 4''<br>ANSI 150 & ANSI 300 (ASME B16.5) |
| **Electrical enclosure**<br>**- Sensor type**<br>**- Preamplifier** | 1 or 2 (3 available on request)<br>Inductive pick-up coil<br>2 wires \| 2 wires NAMUR \| 3 wires Open Collector | 1 Inductive pick-up coil<br>2 wires \| 2 wires NAMUR \| 3 wires Open Collector |
| **Optional** | Local totalizer with Hart analog output | |
| | **Performance** | |
| **Linearity** | ±0.15% Custody Transfer Applications<br>±0.10% Premium applications or Master Metering | ±0.15% Custody Transfer Applications (optional)<br>± 0.2% (single product only)<br>± 0.3% (for multiple products) |
| **Repeatability** | <0.04% Custody Transfer Applications<br><0.02% Premium applications or Master Metering | ≤ 0.04% |
| **Max flow rate** | 0.12 to 9,300 $m^3/h$ \| 0.75 to 58,500 bbl/h | 3 to 300 $m^3/h$ \| 13 to 1,321 gallons per minute |
| **Viscosity range** | 0.2 to 350 cSt (higher upon request) | < 15 cSt |
| | **Meter temperature range** | |
| **Ambient temperature** | -50°C to +80°C (-58°F to +176°F) | |
| **Process temperature** | -50°C to +180°C \| (-58°F to +356°F) | -50°C to +150°C I (-58°F to +302°F) |
| **Storage temperature** | -50°C to +60°C (-58°F to +140°F) | |
| | **Meter approvals** | |
| **Electrical** | ATEX and IECEx (II2G – IIC T6) \| UL/cUL (Class 1 Div 1 Group C, D) | |
| **Protection** | IP66 | NEMA 4X |
| **Pressure** | PED Directive 2014/68/EU compliant | |
| **Electromagnetic compatibility (EMC)** | EMC Directive 2014/30/EU compliant | |
| **Metrology** | OIML R117-1 \| MID (Class 0.3) | OIML R117-1 \| MID (Class 0.5) |
| | Other national approvals (upon request) | |



# Ultrasonic flowmeters

# Ultrasonic portable flowmeters

| Product name | Minisonic II Portable | Uf 801 P |
|---|---|---|
| |  |  |
| **Materials of construction** | | |
| **Enclosure** | Molded ABS, robust and compact | |
| **Meter Specification** | | |
| **Model** | 1 pipe with 1 chord | Up to 2 pipes or 2 chords |
| **Media measured** | Liquids | Liquids and gases* |
| **Measured values** | Flow measurement | Flow measurement and calorimetry |
| **Pipe diameters** | up to 10 000mm | |
| **Signal treatment** | Analogic + ESC (Echo Shape Control) | Digital Signal Process<br>+ ESC (Echo Shape Control) |
| **Performance** | | |
| **Accuracy** | Up to 0.5% | |
| **Repeatability** | Up to 0.1% | |
| **Linearity** | Up to 0.1% | |
| **Electronics** | | |
| **Power supply** | Li-Ion internal battery<br>Up to 20 jours in continous use,<br>70 hours with economy mode | NiMh internal battery<br>Up to 14h in continuous use |
| **Input / output** | 1x 4-20 mA active output<br>2x Logic output (counting) | • 1 isolated, active analogue output: current 4-20mA, 0-20mA, 0-24mA Module 1<br>• 2 static relay outputs (50v - 10mA) usable as frequency outputs (up to 1kHz) - Module 2<br>• 2 isolated current inputs 4-20mA, 0-20mA, 0-24mA - Module 3<br>• 2 0-10V voltage inputs - Module 4<br>• 2 contact inputs (pulse or state) Module 6<br>• 2 static relay outputs (50v - 100mA) usable as frequency outputs (up to 30 Hz) - module 8 (single) |
| **Communication** | USB | RS232 (Modbus RTU) |
| **Recorder** | yes | |
| **Meter temperature range** | | |
| **Process temperature** | -20 to 50°C / -4 to 122°F | -10 to 50°C / -14 to 122°F |
| **Storage temperature** | -20° to 50°C / -4 to 122°F | -20 to 35°C" / -4 to 95°F |
| **Meter approvals** | | |
| **Electrical** | No ATEX | |
| **Protection** | IP68 | |
| **Electromagnetic compatibility (EMC)** | EN/IEC 61326-1 | |
| **Safety** | EN/IEC 61010-1 | |

