



Financial & Industrial Company  
**KOSMOS·NEFT·GAS**







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**KOSMOS-NEFT-GAS**

## **Financial & Industrial Company KOSMOS-NEFT-GAS**

**Date of foundation: 20.10.1994**

**Total number of employees: 1300 per.**

**Production area: 150 000 m<sup>2</sup>**

**Number of patents and inventions: > 150 pcs.**

**Licenses, certificates, accreditations: >100 pcs.**

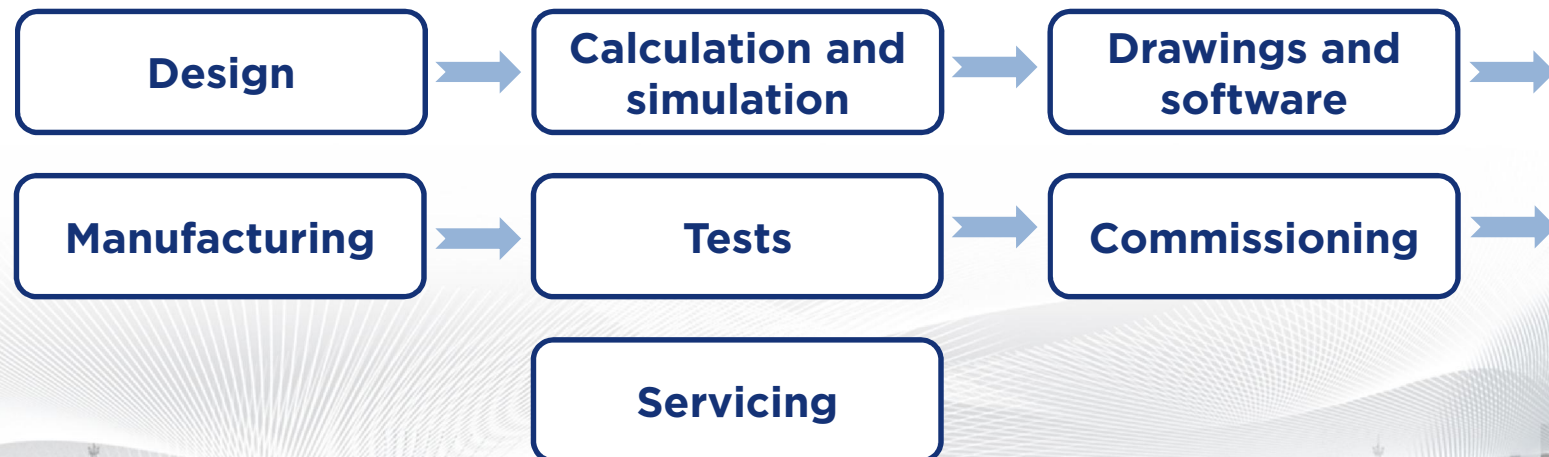






## Organogram

- **KNG Hydrocarbon Processing Project**
- **Financial & Industrial Company KOSMOS-NEFT-GAS:**
  - **Scientific and Engineering Centre**
  - **Automation division**
- **Production Complex**
- **KNG Service company**
- **KNG Energo**







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# KNG Hydrocarbon Processing Project

Design Institute

**Comprehensive engineering:**

- oil fields
- complex preparation of oil and gas
- petrochemical production
- gas and oil refineries
- liquefied natural gas production (LNG)
- liquefied petroleum gas (LPG) storages
- loading/unloading terminals
- petroleum depot
- multifunctional production facilities







## Reconstruction of the NGL processing complex







## Unstable condensate pumping station







## **Orenburg Gas Processing Plant**







## **And other projects**

**Ethylbenzene production**



**West Siberian Complex of Deep CONversion of Raw Hydrocarbons (UVS) into Polyolefins**



**Booster compressor station**



**LPG tank farm**







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## FIC KOSMOS-NEFT-GAS Scientific & Engineering Centre

### Basic Activity:

- skids and valve blocks
- pumping units
- skid with gas separators and heat exchangers
- gas separator unit
- wellhead control panel
- gas heaters
- burners and flares
- inhibitor injection units
- well automation skids
- autonomous power supply
- shut-off and control valves
- hydraulic devices







- **Skids and valve blocks**







- **Pumping units**







- **Skid with gas separators and plate heat exchangers**



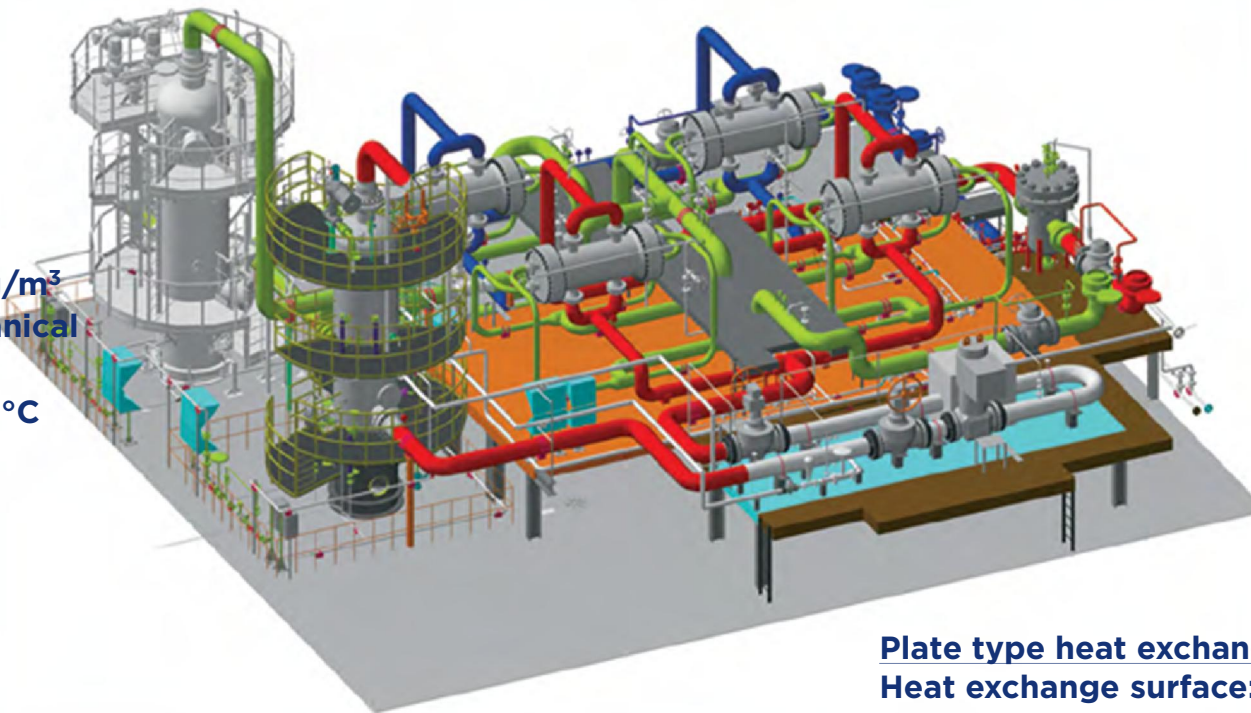




- **Skid with gas separators and plate heat exchangers**

Designed to clean natural gas from liquids and solids, it can be used in complex gas treatment units at gas condensate fields, as well as in oil and gas production and oil refining industries.

