

Energy Efficiency



GRI 103-2

The Group continuously works to increase the energy efficiency of its assets in order to reduce their environmental impact and tackle climate change. We apply innovative solutions to optimise our consumption of energy and natural resources. Our priorities in this area include implementing energy saving programmes and energy service projects, increasing the amount of electricity that we generate internally, reducing the energy intensity of our products and replacing natural gas with biofuel.

We have a dedicated division in the Operational directorate at the Executive Team level, as well as energy management and energy efficiency departments at each production asset that are responsible for planning and controlling energy resource consumption in production. They are also responsible for introducing energy efficiency measures aimed at reducing consumption to the levels outlined in target performance indicators and energy saving programmes.

Since 2013, we have been developing energy management systems at our production assets that conform to the ISO 50001:2011 international standard. As of the end of 2020, 10 assets⁹ transferred to the new ISO 50001:2018 standard for energy management systems, which introduced the concept of risk assessment in energy. The procedure defines a technique for risk identification, measurement and management in the energy management sector to mitigate risk factors and prevent situations that adversely impact performance.

When assessing energy risks, Metinvest monitors the factors that affect the energy performance of business units and updates its risk matrix on an annual basis. The matrix reflects all threats to the energy management system and helps to determine why and how often they appear, assess the extent of their impact, make recommendations to mitigate them, evaluate the associated risks, and select appropriate measures to eliminate or minimise them.

GRI 103-3

Metinvest's assets have passed an external certification audit designed to assess the workflow management system for compliance with the ISO 50001 standard governing the use of energy resources and efficiency initiatives. We also conduct internal energy management audits based on a matrix and system that we developed to assess the efficiency of the certification requirements that we implemented. Performing energy audits is the responsibility of the energy saving committee and energy management teams at each production enterprise. Such

audits help to determine areas for improving energy efficiency and shape key goals for annual energy saving programmes.

In 2020, the Group's assets underwent scheduled audits by the internal energy management teams of all business units. These checks are performed in line with our Procedure for Conducting Internal Energy Management System Audits at Production Sites, which lays out the requirements for the audit team composition, the format and frequency of inspections, and reporting procedures. The Methodology for Conducting Energy Audits at Production Sites serves as an additional tool to search for energy efficiency measures.

⁹ Avdiivka Coke, Azovstal, Central GOK, Dnipro Coke, Ilyich Steel, Kryvyi Rih Machining and Repair Plant, Mariupol Machining and Repair Plant, Northern GOK, Zaporizhia Coke and Zaporizhia Refractories.

METINVEST'S ENERGY MANAGEMENT SYSTEM

Technical measures:

- Equipment and supply line repair and inspection
- Fleet renewal
- Equipment modernisation and design changes
- Accounting system development

Technological measures:

- Raw material and product quality management
- Furnace charge management
- Technological optimisation
- Process automation

Operational measures:

- Development of differentiated standards
- Rate setting, deviation analysis and development of respective measures
- Development of optimisation models for operator prompts
- Optimisation of technological modes and equipment operation
- Operational management of energy balances
- Introduction of ISO 50001 and regular audits
- Cross-functional groups and energy audits



GRI 302-1

In 2020, the direct energy consumption of Metinvest's assets as measured in terajoules (TJ) increased by 2% year-on-year. This was caused by an increase in the production of both pulverised coal fuel and steel at Ilyich Steel, as well as the consolidation of two assets that joined the Group: Dnipro Coke and Zaporizhia Refractories.

Direct energy use, TJ¹⁰

Year	Natural gas	Heating oil	Coke	Diesel fuel	Petrol	Metallurgical coal	Electricity	Total
2018	38,452	0	102,355	6,258	73	34,165	28,637	209,940
2019	36,922	0	93,196	6,534	61	37,658	30,308	204,679
2020	38,656	14	91,801	6,640	47	42,444	29,509	209,111

GRI 302-4

In 2020, Metinvest continued to develop and implement energy efficiency projects. This contributed to an increase in energy saving by 7% year-on-year, including increase in electricity saving by 5% year-on-year. The main savings came from Azovstal, which was able to produce an additional 54 million kWh of electricity internally after repairing the turbine at its power station that produces electricity and compressed air for blast furnaces, thereby reducing the need

for third-party purchases. An additional improvement in electricity saving came from Ilyich Steel optimising the cut of slabs at its hot strip mill 1700.

During the reporting period, Metinvest also implemented other energy efficiency measures at its assets. Avdiivka Coke introduced a flexible switching system for turbine generators with lower specific steam consumption and replaced the electric pump unit. This made it possible

to generate 4.3 million kWh of electricity internally, which eliminated the cost of purchasing it from third parties.

Azovstal modernised the ceiling lighting at its heavy plate shop and upgraded the brickwork in rotary kilns nos. 1 and 4 to increase the speed of limestone heating.

Ilyich Steel installed energy efficient centrifugal compressors in its heat and power department, which made it possible to save 3.3 million kWh of electricity during the reporting period. It also installed dual-layered cast insulation on its skid pipes, which helped to reduce natural gas consumption by 3.4 million cubic metres.