* Minimum pressure is required

# Ultrasonic flowmeters

| Product name | Minisonic | Minisonic II |
|---|---|---|
| |  |  |
| **Materials of construction** | | |
| **Enclosure** | Molded Polycarbonate with 30% glass fibers, robust and compact | Aluminum housing, robust and compact |
| **Meter Specification** | | |
| **Model** | 1 pipe with 1 chord | 2 pipes or 2 chords |
| **Media measured** | Liquids | |
| **Measured values** | • Flow measurement (pipe)<br>• ISD / PSD = Product change detection in pipelines (ISD) or Detection of pigs, spheres & scrapers (PSD) | |
| **Pipe diameters** | Up to 10 000mm | |
| **Signal treatment** | Analogic + ESC (Echo Shape Control) | |
| **Performance** | | |
| **Accuracy** | Up to 0.5% | |
| **Repeatability** | Up to 0.1% | |
| **Linearity** | Up to 0.1% | |
| **Electronics** | | |
| **Power supply** | 110 – 230 VAC 50/60 Hz or 12 - 24 VDC (Average comsumption 6W - 10W peak) | |
| **Input / output** | (1x) isolated Active 4-20 mA output<br>(2x) isolated contact output | • (1x) isolated Active or Passive 4-20 mA output<br>• (2x) isolated contact output<br>Option:<br>To choose between<br>(4x) 2 wires PT100/1000 input,<br>- or (2x) 3 wires PT100/1000 input,<br>- or (2x) 4-20mA Active or Passive 4-20mA input |
| **Communication** | USB - Ethernet (Modbus TCP/IP)<br>In option: Hart or RS485 (Modbus RTU) | USB - Ethernet (Modbus TCP/IP)<br>RS232 or RS485 (Modbus RTU) |
| **Recorder** | Yes | |
| **Meter temperature range** | | |
| **Process temperature** | -20 to 60°C / -4 to 140°F | |
| **Storage temperature** | -35 to 60°C / -31 to 140°F | |
| **Meter approvals** | | |
| **Electrical** | No ATEX | ATEX is an option (see next page) |
| **Protection** | EN/IEC 60659 IP67 | |
| **Electromagnetic compatibility (EMC)** | EN/IEC 61326-1 | |
| **Safety** | EN/IEC 61010-1 | |

# Ultrasonic flowmeters ATEX

| Product name | Minisonic II Ex (Al) | Minisonic II Ex (SS) |
|---|---|---|
| |  |  |
| **Materials of construction** | | |
| **Enclosure** | Aluminum housing with Epoxy paint | 316L Stainless Steel housing |
| **Meter Specification** | | |
| **Model** | 1 pipe with 1 chord | Up to 2 pipes or 2 chords |
| **Media measured** | Liquids & gases | |
| **Measured values** | • Flow measurement (pipe)<br>• ISD / PSD = Product change detection<br>in pipelines (ISD) or Detection of pigs, spheres & scrapers (PSD) | |
| **Pipe diameters** | up to 10 000mm | |
| **Signal treatment** | Analogic + ESC (Echo Shape Control) | |
| **Performance** | | |
| **Accuracy** | Up to 0.5% | |
| **Repeatability** | Up to 0.1% | |
| **Linearity** | Up to 0.1% | |
| **Electronics** | | |
| **Power supply** | 110 – 230 VAC 50/60 Hz or 12 - 24 VDC (Average consumption 6W - 10W peak) | |
| **Input / output** | • (2x) isolated 4-20 mA output<br>(active - common grounding)<br>• (2x) isolated contact output<br>(max 50mA - 24V)<br>• (2x) 4-20 mA (active or passive - common grounding)<br>• (2x) PT100/1000 (2 or 3 wires) | |
| **Communication** | USB - Ethernet (Modbus TCP/IP) In option: Hart or RS485 (Modbus RTU) | |
| **Recorder** | yes | |
| **Meter temperature range** | | |
| **Process temperature** | -20 to 60°C / -4 to 140°F | |
| **Storage temperature** | -35 to 60°C / -31 to 140°F | |
| **Meter approvals** | | |
| **Electrical** | ATEX area compatible (zone 1 and 2) | |
| **Protection** | EN/IEC 60659 IP67 | |
| **Electromagnetic compatibility (EMC)** | EN/IEC 61326-1 | |
| **Explosion proof** | Ex db IIC T6 - IECEx INE 22.0016X | Ex db IIC T6 - IECEx INE 13.0068X |

