

Significance of the first gas power plant project of the in Serbia, Pancevo CHPP

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Construction of the new, first gas-fired power plant in Serbia, with the installed electrical and thermal capacity of 200 megawatts and 121 Gcal, respectively, started in March 2019. The plant located near the NIS refinery in Pancevo is being built by the daughter company of Gazprom.

This investment is valued at EUR 180 million, of which Gazprombank secured EUR 140 million in the form of a loan. The completion i.e. commissioning deadline is the fourth quarter of 2020.

The Russian investor, Gazprom Energoholding, entrusted the construction to the Chinese partner, Shanghai Electric Group, based on the turnkey principle. The contract for the delivery of gas turbines and generators, valued at EUR 40 million, was signed with the Italian company Ansaldo Energia.

According to plans, the annual electricity generation will be around 1,400 GWh, which is about 4% of electricity that will be generated in Serbia in 2019.

Steam-gas power plants consume about 300 million cubic meters of natural gas per year.

As announced, the construction of four more thermal power plants in Serbia is also under consideration, in Belgrade, Novi Sad, Nis and Kragujevac.

In 2014, Naftna Industrija Srbije and Gazprom Energoholding signed a Memorandum on the construction of a steam-gas power plant in Pancevo, which stipulates that Gazprom Energoholding will own a 51% stake in the founding capital of a new company that will build the thermal power plant, while the remaining 49% will be owned by NIS. Gazprom Energoholding is the daughter company of Gazprom, which is the largest owner of power assets in Russia. The majority owner of NIS is the Russian company Gazpromneft.

Electricity and heat generated in the gas plant will primarily be used to supply the NIS refinery in Pancevo. According to plans, the remaining electricity amounts will be sold at the domestic competitive market.

The construction of a steam-gas thermal power plant represents an economic and ecologically efficient solution. This technology provides high efficiency and low fuel efficiency. This will reduce energy supply costs of the NIS refinery.

Natural gas will be used to fuel the thermal power plant, as environmentally cleanest energy resource. Natural gas is a fuel with outstanding technical and ecological advantages over

other conventional fuels, and in that sense it should provide a significant contribution to more efficient and environmentally-friendly use of energy. However, natural gas is a predominantly imported fuel, while its prices mostly depends on the international oil market changes.

Domestic natural gas production currently meets less than 20% of domestic consumption, with the expected downward trend.

For the gas sector of Serbia, development of the South Stream gas pipeline is of great importance. This transnational gas pipeline should enable safe supply of natural gas to the region in the future.

Gas power plants have the advantage of meeting environmental standards. At the consumption point, gas burns up to 98 percent, without releasing any harmful components. This is especially important, bearing in mind that chapter 27, dealing with the environment, is one of the most serious and difficult ones in Serbia's negotiations with the European Union.

However, the construction of a gas-fired power plant is economically justified only if an agreement is reached on the price of gas to be used as a fuel. According to earlier estimates, the construction of gas power plants with modern, efficient units with a natural gas price not exceeding USD 350 per 1,000 cubic meters, would be profitable. Although Gazprom has a monopoly on Russian gas exports, gas prices from Russia vary depending on the country.

According to TAS agency in late February, the average export price of Gazprom gas could range from USD 230 to USD 250 per 1,000 cubic meters of gas in 2019.

The price for 1,000 cubic meters in 2016 was USD 167, in 2017 it was USD 197, while in 2018 it was already USD 245.5, which is an increase of 24.6%.

To calculate the final price, the manipulative and distribution costs should be added to the import price of gas.

When it comes to electricity generation costs compared to the conventional plants operated by Elektroprivreda Srbije, according to Denis Fedorov, General Director of Gazprom Energoholding, applying the latest high-efficiency technologies and equipment throughout project implementation allows for the reduction of operating costs and electricity generation under a competitive price.

In the Pancevo CHPP, with steam-gas plant, the specific consumption of conditional fuel needed to generate one kilowatt-hour will be around 213-234 grams, compared to the steam-electricity plants of the "last generation", where fuel consumption is 330 grams per kilowatt-hour.

