

UPSTREAM DIVISION

466 MN KWH
+7%

ENERGY SAVINGS IN 2017

RUB **1.5** BN

ECONOMIC EFFECT

UPSTREAM DIVISION'S ENERGY EFFICIENCY PROGRAMME IN 2017

FOCUS	KEY ACTIVITIES
TECHNICAL <ul style="list-style-type: none"> ■ Mechanical boost ■ Maintaining reservoir pressure ■ Treatment and transportation of oil and gas ■ Electricity and heat supply ■ Geological and engineering activities 	<ul style="list-style-type: none"> ■ Use of high-efficiency electric centrifugal pump units ■ Replacement of asynchronous submersible motors with ac motors ■ Transition of wells into short-term/periodic operation mode ■ Reduce produced water and pump it into the formation ■ Modernization of pumping units and the introduction of energy efficient rotors and frequency-controlled drives for them ■ Installation of energy-efficient lamps and heaters
ORGANIZATIONAL	<ul style="list-style-type: none"> ■ Introduction and certification of the EMS in accordance with the requirements of ISO 50001 and internal audits of the system ■ Construction of a system to monitor the energy efficiency of oil production facilities and a mandatory energy audit ■ Optimization of the cost of electricity from external networks ■ Replacement of diesel engine power stations with gas turbine stations (cost optimization)

The Upstream Division's energy efficiency programme exceeded the targets in 2017. Energy savings amounted to 466 mn kWh (RUB 1.5 billion).

The Division drafted and implemented a programme to improve the reliability and modernize electrical equipment and networks, which included 102 measures, during the reporting year. The measures made it possible to significantly reduce oil shortages during emergency power outages compared with 2016.

The Division's key energy efficiency indicator – specific electricity consumption for fluid produced – totalled 28.98 kWh/t.¹

The establishment of the Cross-Functional Commission on Energy Efficiency within the Upstream Division was approved in 2017 and the commission held four meetings.

Energy management structures were designated at all current assets. The Division drafted the corporate standards 'Energy Analysis' and 'Energy Planning'.

ENES 2017 AWARDS

The Company's enterprises won awards at the ENES 2017 national competition of energy conservation and energy efficiency projects held by the Ministry of Energy of the Russian Federation. Gazpromneft-Muravlenko won second place in category 'Effective Management System for Energy Conservation and Improving Energy Efficiency at Fuel and Energy Industry Enterprises'. Gazpromneft-Khantos won the category 'Leader in the Introduction of the Best Available Technologies (BAT) in Energy Conservation and Improved Energy Efficiency'. The Company also received an award for the best video promoting an energy-saving lifestyle.

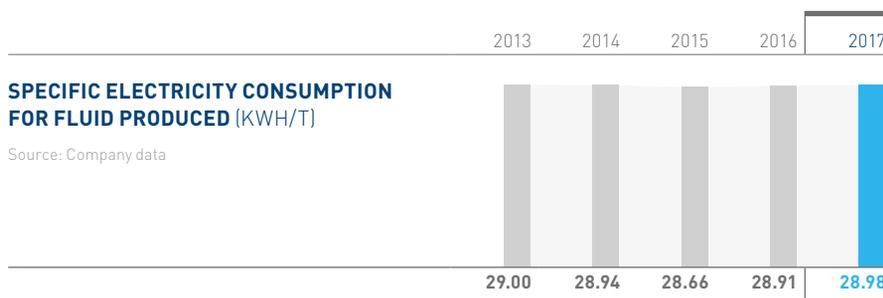
¹ — The increase in specific electricity consumption in 2017 by 0.07 kWh/t is due to an increase in the proportion of production at assets with a greater depth of oil-containing liquid.

TOTAL ENERGY CONSUMPTION IN UPSTREAM DIVISION

Indicator	2013	2014	2015	2016	2017
Electricity consumption (purchased + generated), MWh	6,032,738	6,177,164	6,419,919	6,298,276	6,064,268
Change vs. previous period, %	6.0	2.4	3.9	(1.9)	(3.7)
Thermal energy consumption (internally produced and purchased from third-party suppliers), GJ	1,218,555	1,064,758	982,015	996,644	1,124,180
Change vs. previous period, %	1	13	8	1	12.8 ²

CONSUMPTION OF PURCHASED ENERGY

Indicator	2013	2014	2015	2016	2017
Purchased electricity (minus electricity transferred to third parties), MWh	5,180,370	5,183,377	5,356,476	5,218,287	4,857,536
Purchased thermal energy (minus electricity transferred to third parties), GJ	133,000	117,000	96,000	113,000	97,000



² — The growth in heat energy consumption is due to the introduction of new boiler houses at Gazpromneft-Vostok and boiler houses at the major Messoyakha field and Novy Port projects.

New technologies in the Arctic

In 2017, Gazpromneft-Yamal launched the pilot testing of the YURTA combined wind-solar power plant with capacity of 47.5 kW, which is designed to supply power to a group of line-to-line consumers.

The hybrid technology will significantly reduce the cost of power supplies to long-distance and remote sites from network infrastructure facilities due to the lack of a need to build power lines.

The Russian-produced equipment for the power plant is designed to operate at temperatures as low as -60°C. The vertical shape of the wind generators makes it possible to generate electricity regardless of which way air is blowing.

“In the future, the company will be able to provide power to facilities that are located dozens of kilometres from main networks. Moreover, the introduction of a wind-solar power plant is entirely safe for the Arctic environment”.

Sergey Devyatyarov

Chief Engineer and First Deputy CEO
of Gazpromneft-Yamal