# Ultrasonic flowmeters

| Product name | Uf-811 | Uf-821 | Uf-831 |
|---|---|---|---|
| |  |  |  |
| **Materials of construction** | | | |
| **Enclosure** | Metallic (aluminum with powder paint) | Fiber glass reinforced polycarbonate | Stainless steel 304, epoxy paint |
| **Meter Specification** | | | |
| **Model** | Up to 2 pipes or 2 chords | Up to 4 pipes or 4 chords | Up to 8 pipes or 8 chords |
| **Media measured** | Liquids & gases | | Liquids |
| **Measured values** | Flow measurement and calorimetry (pipe)<br>Flow measurement in a river/open channel | | |
| **Pipe diameters** | up to 10 000mm | | |
| **Width of channel (open channel version)** | RV = 500m (1640ft) / CO = 30m (98ft) | | |
| **Signal treatment** | Digital Signal Process | | |
| **Performance** | | | |
| **Accuracy** | Up to 0.5% | | |
| **Repeatability** | Up to 0.1% | | |
| **Linearity** | Up to 0.1% | | |
| **Electronics** | | | |
| **Power supply** | Low voltage power supply: 10-32V DC /<br>Peak consumption < 12W /<br>Average consumption < 6W | DC power supply: 10-32V DC - peak consumption < 12W - average consumption < 6W<br>AC power supply: 110-240V AC - peak consumption < 15W - average consumption < 7,5W<br>*Note: choice between DC or AC to be done for UF831* | |
| **Input / output** | Up to 4 modules to choose from: | | Up to 10 modules to choose from: |
| | • 1 isolated, active analogue output: current 4-20mA, 0-20mA, 0-24mA - Module 1 (single)<br>• 2 static relay outputs (50V - 10mA) usable as frequency outputs (up to 1kHz) - Module 2 (single)<br>• 2 isolated, passive current inputs 4-20mA, 0-20mA, 0-24mA - Module 3 (single)<br>• 2 isolated, passive analogue 0-10V inputs: 0 to 15V voltage - Module 4 (single)<br>• 2 Pt 100 / Pt 1000 temperature - Module 5 (dual)<br>• 2 contact 5V inputs (pulse or state) - Module 6 (single)<br>• 2 static relay outputs (50v - 100mA) usable as frequency outputs (up to 30 Hz) - Module 8 (single) | | |
| **Recorder** | yes | | |
| **Meter temperature range** | | | |
| **Process temperature** | -20°C to 70°C / -4 to 158°F | -20 to 60°C / -4 to 140°F | -20 to 50°C / -4 to 122°F |
| **Storage temperature** | -35 to 60°C / -31 to 140°F | | |
| **Meter approvals** | | | |
| **Protection** | EN/IEC 60529 IP68 | EN/IEC 60659 IP67 | IP67 (except with Modbus TCP/IP option: IP20) |
| **Electromagnetic compatibility (EMC)** | EN/IEC 61326-1 | | |
| **Safety** | EN/IEC 61010-1 | | |
| **ATEX area compatible (zone 1 and 2) - Uf - 841** | | | |
| Enclosure<br>316L Stainless Steel housing | |  | |
| Explosion proof | | Ex db IIC T5 -<br>IECEx INE 13.0068X | |

# Ultrasonic flowmeters to meet your process needs

| Product name | FH83 Neo |
|---|---|
| |  |
| **Materials of construction** | |
| Body and Flanges | Carbon Steel or Stainless Steel (Other upon request) |
| **Meter Specification** | |
| Media measured | Liquids |
| Measured values | Process volume measurement |
| Meter Size Flange Rating | DN 50 to DN 600 (2" to 24") (Others on request<br>ANSI 150/300/600/900 |
| Transducers | Removable under operating conditions |
| **Performance** | |
| Accuracy | FH83Neo-1 : ± 1.00% to ± 2.00%<br>FH83Neo-2 : ± 0.50% to ± 1.00%<br>FH83Neo-3 : ± 0.25% to ± 0.50% |
| Repeatability | 0,20% |
| Minimum flow detection | 0.05 m/s |
| Density range | 400 to 1,500 kg/m3 |
| Pressure Drop | negligible |
| **Electronics** | |
| Power supply | 24 Vdc 8W - 230 Vac |
| Inputs | 4 -20 mA |
| Output | (x2) 4-20mA (flow and/or speed of sound)<br>(X1) or (X2) pulse with galvanic isolation<br>Frequency 0 -10 kHz with galvanic isolation<br>(X1) or (X2) potential free contacts (alarms) |
| Serial communication | Modbus RTU through RS 485 with galvanic isolation |
| Software | FHView configuration and analysis software |
| **Meter temperature range** | |
| Ambient temperature | -40 to +60°C (-40 to 140°F) |
| Process temperature | -50 to +100°C (-58 to 212°F) |
| Storage temperature | -40 to + 70° C (-40 to + 158° F) |
| **Meter approvals** | |
| Electrical | ATEX II 2 G (Zone 1, Division 1 Groups C&D) |
| Protection | IP 66 / NEMA 4X |
| Pressure | PED Directive 2014/68/EU compliant |
| Transducer classification | Ex db IIB T6 to T4 Gb / INERIS 21ATEX0035X |
| Housing classification | Ex db IIB T6 Gb / INERIS 21ATEX0036X |
| Remote control classification | Ex ib IIB T4 Gb / LCIE 03 ATEX 6240 X |