The final price of electricity delivered by the Pancevo CHPP to the market is not known at present, since the purchase price of the Russian company's gas has not been officially announced.

However, the plant is not part of any support scheme and no subsidies are planned for its operation. According to the investor's statement, the electricity generated will be sold on the domestic and regional open electricity market. This means that domestic consumers will not pay any difference in the price of electricity generated in the Pancevo CHPP and public power plants.

On the other hand, what is known, though not officially confirmed, is the price of electricity generated in gas power plants of the neighbouring countries.

Thus, OMV Petrom for the supply of households in the regulated market in Romania for its Brazi gas plant, with a capacity of 860 MW, is charging LV 260 (EUR 54.8) per MWh, calculated according to a methodology that takes into account generation costs plus a 5% margin.

The generation of the Brazi plant in 2018 was 3.8 TWh, while according to estimates it will supply about 3 TWh by the end of 2019 to the regulated market.

Starting from this year, the Brazi power plant partly imports gas from Russia to generate electricity, although Petrom is one of the two leading gas producers in Romania.

According to the calculations, 3 MWh of gas is required to generate 1 MWh of electricity. The price of own gas Petrom uses to operate its plants amounts to LV 56 (EUR 11.8) per MWh. Thus, only gas costs per MWh of electricity amount to LV 168 (EUR 35.4), nevertheless, the Romanian energy regulator ANRE recognizes LV 247 (EUR 52.1). The difference of LV 79 (EUR 16.6) refers to covering the import costs of the Russian gas.

The price of LV 260 (EUR 54.8) is the highest approved price for producers in the regulated regime (next to Petrom, this includes Hidroelektrik, Nuklearelektrik and CET). However, the market price for electricity Brazi delivers for peak consumption is over LV 300 (EUR 63.2).

Petrom confirmed that, according to ANRE's decision, it delivers electricity to the regulated market. However, in accordance with the law, the company cannot publish information on the quantity and price of electricity for the regulated market.

Costs of gas transmission to the Brazi power plant comply with the market price principles and refer to a mix consisting of domestic gas production, priced at LV 68 (EUR 14.3 euros) per MWh, imported gas and storage gas.

Petrom adds that the price of the CO₂ certificates is included into the production costs, resulting in higher overall costs than electricity from other sources (hydro and nuclear energy).

Serbian power plants are not covered by the EU Emissions Trading Scheme, hence these costs do not apply to them.

Furthermore, one should bear in mind that in the Serbian power plant of the new generation, gas consumption per kilowatt-hour will be lower compared to the Brazi power plant (230

grams vs. 330 grams).

Pancevo CHPP is the first project of this type implemented by Gazprom Energoholding outside Russia.

The company in Russia operates 80 combined heat and power plants, which is one-sixth of the country's energy industry. One of them is located in St. Petersburg. 10 years ago, it was converted from coal to gas, with an increase in the electricity and heat generation capacity to 360 megawatts.

Since 2007, companies in the Gazprom Energoholding Group have implemented projects for the construction and modernization of installed electricity capacity at the level of some 8.6 gigawatts, complying with modern environmental and technical norms. They also include 17 industrial power plants operating on the basis of the steam-gas cycle.

Replacement of outdated equipment has automatically increased the reliability of electricity and heat supply, and reduced pollution not only in St. Petersburg but also in the Gulf of Finland.

Combined heat and power plants are only fuelled by gas, which is an environmentally friendly energy source. It has a diesel fuel reserve, which can only be used in the event of hazards, and only for three days until the defects have been removed.

Gas power plant, one of the most important in the country and three times more capacity, is located in the very center of Moscow. Its state-of-the-art boilers were officially commissioned three years ago by President Putin.

The thermal power plant has been in operation since 1957, supplying electricity and heat to the central and south-eastern parts of Moscow, covering the energy needs of two million people.