

ENERGY CONSUMPTION AND ENERGY EFFICIENCY

HIGHER PRODUCTION GROWTH RATES HAVE LED TO INCREASED ENERGY CONSUMPTION AT THE COMPANY. IN AN EFFORT TO MINIMISE THE IMPACT OF THIS PROCESS, GAZPROM NEFT IS WORKING ON IMPROVING ENERGY EFFICIENCY AND OPTIMISING THE USE OF ENERGY RESOURCES BY INTRODUCING A SYSTEMATIC APPROACH TO MEETING THESE CHALLENGES.

One of the priorities for improving the Company's operational efficiency is to enhance the energy efficiency of its production assets.

The main goals of Gazprom Neft in energy conservation and efficiency are:

- > to enhance the energy efficiency of the Company's enterprises while maintaining or improving reliability, safety and performance;
- > to mitigate adverse impacts on the environment;
- > to reduce the consumption of non-renewable energy resources.

The Gazprom Neft Energy Policy is the regulatory framework for such activities. The Energy Policy serves as the foundation for the Energy Management System (EMS), which meets the requirements of ISO 50001:2011. Introducing modern tools to manage production gives Gazprom Neft the opportunity to effectively utilise the best global and national practices for managing the consumption of fuel and energy resources.

The Company has been gradually introducing the EMS at its enterprises since 2012. In 2016, the EMS was introduced and certified at three subsidiaries of the Upstream Division: Gazpromneft-Orenburg, Gazpromneft-Vostok and Gazpromneft-Muravlenko. Inspection audits conducted at the Upstream Division's corporate centre and two subsidiaries did not reveal any discrepancies. In 2016, the Downstream Division completed the key formation stage of the EMS, which unites the upper (corporate centre) and lower (key subsidiaries) levels for managing energy conservation and energy efficiency at key subsidiaries and the Division as a whole. The Downstream Division's EMS underwent an independent audit and was certified for compliance with the requirements of ISO 50001.

UPSTREAM DIVISION

The main energy efficiency indicator at Upstream Division enterprises is the specific electricity consumption for liquid extraction, which totalled 28.91 kWh/t in 2016, or 1.7% below the planned level.

The Energy Efficiency Programme exceeded its targets in 2016. The Upstream Division had energy savings of 433 million kWh (RUB 1.251 billion), which is a record level for the implementation of energy efficiency programmes at Gazprom Neft.

More than one hundred recommendations were prepared to replicate energy conservation best practices at the Company based on the results of Annual Energy Efficiency Surveys of the energy management system.



The growth in the Company's energy consumption is consistent with the growth in the technologies and equipment that are being introduced. Implementing energy conservation measures not only allows us to contain growth, but also reduce specific consumption indicators by taking a systematic approach, expanding the number of participants in the Upstream Division's energy efficiency programme and developing energy management.

Anton Gladchenko
Director of the Gazprom Neft Gas
and Energy Directorate

The most significant energy efficiency projects in 2016 included:

- > the use of high efficiency electric submersible pump units;
- > the introduction of permanent magnet motors;
- > the operation of downhole equipment in periodic operating modes;
- > a reduction in water produced and its pumping into the formation (shutdown of unprofitable wells and the performance of geological and technical measures);
- > the selection of the optimal size and replacement of pumping units at water-injection and booster pumping stations and initial water separation units;
- > the installation of variable frequency drives on pumping equipment;
- > the optimisation of electric heating systems (the installation of thermostats).

The Upstream Division pays particular attention to the specialised training of its employees. In 2016, the Division launched creation of the new 'Energy Conservation' training module, a project that is unique not only for Gazprom Neft subsidiaries,



433
mn kWh

energy savings
by the Upstream Division
in 2016

#ВМЕСТЕЯРЧЕ

Employees from the Upstream Division's subsidiaries and corporate centre took active part in the Russian oil industry festival #ВМЕСТЕЯРЧЕ and the international energy forum ENES-2016 as a partner and participant in energy efficiency contests. The youth team from among employees of the Upstream Division's subsidiaries finished second in the contest of energy efficiency projects at the ENES-2016 forum. Gazprom Neft's video for employees 'Improving Energy Efficiency' also took home a prize.

but for the Russian oil industry as a whole. The module is primarily designed for engineering and technical personnel as well as specialists whose activities are directly related to energy-intensive business processes. It includes a training course as well as a block of a hundred questions to test employees' knowledge on the subject of energy conservation.