**Gas separators 20C-1**  
**Productivity: 490700 m<sup>3</sup>/h**  
**Pressure: 20 MPa**  
**Fluid concentration: 0,015 g/m<sup>3</sup>**  
**The concentration of mechanical impurities: 0,005 g/m<sup>3</sup>**  
**Temperature: - 60 °C ... +70°C**  
**Pressure loss: 0,019 MPa**

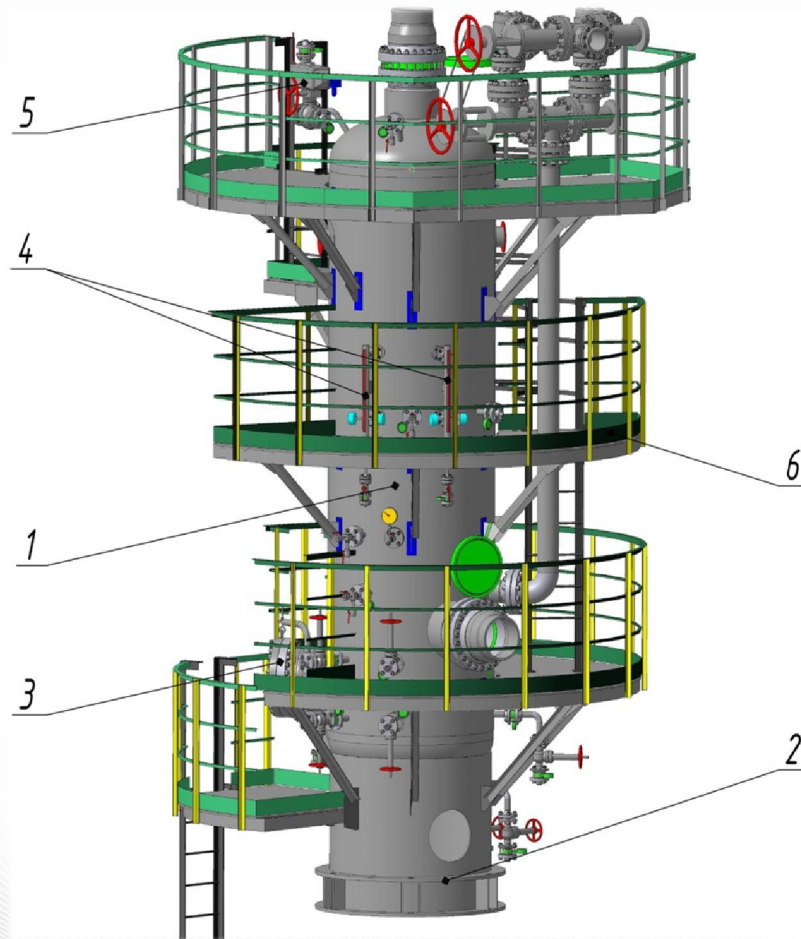


**Plate type heat exchangers**  
**Heat exchange surface: 270 m<sup>2</sup>**  
**Pressure: 20 MPa**  
**Pressure drop: 0,005 MPa**  
**Temperature: - 60 °C ... +100°C**





- **Gas separator unit (External elements)**



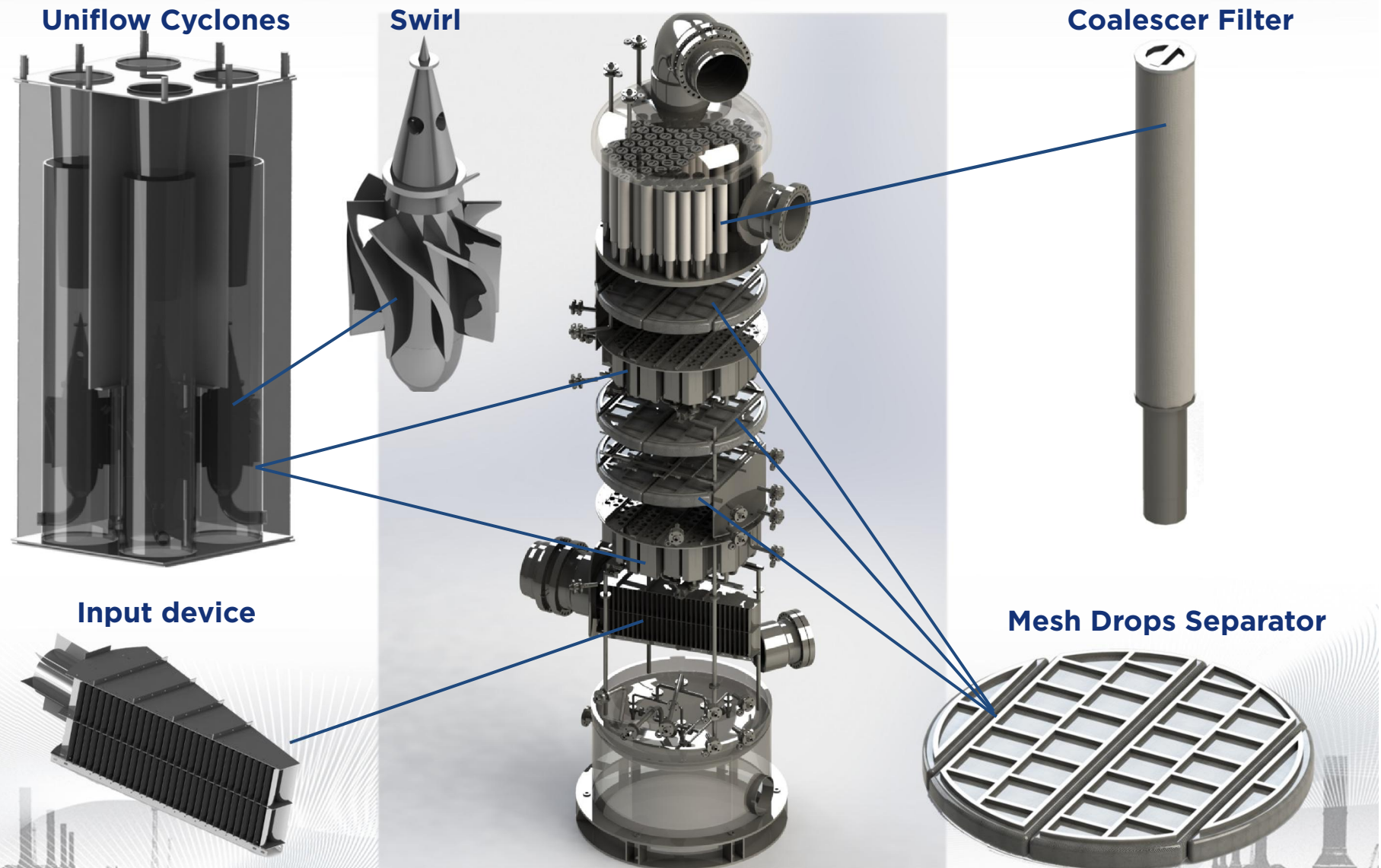
**Main elements:**

- 1- body**
- 2- support**
- 3- hatch**
- 4- level gauges**
- 5- safety valve**
- 6- service platforms**





