

I. T. Yermak, A. V. Domnenkova, S. V. Kiselev, G. A. Chernushevich,
Belarusian State Technological University, Minsk, Belarus

WOOD FUEL PELLET MANUFACTURERS IN BELARUS, UNDER SANCTIONS, SEEKING SALES MARKETS

Due to the ban imposed by unfriendly countries on the export of Belarusian forest products, pellet producers have serious problems with the sale of their products. Government agencies, together with manufacturers of these products, are persistently looking for markets.

Several years ago, wood processing industries invested in the creation of factories for the production of wood fuel pellets. Currently, there are 64 pellet production facilities in the republic with a total capacity of 893 thousand tons per year, which have been idle for more than a year.

Due to the ban imposed since June 2022 by unfriendly countries on the export of Belarusian forest products, including wood pellets, the pellet production facilities created in the republic are idle, and investments for their construction are frozen.

During January-November 2023, all enterprises of various forms of ownership exported only 15 thousand tons of pellets, including 13.3 thousand tons to the countries of the European Union, which is 89 % of all exports for this period. During the corresponding period in 2022, 275.5 thousand tons of pellets were exported, 252.4 thousand tons to the countries of the European Union, which is 92 %.

Attempts to sell wood pellets to European markets (logistically accessible and economically feasible) according to established schemes are suppressed by the regulatory services of the European Union countries. Deliveries of pellets to the markets of the Azerbaijan, Korea, Japan, Turkey, Slovakia and other countries, are usually unprofitable due to the cost of logistics.

However, the challenge is not only to export, but also fulfill the needs of the domestic market, while reducing the use of other fuels.

Currently, Belarus is looking for new opportunities to use pellets in production of thermal and electrical energy.

Resolution of the Council of Ministers of the Republic of Belarus dated October 23, 2023 № 176 [1] listed a number of measures to increase the use of wood pellets.

1. Change the legislation to start classifying wood fuel pellets as goods whose prices are subject to state regulation, with the subsequent establishment of a fixed sale price to domestic consumers, including those engaged in the production of thermal energy for the population needs. Executors: Ministry of Forestry, Bellesbumprom concern, pellet manufacturers, Ministry of Antimonopoly Regulation and Trade. Due date: June 2024.

2. Use wood fuel pellets at cement industry, if economically feasible, with quarterly assessment. Expected growth of pellet consumption is at least 30 thousand tons per year.

3. Co-combustion of wood fuel pellets with other types of solid fuel at energy sources, including carrying out operational testing (hereinafter referred to as RPT) to determine the possible percentage of fuel components for its safe and efficient combustion. The volume of increase in the use of pellets is at least 20 thousand tons per year. Execution period: permanent, subject to positive results of the R&D, R&D until September 2024.

4. Pre-project elaboration of issues:

a. reconstruction of energy sources of the State Production Association «Belenergo» with the installation of new boilers using pellets, or modernization of existing boilers with the possibility of using pellets, including at such facilities as the regional boiler house (hereinafter referred to as the Republic of Kazakhstan) «Shabany» of the branch Minsk Heat Networks, Combined Heat and Power Plant (hereinafter – CHPP) CHPP-5, Baranovichi CHPP;

b. construction of energy sources provided for by the State Program «Energy Saving» for 2021-2025, approved by Resolution of the Council of Ministers of the Republic of Belarus dated February 24, 2021 №. 103, with the installation of boiler equipment operating on pellets, including at the following facilities:

– Brest region - installed capacity of pellet boilers 16.5 MW; the volume of increase in the use of pellets is 7.9 thousand tons per year;

– Vitebsk region - installed capacity of pellet boilers 8.0 MW; the volume of increase in the use of pellets is 4.5 thousand tons per year;

– Gomel region - installed capacity of pellet boilers 43.2 MW; the volume of increase in the use of pellets is 22.7 thousand tons per year;

- Grodno region - installed capacity of pellet boilers 41.0 MW; the volume of increase in the use of pellets is 21.7 thousand tons per year;
- Minsk region - installed capacity of pellet boilers 58.0 MW; the volume of increase in the use of pellets is 30.7 thousand tons per year;
- Mogilev region - installed capacity of pellet boilers 7.4 MW; the volume of increase in the use of pellets is 4.2 thousand tons per year.