# Ultrasonic flowmeters for custody transfer measurement

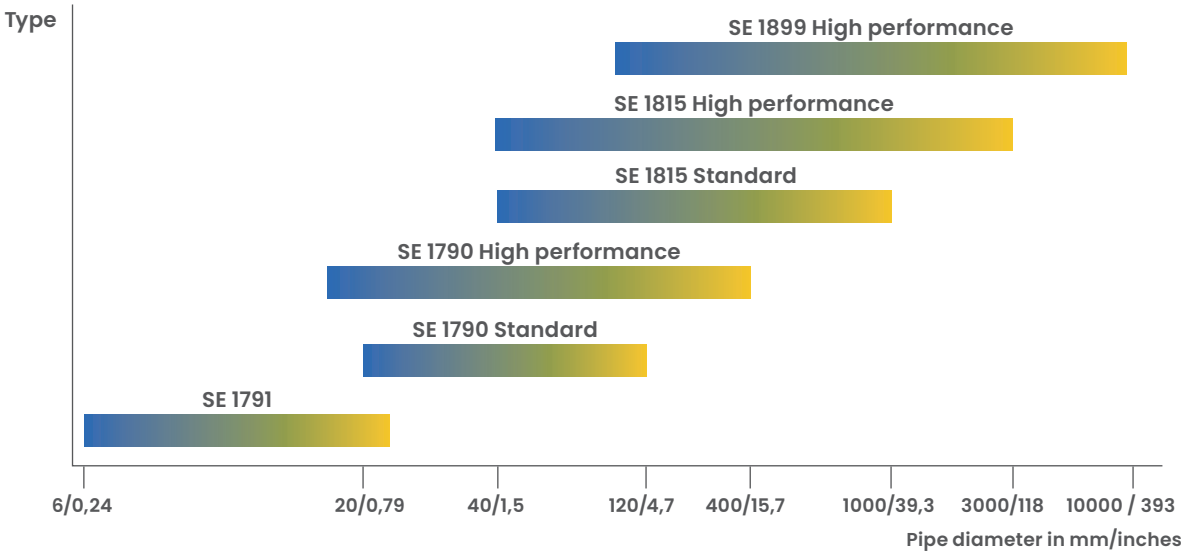
| Product name | FH Sonic |
|---|---|
| |   |
| **Materials of construction** | |
| Body and Flanges | Carbon Steel or Stainless Steel (Other upon request) |
| Transducers | Stainless Steel / PEEK |
| **Meter Specification** | |
| Model | Asymmetrical distribution of 5 chords for improved profile correction (up to 10 chords) |
| media measured | Liquids |
| Measured values | Transactional volume measurement |
| Meter Size Flange Rating | DN 100 to DN 600 (4" to 24") (other, upon request)<br>ANSI 150/300/600/900" |
| Transducers | Removable under operating conditions |
| Diagnostics | Measurement quality (phase homogeneity, VOS, gas on top, solids on bottom...) |
| **Performance** | |
| Turndown | 24:1 |
| Linearity | ± 0.15% |
| Repeatability | 5.8 B1 API |
| Compact Prover Compliance | Under conditions |
| Custody Velocity | 0.5 to 12 m/s |
| Viscosity | 0.2 to 500 cSt |
| Density Range | 400 to 1 500 kg/m³ |
| Pressure Drop | Negligible |
| **Electronics** | |
| Power supply | 24 Vdc |
| Inputs | 4 -20 mA |
| Pulse Outputs | 2x pulse output channels selectable as either 0-5 V or Open Collector.<br>Each pulse represents a fixed volume function of the configured Kfactor.<br>Duty Cycle: 50/50 |
| Analog Outputs | 2x independent and configurable analog outputs (0-20 / 4-20 mA)<br>Analog outputs can be used for: Instantaneous flow rate,<br>Average velocity, Average VOS ...<br>HART (Option) |
| Digital Outputs | 4x independent and configurable digital outputs (0-5 VDC or 0-12 VDC)<br>Digital outputs can be used for: Flow direction, Alarms... |
| Serial Communication | 1x RS 485<br>1x RS 232<br>1x Ethernet |
| Protocol | Modbus TCP, Modbus RTU (RS485) |
| **Meter temperature range** | |
| Ambient temperature | - 45 to + 65 °C (- 49 to + 149 °F) |
| Process temperature | - 50 to + 120 °C (- 58 to + 248 °F) |
| Storage temperature | - 50 to + 80 °C (- 58 to + 176 °F) |
| **Meter approvals** | |
| Electrical | ATEX II 2 G (Zone 1, Division 1 Groups C&D) |
| Protection | IP 66 / NEMA 4X |
| Pressure | PED Directive 2014/68/EU compliant |
| Electromagnetic compatibility (EMC) | EMC Directive 2014/30/EU compliant |
| Metrology | OIML R117-1 \| MID (Class 0.3) |
| NEC Certification | Compatibility Class 1, Division 1, Groups C&D |

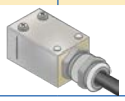
# Transducers & mounting

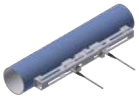
Faure Herman has its own range of transducers designed and manufactured specifically to fit our converters. Our engineers design external probes, insertion probes and wet probes.
Here are a few examples of Faure Herman probes though the list is not exhaustive.

For more information on all available models, please contact us.