- **Gas separator unit (Internal elements)**







**Technology for purification of oil-containing process water.  
Resistance to high content of paraffins, resins.**



**Regeneration 99,6%**

**Removal of petroleum products from up to 300 mg / l to 0.1-2 mg / l.  
Removal of mechanical suspension from up to 300 mg / l to 0.1-5 mg / l.**







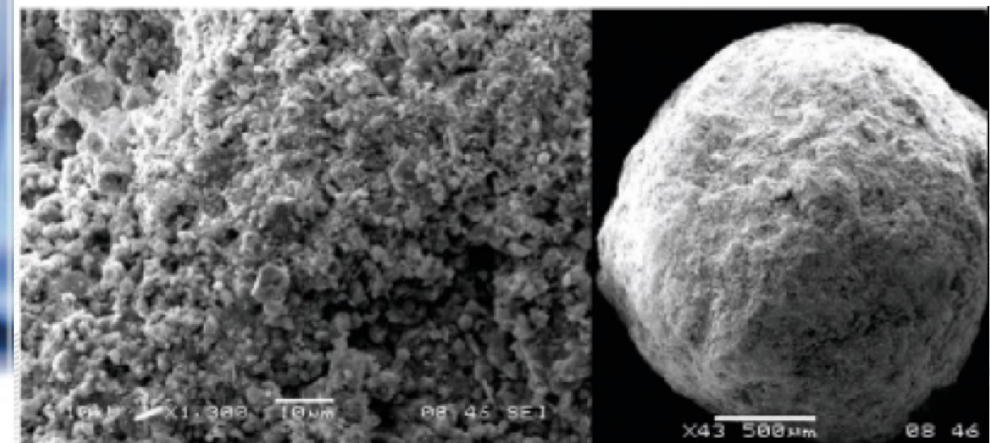
- **Pilot testing in Gazprom Dobycha Nadym (Russia)**

**Operational benefit:**

1. The existing filter system performance doubles ;
2. Water purification efficiency at the stage of pretreatment is up to 0,1 mg/l;
3. Operates effectively in conjunction with activated charcoal for the dissolved petrochemicals removing;
4. Improves a coagulant treatment;
5. Reduces the equipment maintenance frequency by 80%.

**Calculation of efficiency:**

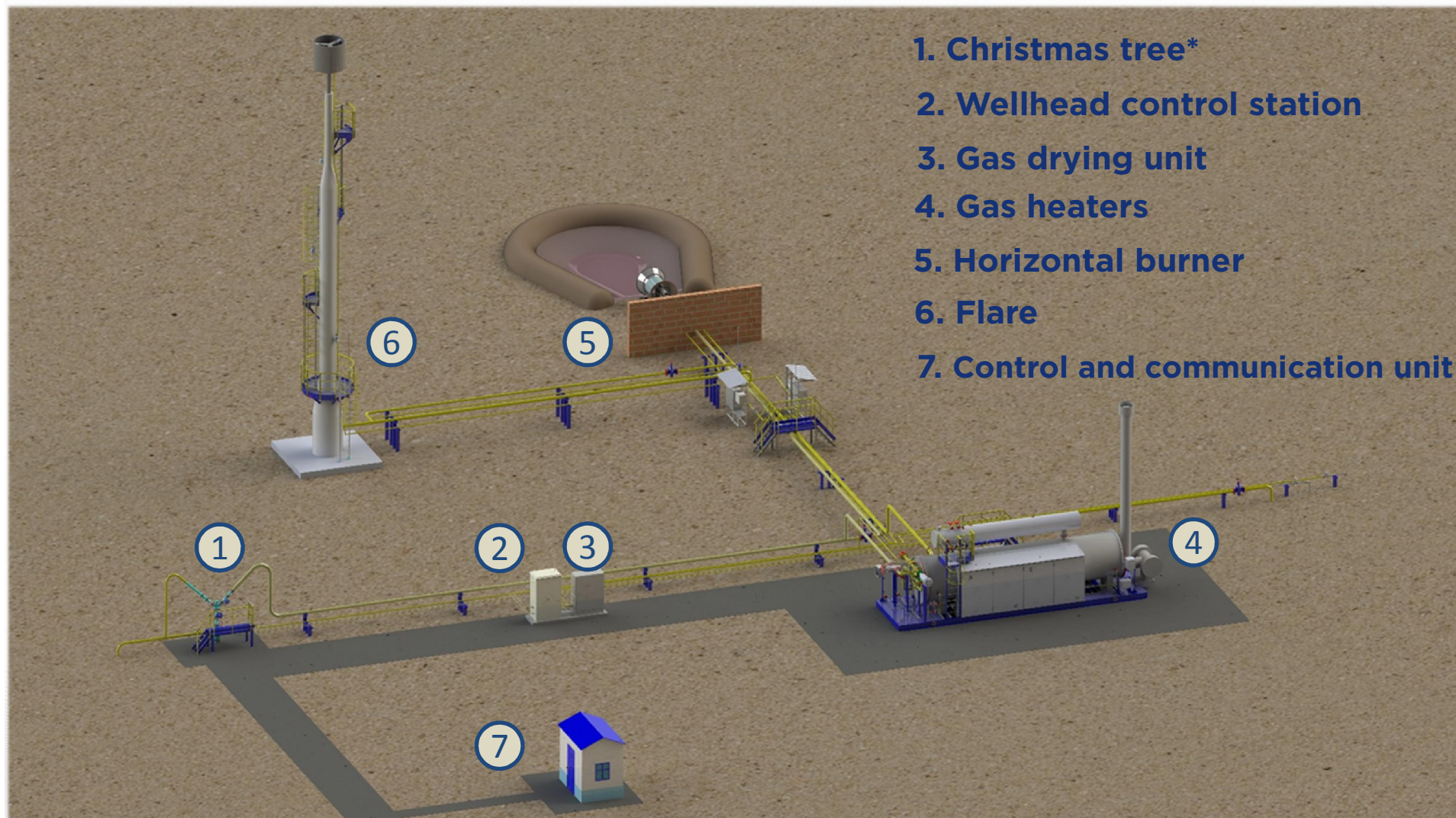
**KNG-FILTER** uploaded in a volume of 4 m<sup>3</sup> in one month purifies 32 400 m<sup>3</sup> of water.  
Flushing requires 84 m<sup>3</sup> of water.







