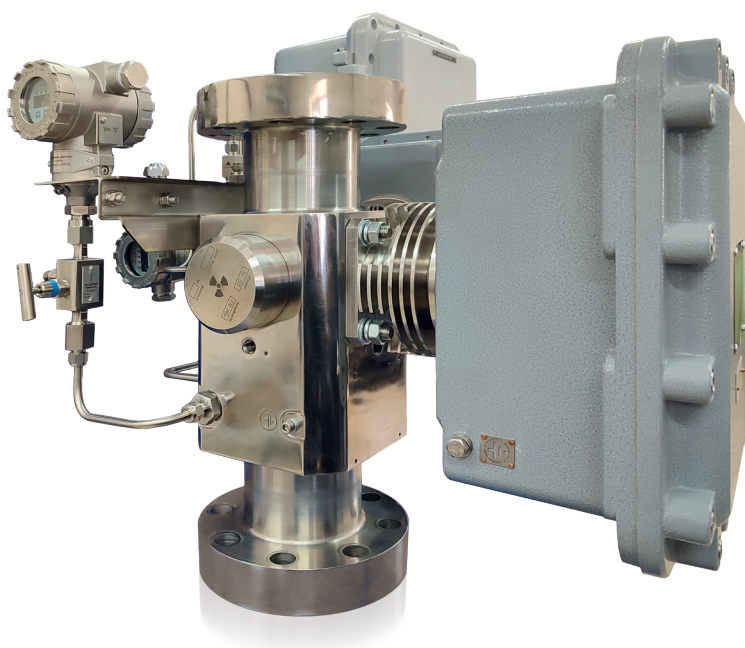




ROSATOM
OIL&GAS TECH

MULTIPHASE FLOW METER RWG-1

This multiphase flow meter is designed to continuously and automatically measure mass flow and mass of downhole fluid, oil and water, volume flow and volume of associated petroleum gas contained in oil/gas or gas/condensate mixture without multiphase flow pre-separation.



- Full import independence; reliable local manufacturer
- Two-beam gamma-ray spectrometer; high flow rate measurement accuracy of individual phases and multiphase flow fractional composition
- Continuous measurement and data provision, real-time data analysis
- Autonomous, safe, separate accounting of well products
- Possibility to implement measuring system of various configurations depending on technical requirements (sampling device, substance composition analyzer, etc.)
- Unique two-stage single-phase sampling device
- No mechanical moving parts, no high-pressure vessels
- Provision of operational information to optimize operation process modes of individual wells and of the field as a whole
- Efficiency of installation and commissioning
- Possibility of self-maintenance
- Reduced operating costs (minimized costs for spare parts, equipment maintenance and repair)

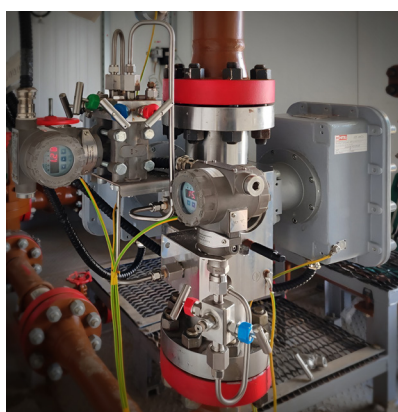
Technical specifications

Technical parameters	Values
Gas volume fraction (GVF)	0–100 %
Water-liquid ratio (WLR)	0–100 %
Operating pressure (maximum)	up to 16 MPa
Working environment temperature	–40 to +100 °C
Ambient temperature	–50 to +50 °C
Flow modes	any
CO ₂ content	up to 6 % mole
H ₂ S content	None
Basic structural material versions, steel grade	12X18H10T
Possibility of use at hazardous areas	B-1A, B-1G
Dust and moisture protection	not lower than IP65
Radiation hazard category of ionizing radiation source according to NP-067-16	5

Measuring station based on RWG-1 multiphase flow meter

To optimize well flow rate measuring process, a measuring station based on RWG-1 multiphase flow meter was developed. It is designed to measure borehole fluid multiphase flow in real time without phase pre-separation by alternately connecting a group of producing wells to the station and then measuring flow rates.

The measuring station consists of process and hardware units.



1 Process unit

It is designed to accommodate and ensure normal operation conditions for the station measuring instruments and process equipment. The unit can be configured as a thermally insulated room containing the multiphase flow meter, all pipelines required to connect the station inputs to the flow meter input and the flow meter output line to the output collector, shut-off and control valves; control and measuring instruments, fire alarm and gas pollution sensors, other process equipment depending on the customer's requirements.



2 Hardware unit

The unit is configured as a thermally insulated room containing a data collection and processing system (DCPS), a power cabinet and a control cabinet (if required), secondary fire alarm devices and gas analyzers. Depending on the requirements, it is possible to install a Wi-fi adapter.



The DCPS is a computing unit for fast execution of all algorithms to calculate flow parameters. It provides communication with all internal measuring devices, interacts with the software to maintain the flow meter and provides information transfer to the customer's control system level.