# External transducers - clamp on




| Product name | SE 1791 | SE 1790 Standard | | SE 1790 High performance | |
|---|---|---|---|---|---|
| |  | Fixed  | Portable  | Fixed  | Portable  |
| **Diameter of the pipe** | From 6 to 25,4mm | From 20 to 120 mm | | From 10 to 400 mm | |
| **Temperature** | From -20°c to +80°c | From -20°C to +140°C | | From -20°C to +110°C | |
| **Connection** | Push-pull connectors | Potted cable through cable gland | Push-Pull | Potted cable through cable gland | Push-Pull |
| **Ingress protection** | EN/IEC 60529 IP54 | Type IP68 | Type IP67 | Type IP68 | Type IP67 |
| **Support type** | Specific | 2 probes per support - SU1790 | Ruler-KE1790 (kit including probes) | 2 probes per support - SU1790 | Ruler-KE1790 (kit including probes) |
| **Atex certification (Max temperature limited at 79°C)** | No |  | | No | |

| Product name | SE 1815 Standard | | SE 1815 High performance | | SE 1899 High performance | |
|---|---|---|---|---|---|---|
| | Fixed  | Portable  | Fixed  | Portable  | Fixed  | Portable  |
| **Diameter of the pipe** | From 40 to 1000 mm | | From 40 to 3000 mm | | From 100 to 10 000 mm | |
| **Temperature** | From -20°C to +140°C | | From -20°C to +110°C | | From -20°C to +110°C | |
| **Connection** | Potted cable through cable gland | Push-Pull | Potted cable through cable gland | Push-Pull | Potted cable through cable gland | Push-Pull |
| **Ingress protection** | Type IP68 | Type IP67 | Type IP68 | Type IP67 | Type IP68 | Type IP67 |
| **Support type** | 1 probe per support - SU1517 | Ruler-KE1815 (kit including probes) | 1 probe per support - SU1517 | Ruler-KE1815H (kit including probes) | 1 probe per support - SU1629 | Ruler-KE1899H (kit including probes) |
| **Atex certification (Max temperature limited at 79°C)** |  | | In option | | In option | |

# Insertion transducers

| Product name | SI 1614 | SI 1612 | SI 1611 |
|---|---|---|---|
| |  |  |  |
| **Diameter of the pipe** | From 80 to 2000 mm | From 120 to 4000 mm | From 120 to 7500 mm |
| **Temperature** | From -10°C to +60°C | From -10°C to +60°C | From -10°C to +60°C |
| **Connection** | Within terminal block of probe head | Within terminal block of probe head | Within terminal block of probe head |
| **ACS** | Option | | |
| **Ingress protection** | Type IP68 | Type IP68 | Type IP68 |
| **Atex certification** | Option | | |

| Product name | SI 1806 | SI 1820 |
|---|---|---|
| |  |  |
| **Diameter of the pipe** | From 100 to 4000 mm | From 120 to 7500 mm |
| **Temperature** | -20 °C to +79°C | From -20°C to +79°C |
| **Connection** | Sealed through cable gland or Head mounting | Through cable gland |
| **Ingress protection** | Type IP67 with Head mounting / IP68 with cable gland | Type IP68 |
| **Atex certification** | Option | Option |

# Open channel transducers

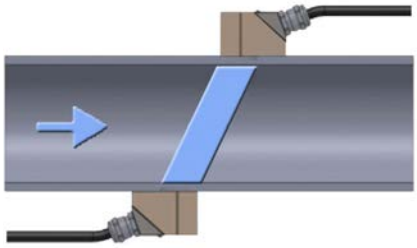
| Product name | SM 1654 | SM 1686 | SM 1527 |
|---|---|---|---|
| |  |  |  |
| **Distance between transducers** | 1 to 4 m | 2 to 20 m | 3 to 20 m |
| **Temperature range** | <60°C | | |
| **Connection** | Sealed through cable gland | | |
| **Ingress protection** | EN/IEC 60529 IP68 | EN/IEC 60529 IP68 | EN/IEC 60529 IP68 |
| **Transducer angle** | 45° | 45° | 0° |
| **ATEX certification** | - | - | - |

| Product name | SM 1689 | SM 1690 | SM 1613 |
|---|---|---|---|
| |  |  |  |
| **Distance between transducers** | 20 to 50 m | 2 to 20 m | 2 to 20 m |
| **Temperature range** | <60°C | | |
| **Connection** | Sealed through cable gland | | |
| **Ingress protection** | EN/IEC 60529 IP68 | EN/IEC 60529 IP68 | EN/IEC 60529 IP68 |
| **Transducer angle** | 30° | 35° | 0° |
| **ATEX certification** | - | - | - |

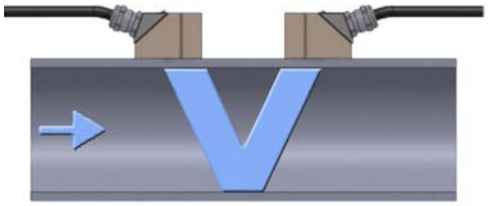
| Product name | SM 1684 | SM 1681 | SM 1666 |
|---|---|---|---|
| |  |  |  |
| **Distance between transducers** | 20 to 50 m | 50 to 100 m | 100 to 250 m |
| **Temperature range** | <60°C | <60°C | <60°C |
| **Connection** | Sealed through cable gland | | |
| **Ingress protection** | EN/IEC 60529 IP68 | EN/IEC 60529 IP68 | EN/IEC 60529 IP68 |
| **Transducer angle** | 0° | 0° | 0° |
| **ATEX certification** | - | - | - |