- **Equipment for gas wells**

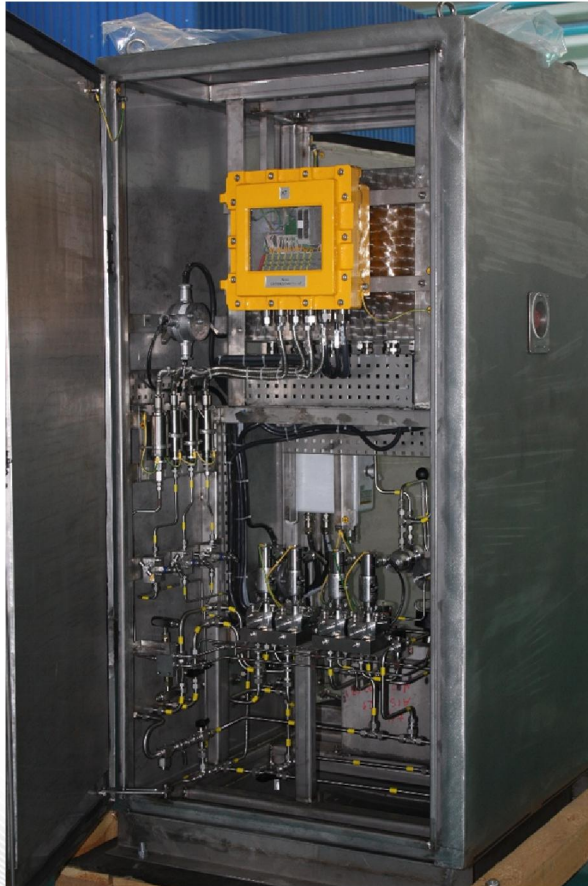


**Integrated solution for gas condensate field (30% H<sub>2</sub>S )**





- **Wellhead control panel**



- **Pneumatic and hydraulic signals**
- **Local control system**





- **Gas dehydration units**



**open**

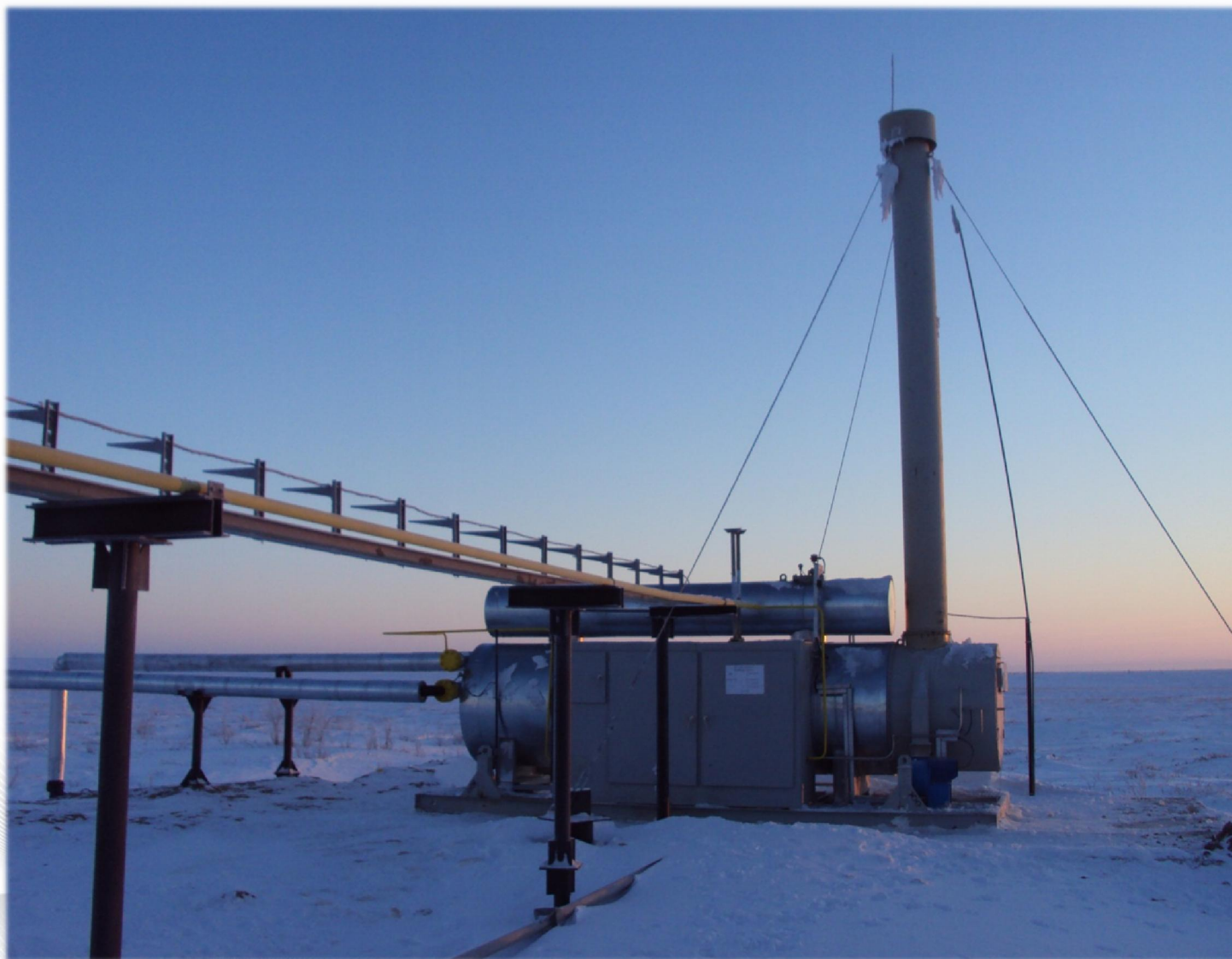


**enclosed**





- **Gas heaters PG350**







- **Burners and flares, over 35 models**



**Horizontal burners**  
For the combustion of  
reservoir mixture and waste  
gases during the flowline  
purging of gas well clusters.