TOTAL ENERGY CONSUMPTION BY THE UPSTREAM DIVISION

Indicator	2012	2013	2014	2015	2016
Electricity consumption (purchased + generated), MWh	5,690,232	6,032,738	6,177,164	6,419,919	6,298,276
Change vs. previous period, %	6.9	6.0	2.4	3.9	(1.9)
Thermal energy consumption (internally produced and purchased from third-party suppliers), GJ	1,231,237	1,218,555	1,064,758	982,015	996,644
Change vs. previous period, %	(3)	(1)	(13)	(8)	1

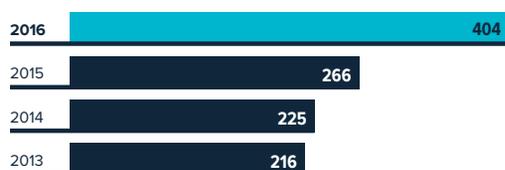
CONSUMPTION OF PURCHASED ENERGY

Indicator	2012	2013	2014	2015	2016
Purchased electricity (minus electricity transferred to third parties), MWh	4,902,184	5,180,370	5,183,377	5,356,476	5,218,287
Purchased thermal energy (minus electricity transferred to third parties), Gcal	29,152	31,623	28,384	22,858	26,700

DOWNSTREAM DIVISION

DEVELOPMENT OF CAPACITY AT POWER GENERATION FACILITIES (MW)

Source: Company data



The Upstream Division implemented a programme to improve reliability and modernise its electrical equipment and grids during the reporting year. The programme involved the capital construction of power supply facilities, the modernisation of power grids and substations, the introduction of high-speed automatic transfer switch and automated information systems as well as enhanced storm stability and lightning protection of power grids. As a result of the programme, oil shortfalls during emergency power shutoffs declined by 1.5% compared with 2015.

Taking into account the oil production targets, the Company actively developed the capacity of power generation facilities by building new and expanding existing autonomous power plants. Five new power generation facilities were commissioned last year.

The decrease in electricity consumption is the result of a reduction in the volume of fluid produced. The increase in thermal energy consumed for oil production processes was due to changes in the ambient air temperature.

The key energy efficiency indicator for oil refining enterprises is the energy intensity index (EII) calculated using the methodology of Solomon¹.

ENERGY INTENSITY INDEX OF THE COMPANY'S OIL REFINERIES

Enterprise	2012	2013	2014	2015	2016
Omsk Oil Refinery	126	123	117	114	110
Moscow Oil Refinery	124	123	122	114	113
YANOS	110	110	108	109	107
NIS	–	–	126	122	118

The specific energy consumption indicator is the most convenient for operational control.

Indicator	2012	2013	2014	2015	2016
Specific consumption, kg OE/t	134.2	131.0	134.6	131.5	136.8

Since 2011, the Downstream Division has employed an Energy Conservation and Energy Efficiency Programme, which is the main tool used to implement the Company's Energy and Technical Policy in energy efficiency – a strategic priority for the Company's development – and sets the goals and objectives of the Downstream Division's enterprises in this area for the medium-term. The programme is drafted by the Downstream Division's Energy Department for a three-year period with subsequent annual updates.

Under the Programme, the main focuses of the Division's energy conservation and energy efficiency activities are:

- > to improve work efficiency and optimise the processing behaviour of energy and technological equipment,
- > to reduce the fuel and energy intensity of technological processes;
- > to reduce losses of fuel and energy resources;
- > to increase the proportion of steam condensate returned by process units;
- > to increase the efficiency of heat exchange processes and the generation and use of thermal energy in core and auxiliary processes;
- > to improve the infrastructure level of core and auxiliary production processes at enterprises with metering devices;
- > to introduce the energy management system.

¹ This index allows for a quantitative comparison of the energy efficiency of a specific oil refinery with another refinery that is similar in terms of production units and work conditions. The smaller an enterprise's EII value is, the better its energy efficiency level is.