

Energy-saving measures

The Group worked to increase energy efficiency at its operations in 2016 by generating more electricity in-house and reducing the share of energy resources that it purchased. Initiatives to optimise the use of light, heat, fuel, compressed gas and separation products generated significant savings.

Steel segment

Steelmaking



EVRAZ ZSMK (Russia)

EVRAZ ZSMK's energy efficiency programme continued in 2016, including measures aimed at reducing the amount of electricity used to compress air at the Prokatnaya compressor station, shutting off natural gas supplies to some equipment at oxygen convertor shop 1 during operational downtime, and using less steam in the rail yard.

Natural gas consumption totalled 611.4 million cubic metres in the reporting period, a decrease of 40 million cubic metres year-on-year, due to fuel balance optimisation. Overall electricity usage amounted to 4,132 million kWh, which is 36 million kWh less than in 2015, thanks to the measures mentioned above.

EVRAZ NTMK (Russia)

EVRAZ NTMK implemented several projects as part of its energy efficiency programme, leading to a 66% reduction in electricity purchases, of

which a 42% reduction came from outsourcing oxygen production, 12% was the result of increasing on-site electricity generation, and another 12% was due to lower consumption.

A total of 446 million kWh was purchased from external producers during the reporting period, which is 461 million kWh less than in 2015 as a result of these measures.

Natural gas consumption totalled 1,178 million cubic metres in 2016, up by 69 million cubic metres year-on-year as a result of increased gas usage by the blast furnaces, which was required to maintain the optimal balance of energy costs.

EVRAZ DMZ (Ukraine)

In 2016, EVRAZ DMZ undertook numerous initiatives to reduce spending on energy purchases and maximise its consumption of associated gases (from blast furnaces and coking facilities).

The power plant's energy structure was optimised by increasing the usage of associated gases from the blast furnaces and coking facilities. This reduced natural gas consumption to 16.8 million cubic metres. Further measures were undertaken to improve the accounting of energy sources (natural gas, electricity, and drinking water) in order to better monitor resource usage.

Overall, 37.9 million cubic metres of natural gas were used in 2016, which is 6.5 million cubic metres less than in 2015. Electricity consumption totalled 312.3 million kWh, down by 9.4 million kWh year-on-year.

EvrAZ Yuzhkoks (Ukraine)

EvrAZ Yuzhkoks' energy efficiency programme included: shutting down under-utilised power stations, replacing inefficient equipment, and installing frequency convertors on pumps in a number of production units.

These measures reduced electricity consumption by roughly 995 thousand kWh in 2016, to a total of 51.6 million kWh, of which 11.5 million kWh were purchased and 40.1 million kWh were generated on-site.

Total consumption for the year was up by 3 million kWh compared with 2015. The increase was due to the need to use equipment with high energy consumption during major repairs that were conducted in 2016: gas and air blowers, as well as gas pipelines. Without the programme, overall consumption would have been 52.5 million kWh.

Mining



Evrazruda (Russia)

Evrazruda's energy efficiency programme for 2016 included reducing electricity consumption by replacing incandescent light bulbs with LEDs in the underground tunnels of the Tashtagolskaya and Kazkaya mines, as well as changing the bearing material in the ball mills at the Abagursky branch.

Total electricity consumption was 434 million kWh, which was 12 million kWh less than in 2015 as a result of the programme.

Evraz Sukha Balka (Ukraine)

Installing energy saving lighting in the main haulageways as part of the energy efficiency programme reduced electricity consumption by 0.65 million kWh to 139.76 million kWh.



Reduction in energy consumption for 2016

↓ **14.2%** yoy
in Coal segment

↓ **34.8%** yoy
in Steel, North America segment

Coal segment

The main efforts of the Coal segment's ongoing energy efficiency programme in 2016 were aimed at reducing heat energy and electricity consumption:

- switching to less energy-intensive equipment (shutting down excess capacity)
- using equipment more efficiently
- shutting down the enrichment plant's drying machines during the summer

The result was a 49 million kWh overall reduction in energy consumption to 295 million kWh.

Steel, North America segment

Evraz North America's operations continued implementing energy-saving measures in 2016.

During the rebuild of the slab reheat furnace in Portland, our technical team upgraded the refractory material to a high-tech product that provides significantly higher insulation coefficients than other technologies. As a result, we expect energy savings of approximately four therms per short ton, or ca. 371 TJ in energy savings annually at full utilisation.

For 2016, electricity and natural gas consumption declined year-on-year in-line with production volumes from 1,623 GWh to 1,059 GWh and from 9,120 TJ to 6,357 TJ, respectively.