# Mounting

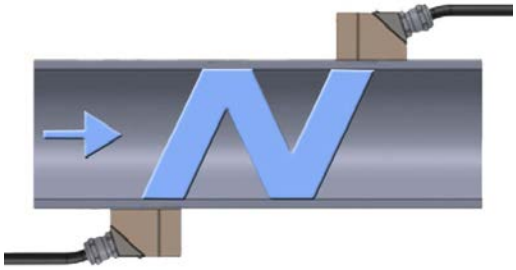
## External clamp on probes



«Direct» or «/»



« Reflex » or « V »



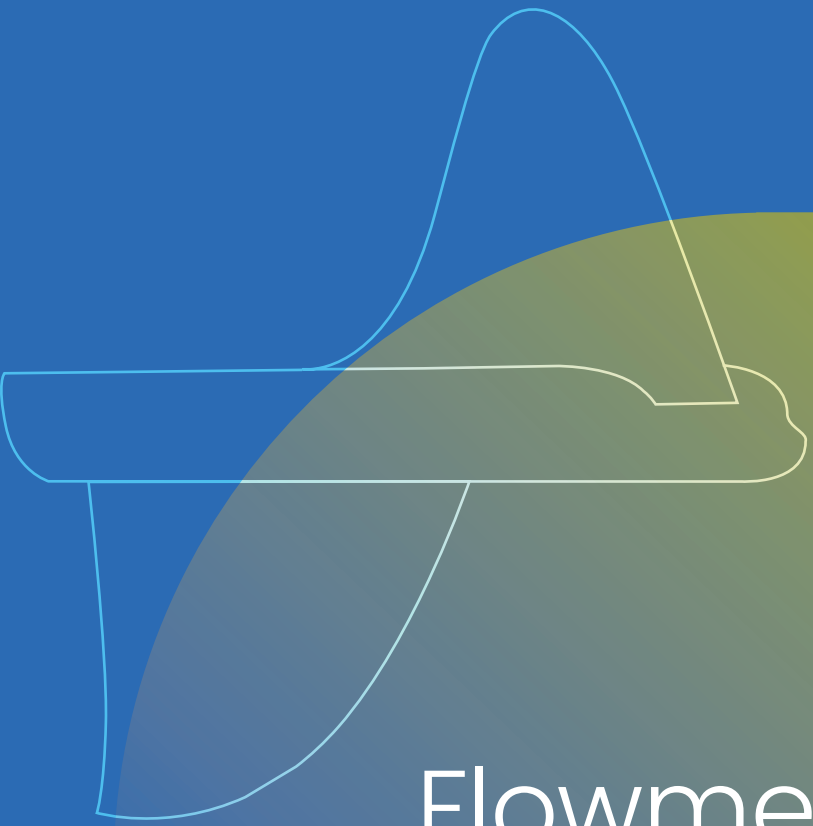
« N »

« W »

The V arrangement is the preferred choice for most applications. It allows limited impact of transverse velocities in flow calculation.

Increased path length permits limited impact of time resolution on loss of accuracy for lower flow-rate in the case of small pipes. Use must be limited because ultrasonic echo will become weaker and more distorted with risk of loss of accuracy.

In practice, multiple-reflection modes are reserved for pipes that are smooth and from from fouling or corrosion. Measurement probes should be positioned so as to avoid areas at risk of air bubbles and sediment.



# Flowmeters in defense segment

# Heliflu™-CTA - Helical turbine meters

## The compact helical metering solution for liquid hydrocarbon measurement

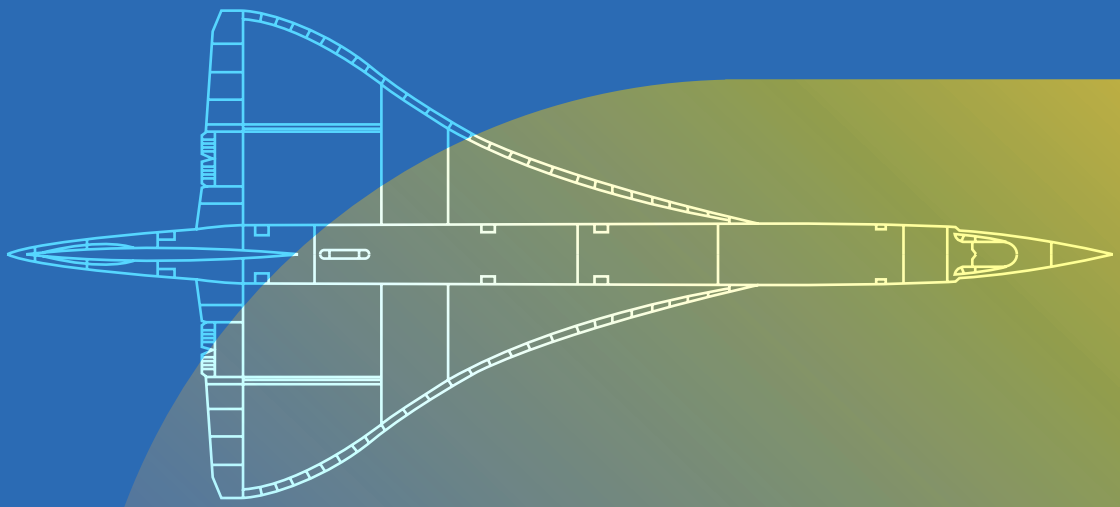
## Applications

- Tank Truck Loading & Unloading through flexible hoses
- Mobile Field Refueling System
- Military Operations

