



The oil quality measurement and control system

The oil quality measurement and control system (QMCS) is designed for automatic operational measurement of the mass (volume) of oil; determination of its qualitative characteristics (density, moisture content, pressure, temperature); oil sampling; transfer of information to the operator's workstation.

QMCS is a part of oil treatment units (OTU), pumping stations or other surface installations of oil and gas producing enterprises



Part of the equipment

The QMCS includes the following equipment:

- node of input filters;
- unit for measuring the amount of oil with flow meters (volume or mass);
- at least two measuring lines (one is a backup and verification line, the second is a working line, or three separate lines);
- block of quality control and sampling;
- drainage system from pipelines;
- block box or base frame;
- connection points for pipe piston calibration units (TP9) and devices for determining the residual gas content (RGC)
- control and measuring devices.

Block-boxes are equipped with heating, ventilation, gas control and fire alarm sensors.

Upon separate request, the QMCS is completed with a specialized device for processing data from the primary transducers of flow, humidity, temperature, and pressure installed in the QMCS.

Below is the nomenclature of the QMCS.

Designation

QMCS is available in two versions: blocks of oil metering units of open design - version 1 and placed in block boxes - version 2.

Order entry example:

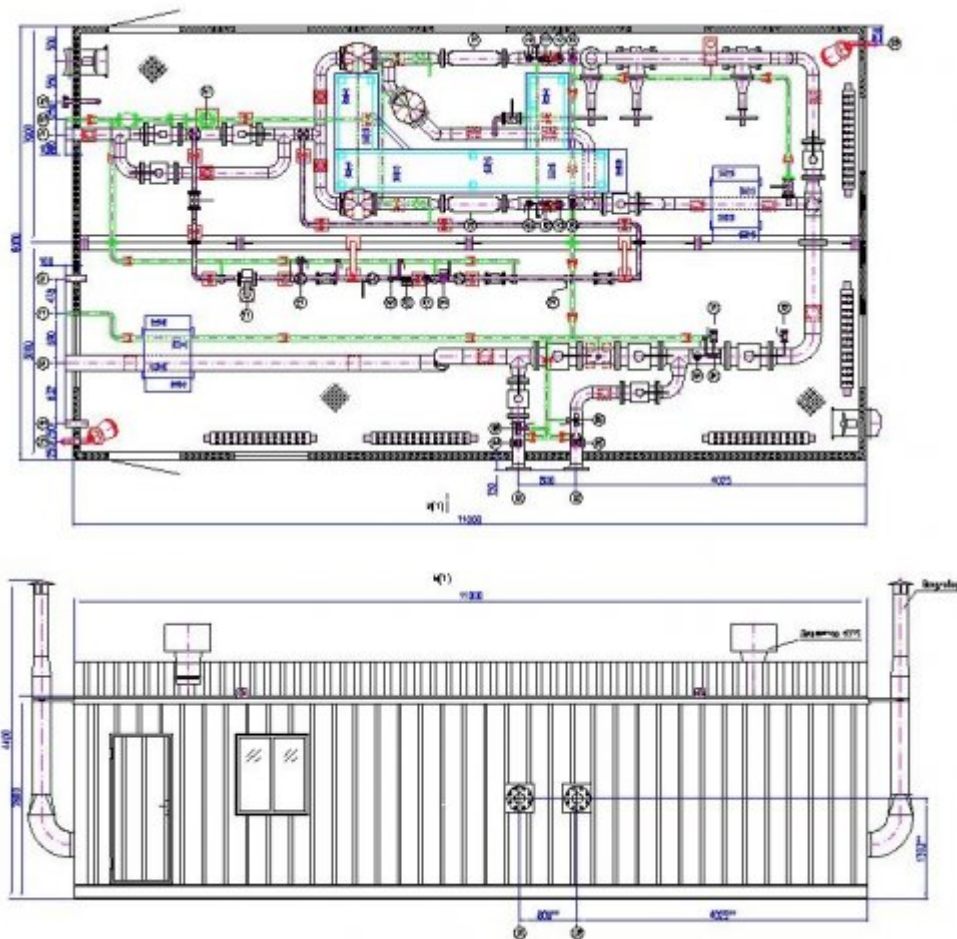
Oil quality measurement and control system QMCS-500-HL1, where:

500 – throughput, t/h;
HL1 - climatic version.

Technical details	
Working environment	oil after separation at the booster pumping station, oil treatment unit, preliminary water discharge unit

Working mode	uninterrupted	
Design pressure, MPa	4,0; 6,3	
Throughput, t/h (m3/h) from 10 to 1260		
Fluid temperature, °C from +5 to +90		
Viscosity of the fluid, cSt, no more than 100		
Fluid density, kg/m3 780-950		
Limits of permissible relative measurement error: • Masses of crude oil $\pm 2,5\%$	$\pm 2,5 \%$	
• Masses of crude oil excluding water, with water content in crude oil in volume fractions:	up to 70%	$\pm 6 \%$
•	from 70% to 95%	$\pm 15\%$
life cycle, not less, years	20	

Oil quality measurement and control system QMCS-3000-2-HL1 with a capacity of 150 t/h



Explication fittings

Name	Purpose	PN, MPa	Quantity
A1	Oil input	6,3	1
B1	Oil output	6,3	1
V1	Unaccounted oil drainage	6,3	1
G1	Accounting oil drainage	6,3	1

D1	Drainage from the block floor	1,6	1
Z1,2	Foam mortar for extinguishing	6,3	2
F1	Entering an EA action	-	1
I1	Cable entry for instrumentation and control	-	1
C1,2	To the mobile verification unit "PUMA"	6,3	2

The range of manufactured QMCS

Options	Dimensions				
	QMCS - 500	QMCS - 1000	QMCS - 3000	QMCS - 5000	QMCS -10000
Throughput, t/h	8 - 40	24 - 120	36 - 180	60 - 300	120 - 800
Nominal diameter of the measuring line, mm	40	65	80	100	150
Design pressure, MPa	4.0-10.0				
Fluid temperature, oC	+5+50				
Viscosity of the fluid, cSt no more	100				
Density, kg/m3	780-950				
Water cut, % no more	90				
Working fluids	oil, water				