Executors: regional executive committees, Minsk City Executive Committee, Department of Energy Efficiency of the State Standard. The execution period is 2024-2025.

c. construction of a boiler house in Soligorsk using pellets. Installed power of pellet boilers is 24.0 MW; the volume of increase in the use of pellets is 42.8 thousand tons per year. The deadline is 2023;

5. Development of pre-project (pre-investment) documentation taking into account the implementation of heat supply without the use of imported fuels with:

- reconstruction (modernization) of energy sources operating on local fuel and energy resources (except for cases of peak heat load);
- construction of boiler houses with a thermal capacity of up to 1 MW (except for cases of providing apartment heating in multi-apartment residential buildings, as well as the lack of technical possibility of using another type of fuel). Executors – republican government bodies, regional executive committees, Minsk City Executive Committee (developers, customers for the construction of power plants). The deadline is constant.

There are two main principles for using industrial pellets for energy production. Either thermal power plants are completely converted to pellets as the only type of fuel (in this case they talk about the so-called mono-combustion), or pellets are used as an additional fuel.

At the energy sources of the State Production Association «Belenergo» both boiler units using natural gas, associated (stripped) gas, fuel oil as fuel, and solid fuel boilers using local types of fuel (peat fuel, fuel chips, lignin from hydrolysis production).

When considering the issue of converting gas-oil boilers to burning wood pellets at some of the existing power plants of the association, one should take into account the additional financial costs of energy supply organizations for the development of architectural and construction projects, coordination with boiler manufacturers, the volume of reconstruction and the reconstruction itself. It is also necessary to take into account the time period of 3–5 years for the implementation of these works.

According to the Ministry of Energy of the Republic of Belarus, the use of wood pellets in thermal power engineering is inappropriate, both due to the higher cost of pellets (in conventional terms, 2 times higher than the cost of milled peat and 1.4 times higher than the cost of fuel chips), and due to the difficulty the situation in the current economic conditions of peat enterprises of the republic.

However, the task is not only to sell, but also to provide the domestic market, and at the same time reduce the use of other fuels.

The main barrier to expanding the use of pellets within the republic is their cost in comparison with other types of solid fuel.

The average cost of 1 Gcal of thermal energy used as fuel is:

- pellets (at a cost of 210 rubles/t) – 212 rub./Gcal;
- firewood (30 rub./m³) – 147 rub./Gcal;
- natural gas for the needs of the population (456 rubles thousand m³) – 119 rub./Gcal;
- wood chips (38 rub./m³) – 100 rub./Gcal;
- milled peat (88 rub./t) – 93 rub./Gcal.

At the same time, housing and communal services organizations continue to operate boiler houses in which the cost of 1 Gcal is above 250 rub. Modernization of such boiler houses or construction of new low-power ones up to 1 MW will allow achieving an economic effect, including by optimizing the number of personnel and switching the boiler house operating mode to automatic mode.

The Government of the Republic of Belarus is considering the possibility of using fuel pellets by the population of the republic by stimulating the transition from the use of firewood and peat briquettes to pellets.

However, this issue has been resolved only at the level of including pellets in the list of solid fuels sold to the population at fixed retail prices, with a maximum supply rate of 2 tons per year per household (Government Decree No. 491 dated July 28, 2023) [2]. Implementation of measures taken by the Government of the Republic of Belarus in 2024–2025 provides for the annual use in the domestic market of only 221 thousand tons, or 25 % of the total capacity.

Thus, the problem of selling pellets to consumers remains quite acute today.

Manufacturers of wood pellets, together with the Government, are persistently looking for markets.

1. On a set of measures to increase the use of wood pellets: Resolution of the Council of Ministers of the Republic of Belarus of October 23, 2023 No. 716 // National Legal Internet Portal of the Republic of Belarus, 10.24.2023, 5/52272.

2. On amendments to the Resolution of the Council of Ministers of the Republic of Belarus of November 9, 2012 No. 1028: Resolution of the Council of Ministers of the Republic of Belarus of July 28, 2023 No. 491 // National Legal Internet Portal of the Republic of Belarus, 01.08.2023, 5/51944.

И. Т. Ермак, А. В. Домненкова, С. В. Киселев, Г. А. Чернушевич,
*Белорусский государственный технологический университет, Минск,
Беларусь*

**ПРОИЗВОДИТЕЛИ ДРЕВЕСНЫХ ТОПЛИВНЫХ ГРАНУЛ В
БЕЛАРУСИ В УСЛОВИЯХ САНКЦИЙ ИЩУТ РЫНКИ СБЫТА**