NATO CODE: 6680 14517 5246

NATO CODE: 6680 14528 8218 T


| CTA Meter Sizes & Flow Ranges | | | | | |
|---|---|---|---|---|---|
| **Body Dimensions** | **Model** | **Flow Range ($m^3/h$)** | | **Flow Range (GPM)** | |
| | | **Qmin** | **Qmax** | **Qmin** | **Qmax** |
| Length: 178 mm \| 7.0 in<br>Height: 94 mm \| 3.7 in | CTA 20 | 0.6 | 24 | 2.6 | 106 |
| Length: 253.5 mm \| 9.3 in<br>Height: 137 mm \| 5.4 in | CTA 100 | 3 | 100 | 13.2 | 440 |
| **Environment** | | | | | |
| **Ambient temperature range** | - 40 to + 60 °C \| - 40 to + 140 °F | | | | |
| **Climatic protection** | IP66 | | | | |
| **Safety** | | | | | |
| **ATEX EEx ia IIB T4** | Compatible with installation in Zones 1 & 2 Group IIA & IIB | | | | |
| **Mechanical** | | | | | |
| **Meter MASS** | CTA 20: 1.6 kg \| 3.53 lbs<br>CTA 100: 2.5 kg \| 11.46 lbs Aluminum | | | | |
| **Pressure** | 16 bar \| 232 psi (maximum) | | | | |
| **Connections** | CTA 20: Upstream 11/4" Female BSP \| Downstream 11/4" Male BSP<br>CTA 100: Upstream 21/2" Female BSP or 21/2" Female NPT<br>Downstream 21/2" Male BSP or 21/2" Male NPT | | | | |
| **Performance** | | | | | |
| **Accuracy (direct/reverse)** | CTA 20: ± 1 % to 10 cSt \| ± 2 % to 25 cSt<br>CTA 100: ± 0.5 % to 10 cSt \| ± 1 % to 25 cSt | | | | |
| **Turndown ratio** | 10:1 | | | | |
| **Repeatability** | <0.04% | | | | |
| **Viscosity range** | 1 to 25 cSt | | | | |
| **Electrical** | | | | | |
| **Functionalities** | Curve compensation<br>Unit Options ( L \| $m^3$ \| US Gallon \| Barrel \| feet3 ) per time @ factory setting<br>Low battery detection | | | | |



# Aerospace flowmeters

# Market served

## Fuel Consumption

An accurate fuel consumption measurement enables operators to safely extend their range or increase their payload.

## Air to air refueling

In order to optimally fulfill missions, military planners need to know the accurate quantity of fuel transferred from one aircraft to another.

## Avionics / Fuel cells / Batteries cooling

Embedded electronics, but also power generation for electrical engines, generate significant heat. Faure Herman monitors the coolant flow helping optimize the system performance.

## Engine regulation

Faure Herman flowmeters are used for the precise measurement of jet fuel injection for power control on aircraft engines.

# Services

## Engineering

Our engineering teams is able to propose customized solutions based on your specifications.

## FH Lab

Calibration and/or validation of third party flowmeters (non-Faure Herman).

- SAF (Sustainable Aviation Fuel)
- Other fluids with multiple viscosities (i.e.: Coolant)

## MRO

We manage our own repair station and are able to perform all MRO tasks on Faure Herman flowmeters.

# Capabilities

## Flowmeter Technology

- Designed for maximum mean time before failure (MTBF)
- DO-160 or MIL-STD-810/461/464 compliant

**Benefits:**

- ±0.5% or even better accuracy
- Fast response

## References

- Over 55,000 flowmeters installed
- More than 200 models available
- Over 50 programs spread across the world
- Installed in aircraft, helicopters and UAV, either in airframe or engine bay

**Fuel consumption**

**Engine regulation**

**Avionics cooling**

**Air-to-Air refueling**


# FH Lab: our calibration services

# Liquid flowmeter calibration under actual operating conditions with real world fluids

## Make your measurement “beyond all doubt”

Measuring at real conditions is far from easy but calibrating using surrogates (like water or similar) can lead to significant errors in calibration and the corresponding loss of profits.

To achieve this goal, flowmeters for mass and/or volume can be calibrated at real operating conditions with actual fluids (i.e.: gasoline, jet fuel, ...) at the FH Lab calibration and test facility.

