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

TECHNICAL
- Mechanical boost
- Maintaining reservoir pressure
- Treatment and transportation of oil and gas
- Electricity and heat supply
- Geological and engineering activities

ORGANIZATIONAL
- 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


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

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity consumption (purchased + generated), mWh</td>
<td>6,032,738</td>
<td>6,177,164</td>
<td>6,419,919</td>
<td>6,298,276</td>
<td>6,064,268</td>
</tr>
<tr>
<td>Change vs. previous period, %</td>
<td>6.0</td>
<td>2.4</td>
<td>3.9</td>
<td>(1.9)</td>
<td>(3.7)</td>
</tr>
<tr>
<td>Thermal energy consumption (internally produced and purchased from third-party suppliers), GJ</td>
<td>1,218,555</td>
<td>1,064,758</td>
<td>982,015</td>
<td>996,644</td>
<td>1,124,180</td>
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<tr>
<td>Change vs. previous period, %</td>
<td>1</td>
<td>13</td>
<td>8</td>
<td>1</td>
<td>12.8²</td>
</tr>
</tbody>
</table>

CONSUMPTION OF PURCHASED ENERGY

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

SPECIFIC ELECTRICITY CONSUMPTION FOR FLUID PRODUCED (KWH/T)

Source: Company data

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

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.