**Flares**  
Smokeless burning without  
additional air supply

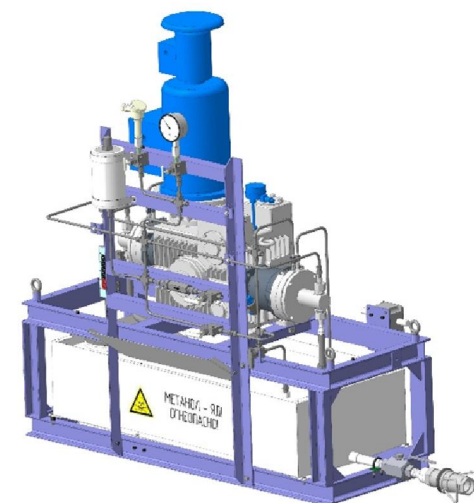


**Combined flare**  
HP/LP and gas exhaust with  
high content of hydrogen  
sulfide.





- **Inhibitor injection units**



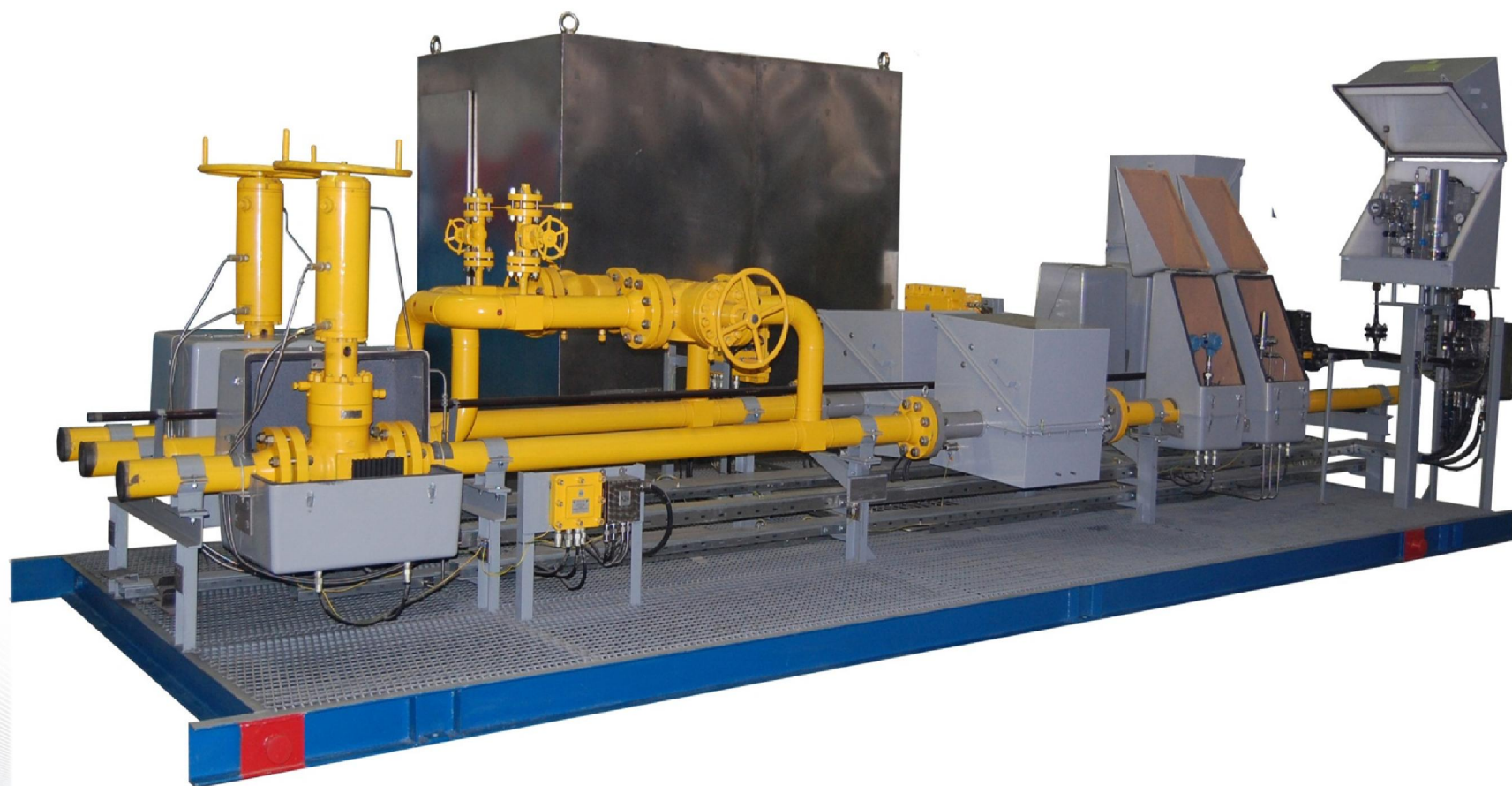
**Temryuk-Akhtarsk area in the Azov Sea**

<b>Flow control range</b>	<b>70 - 130 l/h</b>
<b>Working pressure</b>	<b>63 MPa</b>
<b>Tank capacity</b>	<b>4 m<sup>3</sup></b>





- **Well automation skids**

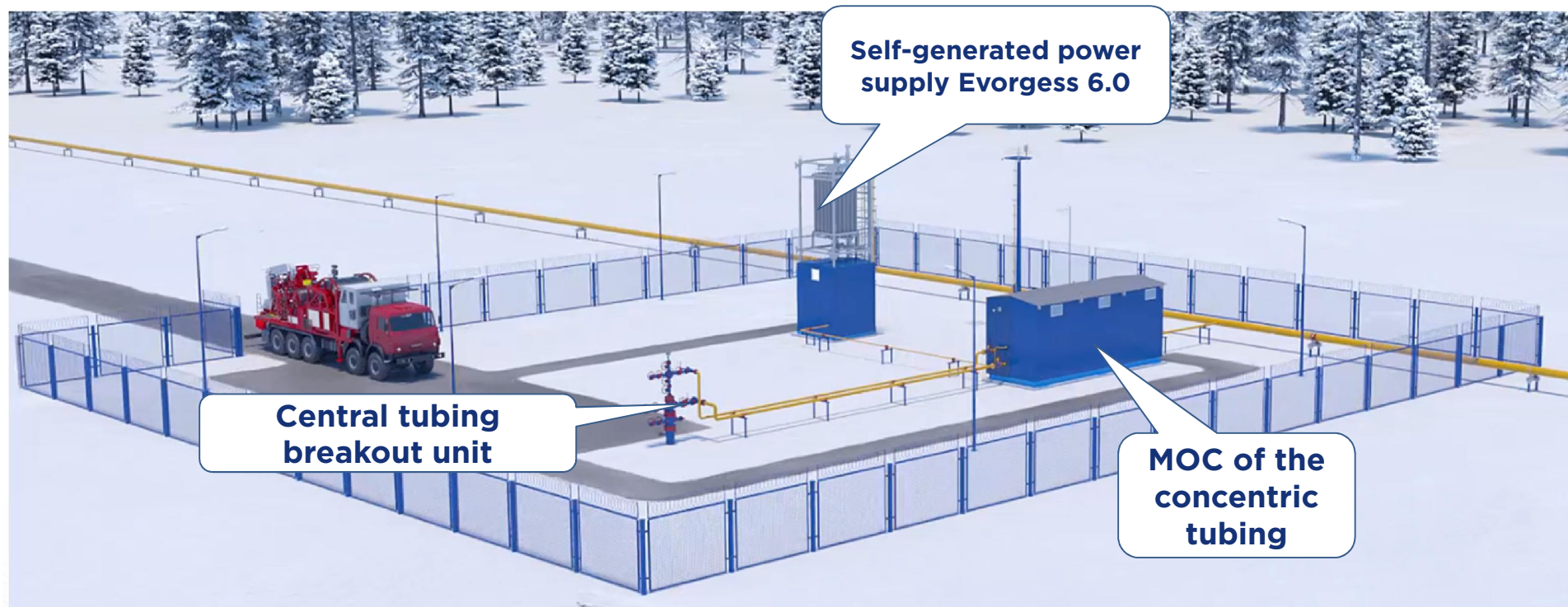


**MOC-2**





- **Well automation skids for concentric tubing wells**  
**Extends well life up to 7 years**



