



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



EnMS implementation on Copper rod production

(former “Katur-Invest”)

PMK (copper rod production) is part of Uralelektromed JSC (UMMC Holding), and is the largest producer of copper rod in Russia¹. Since 2013, the copper rod for export supply was certified in accordance with international standards: ASTM B 49, EN 1977.

An enterprise has installed a *Contrirod* production line for copper rod, and more than 40% of production is exported.



Achievements of the enterprise prior to EnMS project

The enterprise is equipped with automated system of commercial and technical accounting for energy and water. Since 2000. Katur-Invest has implemented, certified and has been maintaining an integrated system of quality management (ISO 9001:2008), environment (ISO 14001:2004) and labor safety (OHSAS 18001:2007).

The management portray high levels of interest and awareness in the issues of energy saving and energy efficiency improvements, as well as works in the direction of systematization of these processes. Every year a programme for energy savings and EE increase is being developed; systems for on-line monitoring of energy consumption and technological parameters are developed and applied.

For organization of energy saving activities there is an Energy commission responsible for Programme development and oversight over its implementation, and correction of specific norms for energy resource use.

EnMS implementation in 2015

When implementing EnMS, beside ISO 50001 requirements, Katur-Invest applied UNIDO methodology in the following directions:

1. Use of regression analysis method to forecast energy consumption and to estimate the influence of each of the production variables.
2. Inventory of energy users and identification of the most significant ones.
3. Formulation of “opportunity lists” towards significant energy users (SEUs).

¹ Note: In July 2016, Katur-Invest became part of Uralelektromed, JSC, thus becoming a separate subdivision – production of copper rod. At the time of UNIDO project implementation, Katur-Invest was an independent enterprise, therefore, further in the text it is referred to under this name.

During project implementation, the EnMS working group of the enterprise performed the following activities:

1. Developed an Energy policy, defined energy savings targets, distributed personnel's roles and responsibilities.
2. Defined the scope and boundaries of EnMS by the types of energy resources: natural gas and electricity.
3. Defined the base line for energy consumption, which enables to measure and analyze effects from EE increase.
4. Defined SEUs and production factors (variables) affecting energy consumption.
5. In addition to existing system of energy consumption planning, a forecasting system for energy consumption on the basis of regression models was organized.
6. Based on existing SCADA system, information is organized to be received instantaneously on current actual consumption to define deviations from the base line.
7. Meetings are organized on a regular basis on energy efficiency, and analysis of energy performance indicators is done by the management.

Results of Katur-Invest activities in the area of energy saving and energy efficiency increase in 2015

✓ Within the framework of the Katur-Invest Programme for energy savings and energy efficiency increase for 2015-2017 and UNIDO EnMS project in 2015, the enterprise achieved the following results:

1. Technological measures were implemented:
 - development of new speed wedge recipes for the rolling mill;
 - automation of operating modes of the shaft furnace;
 - changing the method of charging the batch mixture into the furnace;
 - modernization of the skip hoist basket;
 - modernization of the connecting chute with the secondary use of the exhaust gases of the shaft furnace.
2. Savings were achieved (in comparison with forecasted consumption), calculated by the regression analysis method:
 - **Electricity savings: 792 thousand MWh (3,7 %);**
 - **Natural gas: 170 thousand m³ (1,7 %).**
3. Personnel, including operating staff, became more involved in the energy savings processes.
4. The amount of implemented measures (especially, with small payback period) increased, period for their implementation has shortened.
5. Factors affecting energy consumption were identified, and began to be monitored in the on-line mode.

Conclusions

Despite being an enterprise with high production culture and having an automated system for energy accounting and well-organized work in energy saving, Implementation of EnMS allowed Katur-Invest to identify and realize additional potential for energy efficiency improvements from low-cost organizational measures. High level of interest and involvement of the Director of enterprise contributed to achievement of such positive results.