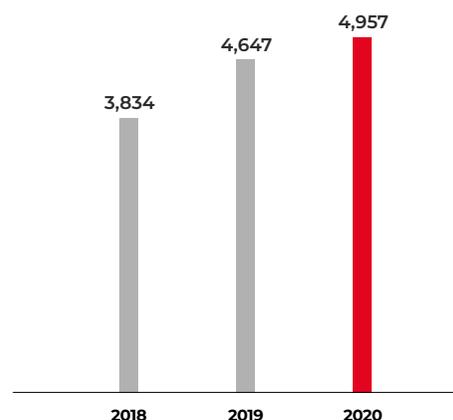
Northern GOK installed more efficient lighting systems at crushing plant no. 1 and pellet shop no. 1, which reduced electric power consumption by 4.4 million kWh. It also replaced the insulation of the gas ventilation pipe on the Lurgi 552-A roasting machine, which helped to cut natural gas consumption by 0.2 million cubic metres.

Central GOK reduced its electricity consumption by 11.4 million kWh. This was the result of re-equipping the magnetic separators at its beneficiation plant, as well as modernising the classification system for middlings, the lighting systems at production facilities in the beneficiation plant and the electrical drive system of excavators. It also reduced its natural gas consumption by 4.5 million cubic metres as a result of using shredded sunflower husks as an alternative fuel for pellet production.

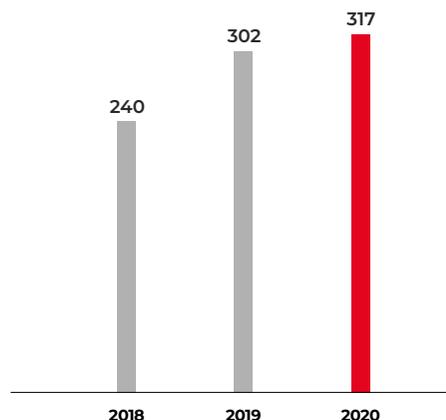
Separately, the Zaporizhstal joint venture cut the volume of electricity purchased from third parties by 8.8 million kWh and reduced its natural gas consumption by 5.1 million cubic metres. These significant decreases were the result of increased electricity generation at turbine generator no. 2 (combined heat and power plant) and the use of secondary gas as a replacement for natural gas in lime kiln.

The Group achieved additional energy savings by increasing the efficiency of secondary fuel use, modernising fuel-consuming equipment and improving the efficiency of heat-exchange and compressor equipment, as well as modernising the slurry pumps and pipeline transport systems at Metinvest's assets.

Total energy saved as a result of energy efficiency measures, TJ



Electricity savings, million kWh



¹⁰ The coefficient used for conversion from TOE to TJ is 1 TOE = 0.0293076 TJ. The direct energy use data for 2018-19 that was presented in the 2019 sustainability report has been restated for the 2020 report to account for changes in Azovstal's data (use of electricity, diesel and petrol, coke and metallurgical coal). The key changes were as follows:

- Previously, electricity consumption was recorded in accordance with the statistical reporting, which did not reflect direct use, as it did not take into account internally generated energy and internal losses.
- The metallurgical coal consumption data previously included coal used as raw materials for producing coke and coke by-products. It now only includes coal used as fuel, which in turn decreases the figures for metallurgical coal use and increases those for coke used as fuel compared with the previously published data. In addition, the updated metallurgical coal figures exclude the coal used for producing coke by-products for sale.

During the reporting period, Metinvest spent US\$8.2 million on energy efficiency programmes, which exceeded the previous year's figure by US\$1.3 million. This was due to the increased number of energy-efficient LED lamps installed at Northern GOK's workshops, as well as measures introduced at Mariupol Machining and Repair Plant, such as modernising the reheating furnace and heat-treatment furnaces in the foundry shop and replacing the electric transformer in the electric furnace.

In 2021, Metinvest will continue its efforts to improve energy efficiency. Priorities include the energy efficiency programmes at its assets, energy service projects, reallocation of equipment loads to periods with lower electricity costs, modernisation of lighting systems, installation of frequency regulators, modernisation of reheating furnaces, replacement of natural gas with sunflower husks as a fuel source, modernisation of compressor equipment and generation of more electricity internally.

Energy Service Projects



In 2020, Metinvest signed an agreement with YASNO Energy Efficiency LLC (YASNO) to continue implementing the energy efficiency projects at the Group's assets that were launched in 2018. The basic project mechanism is unchanged. YASNO invests its own funds to implement energy efficiency projects for Metinvest on a turn-key basis under energy service contracts that guarantee energy savings. Metinvest pays for the services provided by means of the economies achieved.

In the reporting period, we worked with YASNO to implement five energy service projects. They included the upgrade and replacement of the lighting systems at Ilyich Steel and Northern GOK, as well as the installation of a new compressor station at Central GOK's Ordzhonikidze mine.

The estimated annual energy savings from the projects being implemented is 16.6 million kWh.

“By implementing energy service projects, we continue to improve the plant's operating efficiency. This will be also guaranteed under the agreement between Metinvest and YASNO.”

Taras Shevchenko, General Director of Ilyich Steel