**MOC-2**





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- **Well automation skid equipped with the concentric tubings**







- **Shut-off and control valves, > 80 models**



**Hydraulic shut-off valve**

**Dn = 80 mm**  
**P = 70 MPa**  
**Automatic overlap in case of pressure drop/rise**



**Direct flow regulating valve**

**Dn = 50-400 mm**  
**P = 10-70 MPa**  
**Actuating mechanism:**  
-hydraulic  
-pneumatic  
-electric



**Angular choke valve**

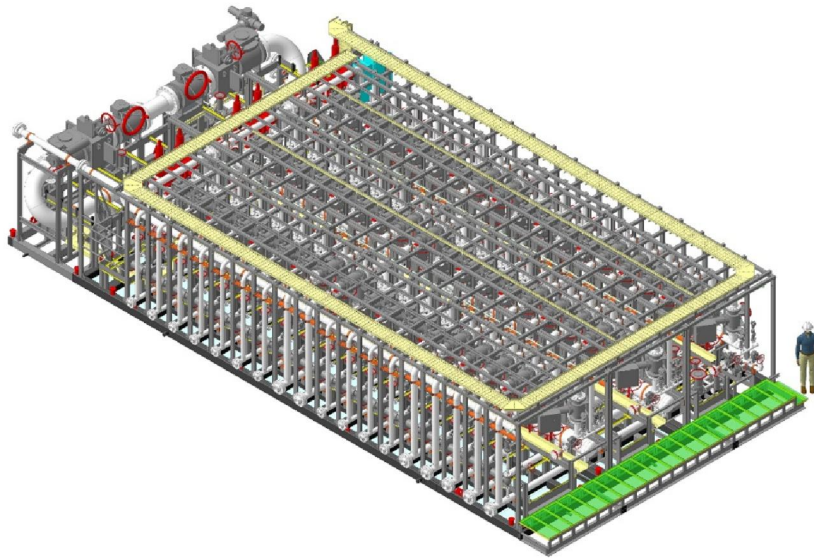
**Dn = 50-400 mm**  
**P = 10-70 MPa**  
**Actuator:**  
-hydraulic  
-pneumatic  
-electric





## Manifold blocks for the platforms of offshore oil, gas and condensate fields

In 2020 a manifold block was developed and manufactured for the LUKOIL  
“Offshore oil, gas and condensate Grayfer Field”



1. Climatic modification-  
OM1 as per GOST 15150  
Standard
2. Seismic activity - 8 balls  
according to the MSK-64  
scale
3. DN - 400 mm