### Type of flowmeters that can be calibrated

Turbine (flat blade and helical), coriolis, ultrasonic (single, multi-path and clamp-on), positive displacement (PD) and most other technologies.

### Witness the calibration

Available upon request.

### Availability

FH Lab operates around the clock without any temperature regulation restriction thanks to our temperature controlled flow loop.

- Time slots can be made available upon short notice.
- Please contact us for pricing, availablility or special requests.

### Calibration Certificate

Worldwide recognized calibration results through the ILAC/MRA. (Mutual Recognition Agreements)

- Traceability fully established to International Standards.
- Independent Calibration Laboratory accredited by COFRAC/ILAC (ISO 17025).
- Scope available on: www.cofrac.fr/en

### Available fluids

Same day multiple fluid/viscosity calibrations available.

- Water, gasoline, mineral oils, fuel oils, diesel, jet-fuel
- SAF (Sustainable Aviation Fuel)

### Capability

Calibration benches uncertainty meet the most stringent requirements

- Fluid viscosities [ 0,5 - 1000 cSt (*) ]
- Flowrates [ 20 l/h - 4500 $m^3/h$ ]
- Temperature range [10°C - 60°C]
- Nominal line sizes [ 1/2” - 20” ]
- Uncertainties [0,05% prover] & [0,065% master meter]

* Higher viscosities on request

# Services

## New installation design and commissioning

Faure Herman can assist you in the specification, design, sizing and operation of your future metering systems. Our professional services experts are skilled in:

- General architecture (P&ID) and specifications according to targeted operations/performances
- Instrumentation and accessory specification (e.g. prover sizing)
- System integrity assessment
- Measurements traceability – Measurement uncertainty calculations
- Analysis of measurement uncertainties
- Assistance to Startup & Commissioning

## Audit and Expertise of your existing installations

Faure Herman offers audit/inspection on your existing installations.
These services can include:

- Audit on customer installation, regulation and/or standards basis
- Pre-certification audit
- Troubleshooting and performance improvement

We have experts who can visit your installations anywhere in the world (geopolitical situation permitting) or can assist you remotely through a planned video session to help you analyze your issue or project.

## Advanced Training

Faure Herman regularly offers on-demand training at our premises, through videoconferencing or at customer sites in the following areas:

- Practice of International Regulations, Norms, Standards and Recommendations in the field of liquid and gas measurement
- Static and dynamic measurements on fluids
- Operation of products and metering systems
- Etc

## Rental

Quick response to your request:

- Check that your application is compatible with our equipment
- Daily rental available
- Delivery the day before the first rental day
- Technical assistance by telephone


## Repairs & upgrades

To make Faure Herman products last longer with constant accuracy, our experts place special effort on assisting you with repair or upgrading your meters.

Faure Herman offers full assistance (troubleshooting, upgrade or repair) on Faure Herman products, either in the factory or on site. Our team of after-sale specialists welcome the opportunity to assist you with:

- Complex diagnostic guidance through telephone, email, videoconferencing or visiting your site if necessary
- Replacement of worn parts (e.g. bearings)
- Metrologic performance improvement (rotor tuning)
- Technical upgrade or reconfiguration of the device to new process conditions keeping in mind that quick turnaround time and quality of work are key requirements to meet your operational challenges.

## Aerospace MRO

Faure Herman holds stocks of all components to perform top class servicing on flowmeters with its own qualified staff.

As per Aerospace products, we manage our own repair station and are able to perform all MRO tasks on Faure Herman P/N, keeping in mind that short Shop Processing Time and quality of work are key requirements to meet our customers' expectations.

## Spare Parts

Faure Herman equipment is engineered for high reliability and performance.
To assure the best performance of your meter, regular maintenance is recommended.

Faure Herman offers you a wide range of bearing kits, tools and other spare parts in order to keep your business running.

Consider ordering your spare parts today! It will help reduce your downtime, maintenance time and total cost of ownership.

# Quality System Certifications

Accréditations • n° 2-1210
Portée disponible sur www.cofrac.fr

ISO 17025

## Energy/Water markets

ISO 9001
EN 9100
BUREAU VERITAS Certification

NOTIFICATION D'ASSURANCE QUALITE DE PRODUCTION
PRODUCTION QUALITY ASSURANCE NOTIFICATION

IECEx Quality Assessment Report Summary
INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

DESP 2014/68/UE Module D1
apave

## Aerospace/Defense markets

EN 9100:2018
BUREAU VERITAS Certification

dgac

EASA
European Aviation Safety Agency

# Quality Product Certifications

## Energy/Water markets

Segurança
INMETRO

INMETRO

ONML
Algérie

NMIM
NATIONAL METROLOGY INSTITUTE OF MALAYSIA

# Customers Quality Approvals

## Energy/Water markets

Aramco Overseas Company B.V.

Kuwait Oil Company
A Subsidiary of Kuwait Petroleum Corporation

TotalEnergies

## Aerospace/Defense makets

BAE SYSTEMS

Faure Herman

Counting every drop

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06/2024 - v.0