Enterprise technical policy as a tool for improving energy efficiency

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Abstract. The paper presents the development of the main provisions of technical policy, aimed at improving efficiency in the use of basic production assets of the enterprises of power generating set. Technical policy, as one of the main strategic documents of the enterprise, can be considered as a tool to improve energy efficiency.

1. Introduction
Energy saving and increasing energy efficiency are one of the main sources of future economic growth, affecting all sectors of the economy and the social sphere, all producers and consumers of energy resources. For the fuel and energy sector, the development of energy saving and energy efficiency is a strategic task, the solution of which is possible due to:

- ban on the use of energy-efficient machinery and equipment;
- promoting the use of best available technologies;
- updating of existing and implementation of new energy management systems;
- acquisition of new energy-efficient equipment;
- exchange of ideas regarding best practices in energy savings and efficiency in the sectors of the fuel and energy complex. [1]

2. Technical condition of basic production assets in energy
The energy industry is traditionally considered as capital-intensive. This is because the basic production assets (BPA) of energy companies may have up to tens of thousands of pieces of equipment.

Fixed assets for the energy industry have the structure shown in figure 1. Power equipment such as boilers, turbines, steam generators, electric generators and power transformers make up the largest share of the active part of fixed assets (about 33%). A significant share of the passive part of fixed assets (about 33%) are transmission devices, such as electric networks, heating networks, pipe and gas pipelines.
The structure of fixed assets in the energy industry depends on the following factors:

- **Power facility.** The share of power equipment, working machines, measuring and regulating devices at powerful power plants, is greater than for medium power stations.
- **Type of fuel at thermal power plants.** Coal TPPs have a higher proportion of facilities compared to gas-oil ones due to the cost of the fuel preparation system, unloading devices, overpasses, fuel depots, conveyors, raw coal bunkers and coal dust.
- **Climatic and seismic conditions in the area of the facility.** The warmer the climate and the lower the seismicity, the lower the proportion of buildings and structures in the structure of assets.
- **The structure of fixed assets for generating companies depends on the type of power plants that are part of them.** So for the thermal and nuclear power plants, the predominance of the active part of assets is observed (about 55-60%), passive assets prevail at the hydroelectric power plants (about 80%); For power grid companies, the share of transmission devices will prevail in the structure of assets.

Despite the active policy of the Ministry of Energy of the Russian Federation on updating the active part of fixed assets in energy companies, at the end of 2019 20% of the equipment at energy facilities were assessed as satisfactory, which requires enhanced control of the technical condition, reconstruction or technical re-equipment [2].

In addition to physical wear and tear, working machines, power equipment and other types of fixed assets cease to meet the demands of the modern market in terms of their technical and economic indicators, that is, they are subject to obsolescence.

The worn-out condition of the fixed assets of the Russian electricity-generating complex, which does not meet modern technical and economic requirements, is a factor in reducing the overall efficiency of electricity production.

The introduction of new, more advanced equipment at the enterprises of the electricity-generating complex will be able to provide increased energy efficiency and a significant reduction in the cost of electricity production while significantly increasing its capacity. In this case, the feasibility of using new, more technically advanced equipment is obvious.

### 3. Analysis of technical policy of the energy company

One of the main tools at the state level aimed at ensuring the sustainable development of the country is industrial policy. As part of a common economic policy, industrial policy is a key tool to ensure the economic security of Russia and its technological sovereignty.
According to the Federal Law №488 industrial policy is defined as a set of legal, economic, organizational and other measures aimed at the development of Russia's industrial potential, ensuring the production of competitive industrial products [3].

At the micro level, industrial policy has a direct impact on the implementation of technical policy of the company, whose task is to keep running and timely updating of the fixed assets.

The technical policy of the enterprise is part of a development strategy in the field of improving the quality and competitiveness of products, resource and energy saving, technological production development.

In accordance with the requirements and recommendations of modern management systems, a list of provisions of the technical policy of the enterprise was developed:

1. The purpose of the technical policy;
2. Consumer orientation procedures;
3. Procedures for the selection of equipment suppliers;
4. Equipment selection procedure;
5. Approaches to the implementation of the principle of "continuous improvement";
5.1 Policies / procedures for introducing new knowledge;
5.2 Criteria for determining the sources of new knowledge;
5.3 Criteria for patenting innovation / know-how;
4. Focus on patent search;
5. Focus on the best available technology;
6. System of indicators of the effectiveness of technical policy. [4]

The analysis was based on public information from major energy companies: Rosenergoatom, INTER RAO, RusHydro, Gazprom Energyholding, Mosenergo, T-plus, Unipro, Enel Russia, Fortum, Quadra. The results of the analysis showed that only 50% of companies have published their technical policies.

Table 1 shows an example of an analysis of the structure and content of technical policies of three energy companies. According to the results of the analysis, we can talk about a different level of elaboration of a technical policy depending on the organization. As a reference, one can consider the technical policy of Gazprom Energyholding LLC, which uniquely identifies sources, tools and mechanisms, criteria for applying new knowledge, new technologies, new equipment in the context of company development.

4. Conclusion
Problems related to improving the efficiency of using fixed assets by power generating complex enterprises have a key role in the Russian energy sector. Deteriorated condition of fixed assets is a factor in reducing the overall efficiency of power generation.

To increase energy efficiency at the enterprises of the power generating complex, tools and mechanisms for updating fixed assets should be developed, described in such a fundamental document as the technical policy of the enterprise. In this paper, we propose a structure of technical policy corresponding to modern management systems.
Table 1. Analysis of technical policies composition for energy companies [4].

| Technical Policy Statement                                      | Inter RAO | Gazprom EnergyHolding | Fortum |
|----------------------------------------------------------------|-----------|-----------------------|--------|
| Purpose of the technical policy                                | Yes       | Yes                   | Yes    |
| Procedures for the selection of equipment suppliers            | No        | Yes                   | Yes    |
| Approaches to the implementation of the principle of "continuous improvement" | Yes       | Yes                   | Yes    |
| Policies / procedures for introducing new knowledge            | Yes       | Yes                   | Yes    |
| Criteria for determining the sources of new knowledge          | Yes       | Yes                   | No     |
| Criteria for patenting innovation / know-how                  | No        | Yes                   | No     |
| Focus on patent search                                         | Yes       | Yes                   | Yes    |
| Focus on the best available technology                         | Yes       | Yes                   | Yes    |
| S                                                               | Yes       | Yes                   | Yes    |

5. References

[1] The energy strategy of Russia for the period until 2035 (approved by the order of the Government of the Russian Federation of June 9, 2020 N 1523-r)
[2] The official website of the Ministry of Energy of the Russian Federation. Indicators of the technical condition of electric power facilities (physical depreciation) for 2019. - [Electronic resource]. URL: https://minenergo.gov.ru/node/17860 (accessed 12.06.2020)
[3] Federal law dated December 31, 2014 No. 488 “On industrial policy in the Russian Federation”
[4] Gudkova E E 2019 Technical policy as a basis for assessing the sustainable development of the electricity sector Microeconomics vol 2 pp 66-71