

UZS-1M ULTRASONIC FLOW METER

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**METERING OF** HIGH-TEMPERATURE, HIGH-VISCOSITY LIQUIDS





In the Register of Industrial produced on the territory of the Russian Federation in accordance with the Decree of the Russian Government 719 On the recognition of the production of in Russia». Software KTM Smart Stream of our own development is included in the register of Russian software (Note in the registry 11574 from 24.09.2021). Accreditation of the manufacturer of control and measuring devices and automation from the Federal Service for Technical and Export Control on the ability to use software and hardware on Key Information Infrastructures fuel and energy enterprises.



### ULTRASONIC LIQUID FLOW METER UZS-1M



UZS-1M

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#### PURPOSE:

Liquid flow metering.

#### **ADVANTAGES**:

- Lubricator version for installation on the pipeline without stopping the flow (where you need metering, but you cannot «stop» flow in the pipe);
- Working pressure (Excessive) up to 50 MPa (unibody version);
- Metering of LNG and other liquefied gases up to -196°C;
- Metering of high-temperature liquids up to +300°C/450°C;
- Metering of high viscous liquids (fuel oil, tar), steam-jacketed version;
- Pipe line size from 8mm to 3000 mm;
- Measurement accuracy 0.28%/ 0.5%/ 1%;
- Changes of geometric dimensions changes of the housing, caused by temperature and pressure;
- Splitted calculation for Supplier and Consumer by two independent meters in one housing;
- IBC 4 years, service life 15 years.





# UZS-1M / 4 USZ−1M<sup>™</sup> MOUNTING KIT



#### PURPOSE:

- Flow meter can be inserted into existing pipeline without • stopping the process;
- No need to use flanged spool-piece type flow meter; •
- Possibility to replace sensor under the pressure. •



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### SOLID-MACHINED VERSION





- In case of 50 MPa pressure, solid-machined version is applied for reliable and safe operation at facilities;
- Precise internal surface and positioning of sensors for highquality volume measurements of liquid flow;
- Possibility to manufacture housing up to DN1400 inclusive;
- Solid-machined stainless steel version.

# LNG AND OTHER LIQUEFIED GASES MEASUREMENTS



Aggressive and cryogenic fluids require the usage of stainless steel versions, for safe operation throughout the entire service life, according to the GOST;

It is possible to manufacture using special stainless steel: monel\*, hastelloy\*\* and others upon request of the customer;

Metering of LNG and other cryogenic liquid flow down to -196°C.

\* is a trademark owned by Special Metals Corporation
\*\* is a trademark owned by Haynes International



## HIGH-TEMPERATURE VERSION





#### HIGH-TEMPERATURE LIQUID FLOW METERING

Over-heated water drainage in TPP and NPP circuts at a temperature of +280°C and a pressure of 8 MPa;

Transport of cooling oils (coolants) at temperatures +300°C;

• Heat transfer fluids up to +450°C.

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### STEAM JACKET VERSION



#### PURPOSE AND ADVANTAGES

- Metering of high viscous fluids bitumen, asphalt, fuel oil, etc.;
- Metering of liquids capable of polymerization with stopping of the transport process, to eliminate the need for dismantling and cleaning;
- No equipment breakdown no moving parts.



#### CHARACTERISTICS:

- Manufacture for ressures from 1.6 MPa to 25 MPa;
- Design for high viscosity flow up to 1000 kSt with heating jacket;
- Ambient temperature range from -40...+ 300°C;
- Accuracy 1% in volume metering;
- Reduced maintenance costs for high-viscosity media lines, reduced start-up time after downtime.





# ACCURACY OF VOLUME FLOW METERING UNDER OPERATING CONDITIONS





#### **VERIFICATION ERROR**

- 1-beam versions with a relative accuracy of 1%;
- 2-beam versions with a relative accuracy of 0.5%;
- 3-beam versions for high precision measurements with a relative accuracy of 0.28%;
- 4-beam versions for high-precision measurements with a relative accuracy of 0.15% (serial production late 2023).

# HOUSING GEOMETRY COMPENSATION CAUSED BY THE TEMPERATURE AND PRESSURE





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When the temperature of the flow changes by 200 °C, there is a change of the meter housing geometric dimensions, what is resulting in a discrepancy between the actual and the calculated flow rate. Without the compensation function, this change results in lower accuracy. The compensation corrects measured data in the flow meter and ensures a stable accuracy of measurements.



## QUADRO VERSION





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- Complete data duplication, by two independent meters in one housing, for divided calculation for Supplier and Consumer;
- Reduced installation costs for measuring lines. Due to the usage of «two» meters at one place, it is possible to reduce straight line sections, to reduce costs by buying one housing instead of two, which is especially important for large diameters.



# UZS-1M / 12 / PETROLEUM METERING ON MAIN PIPELINES



## **CORIOLIS FLOW METERS:**

- Maintenance of a large fleet of measuring instruments -inconvenience in maintenance of the installation;
- Large dimensions;
- High cost.

Coriolis flow meter DN100

Main flow meter UZS-1M

DN500 pipeline

ULTRASONIC FLOW METERS:

- 100% throughput capacity;
- No pressure losses;
- Costs reduction for metering skids equipment.

Spare flow meter UZS-1M



# THANK YOU FOR YOUR ATTENTION!

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