1. Production Manifold Block
2. Gaslift Manifold Block
3. Water Injection Manifold Block







- **SUFA Wellhead control panel and Hydraulic power units (HPU) , > 30 models**



**Monoblock modification  
for the Far North  
application**

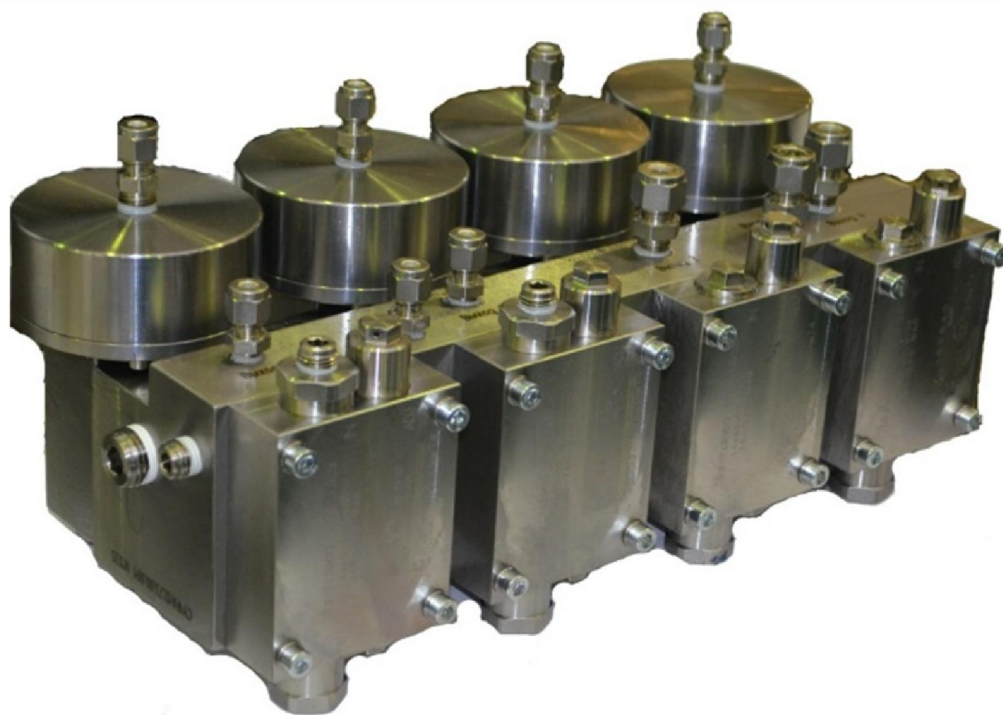


**Multiblock modification for off-shore platforms**



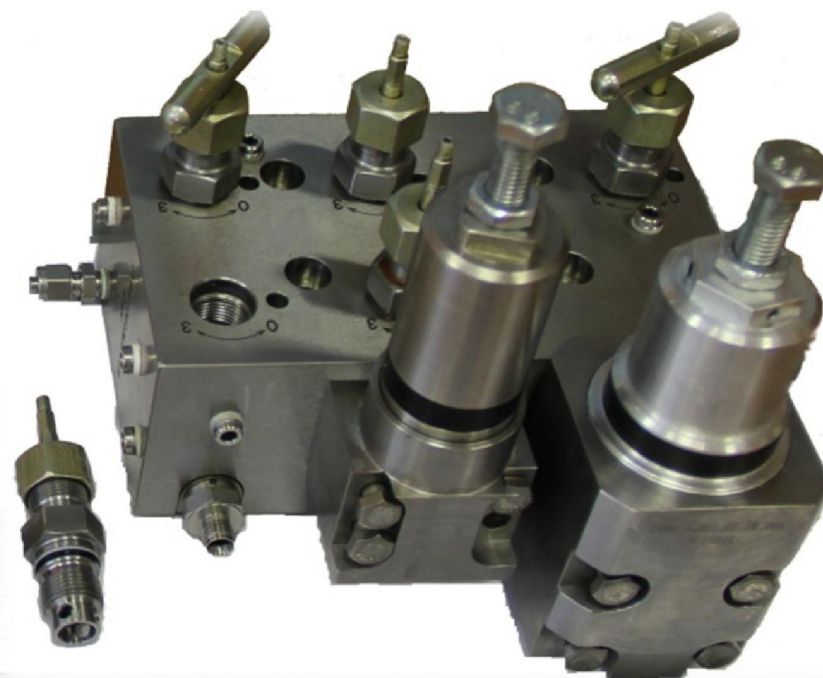


- **Hydraulic devices**



**HP manifold**

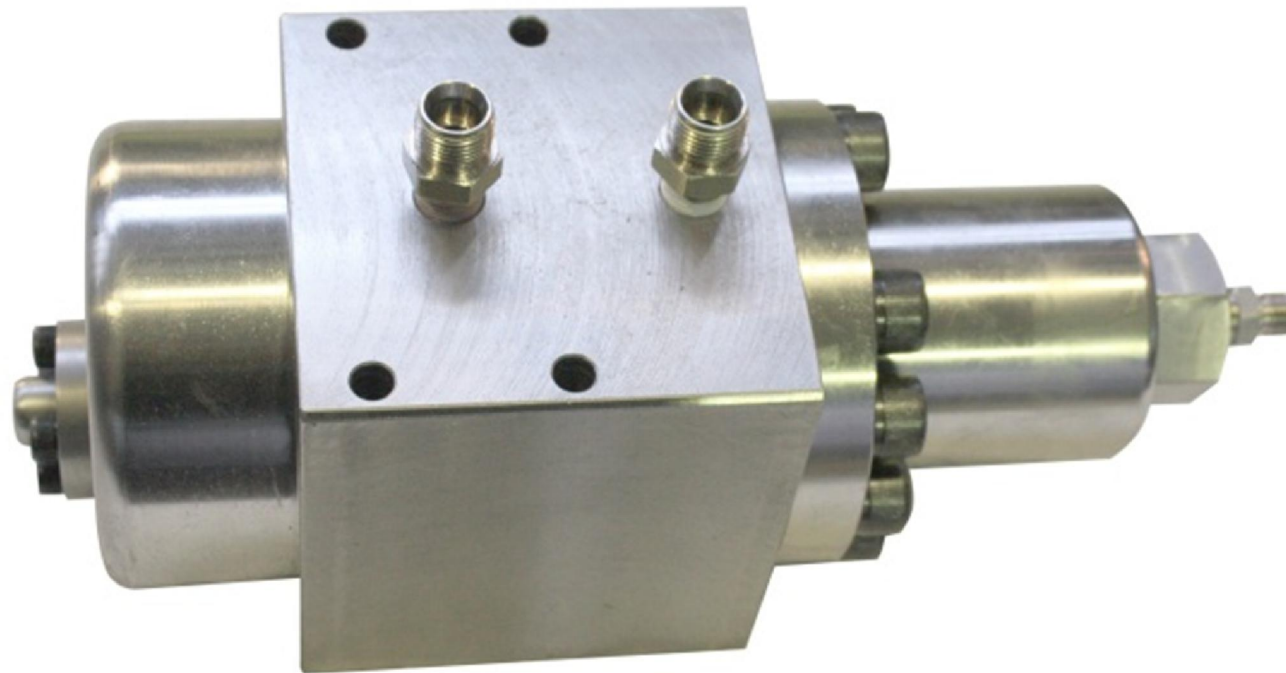
**Pressure control unit**







- **Hydraulic components**

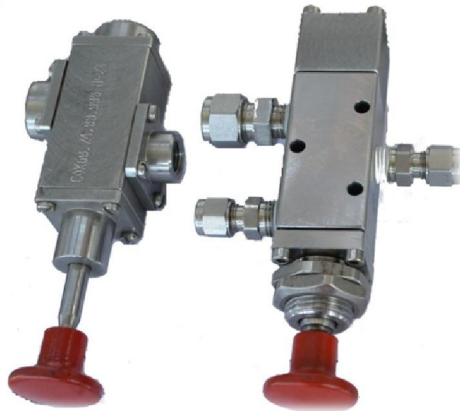


**Hydraulic pressure intensifier 4:1 (7:1)**  
**increases pressure 4 (7) times**

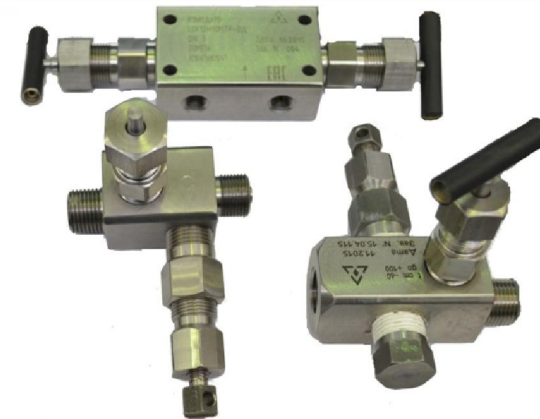




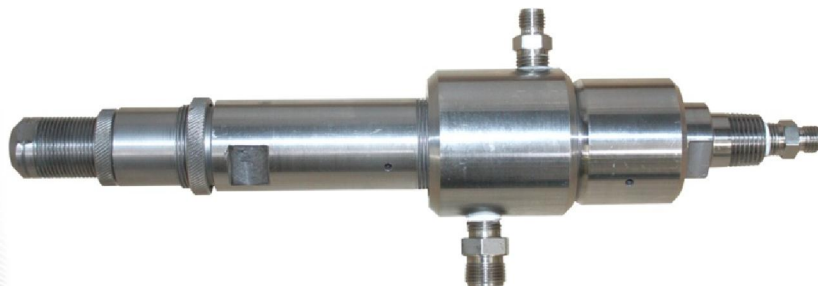
- **Hydraulic components**



**Hydraulic pilots**



**Valve manifolds**



**HP/LP Control Valves**



**Needle valves**



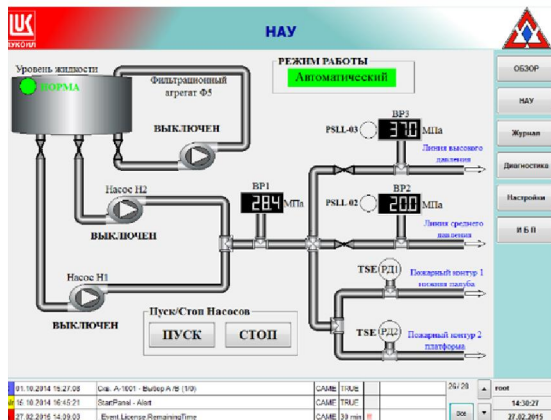
# FIC KOSMOS-NEFT-GAS Automation Division



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## Basic Activity:

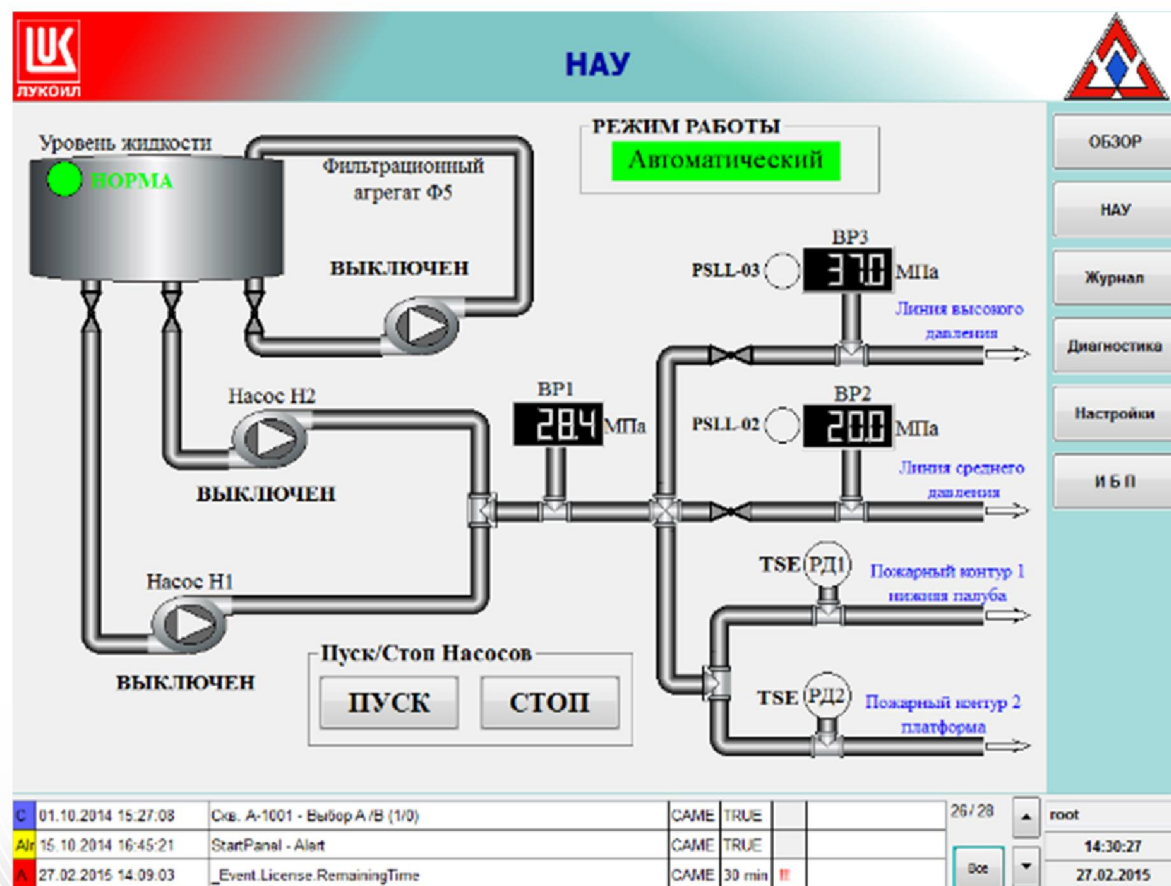
- KNG ICS SCADA system
- autonomous power supply complexes
- automatic control system for air coolers
- designing and assembling of low voltage switchboards
- network server
- contactless torque meters
- active lightning protectors







- KNG ICS SCADA system





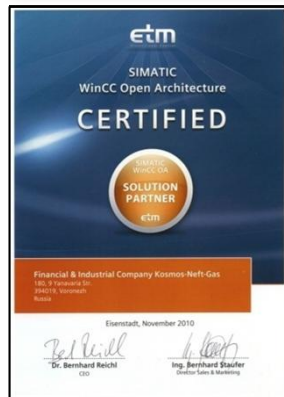


## Safety, reliability and scalability



**1. KNG ICS is certified for safety level SIL3, which simplifies the overall certification of the control system. This system is open to its own design.**

**2. KNG ICS is compatible with the most peripheral devices.**  
**Acceptable interfaces: S7-TCP / IP, S7-Profibus / MPI, RK512, Allen Bradley Ethernet / IP, Teleperm M, Modbus TCP / IP, OPC DA, AE client / server.**



**3. Available protocols: Modbus Serial, Modbus Plus / RS485, BACnet, Cerberus (for connecting a Siemens fire alarm);**  
**Telecontrol and monitoring protocols: IEC 60870-5-101, -104, DNP3, SSI, SINAUT, SNMP.**

**4. Other drivers are available upon request. Also comes API for C ++.**

**5. The system is not associated with any manufacturer of programmable logic controllers (PLC).**

**6. Supports up to 10 million data points**







- **Autonomous power supply units**



**AKE-100/500-01 Methanol block**

<b>Power:</b>	<b>100/500W</b>
<b>Voltage:</b>	<b>24 V</b>
<b>Fuel:</b>	<b>methyl hydroxide</b>
<b>Flow rate:</b>	<b>0,9 l for 1 kW · h</b>
<b>Temperature:</b>	<b>-60°C...50 °C</b>



**EVOGRES 6.0 autonomous power supply units**

<b>Power :</b>	<b>6 kW</b>
<b>Type of electricity:</b>	<b>DC / AC</b>
<b>Voltage:</b>	<b>24/48DC, 220/380</b>
<b>AC</b>	
<b>Fuel :</b>	<b>natural gas</b>
<b>Specific fuel flow rate, m3/kW · h :</b>	<b>0,57</b>
<b>Temperature :</b>	<b>-60°C...50 °C</b>
<b>Maintenance free operation time, h:</b>	<b>8760</b>





- **Automatic control system for air coolers**

ACS is designed for remote, automatic and manual control of air coolers with a frequency-controlled and electric blind actuators and for maintenance a given temperature at the air cooler outlet for compliance and control of the production process.







- **Active type lightning protector M-200**

M-200 operates on the principle of an autonomous generator, which is charged by the energy of the electric field of a thunderstorm and initiates a counter discharge, ahead of all the ascending discharges from the object.

**No external voltage required**







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**KNG-Energo Company offers current innovative technologies for production and construction of the ready-to-operate digital substations up to 110 kV based on block-modular in-house treatments with single or double-stage version using 110 kV GIS.**



**Is for undervoltage from 110 kV to 6 kV.**





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**Low-voltage package module cabinets**

**Packaged switchgears**



**Single-end service assembled chambers**

**Complete transformer substations**





# KOSMOS-NEFT-GAS Production Complex



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## CNC machining centers







- **CNC machining centers**







- **Equipment for surfacing**







## Assembly sites



**Oversized assembly**



**Assembling of pneumatic and hydraulic units**





## Assembly sites







## Test sites



**Pneumatic and hydro testing ,  $P_{max} = 105 \text{ MPa}$**



**Functional Tests,  $P_{max} = 150 \text{ MPa}$**





## Preparatory area

## Painting area







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# Thanks for attention!

**Dmitry Likhachev**  
**Principal Engineer**  
**+79155801617**  
**e-mail:**  
**[likhachev@kng.vrn.ru](mailto:likhachev@kng.vrn.ru)**  
**[www.kng.ru](http://www.kng.ru)**