

Despite numerous plans for constructing a gas-fueled combi-cogeneration power plant in Osijek, the project is still at the very beginning. The Cost-benefit analysis and the Feasibility study have shown the profitability of investing into the power plant.

For constructing the CCPP Osijek with a heating station and a heat accumulator, at the location of the TPP-HP Osijek, the energy license has been obtained for a plant of 500 MWe and 160 MWt, and the final location permit has also been obtained.

In accordance with the Law on Public Procurements, HEP as the purchaser conducts a negotiated procedure with previous publication. By carrying out the first stage of negotiated procedure, in which it is not allowed to reveal the bid price, the intention is to evaluate the capacity of the interested parties. In the second stage, the entity that submits its request and satisfies the required conditions will have the possibility to gain the right to participate. The goal is to conclude a contract according to the “turn-key” model for a gas-fueled combi-cogeneration power plant at the location of the plant TPP-HP Osijek, with the power of 500 MWe and 160 MWt and a maintenance contract for a single-axle gas-steam turbine driven set with accessories.

There are several reasons for constructing this plant. First, it is important to point out that two gas-turbine sets (B1 and B2) with one waste heat boiler, with the capacity of 2 x 25 MW, and three steambloc boilers (3 x 18 t/h) for producing steam for technological consumers were commissioned back in 1975. Second, the Block A, 45 MWe/139 MWt was commissioned in 1985, as the single source with the basic function of producing heat for the purpose of heating the town of Osijek and an adequate quantity of electricity from the combined process. According to the Energy Strategy of the Republic of Croatia, the cessation of operation of the mentioned units is envisaged for the period from 2017 to 2019. In these units - the Plant TPP-HP Osijek, approximately 205 GWh of heat energy, 120.000 tons of process steam and 115 GWh of electricity are generated annually. However, the electricity produced in them can cover only five percent of consumption of the Transmission area Osijek of approximately 2 300 GWh, with the daily maximum of approximately 350 MW at the consumption center.

According to the Industrial Emissions Directive (IED directive 2010/75/EZ), without additional interventions on the facilities aimed at bringing them into conformity with its provisions, the plant will not be able to produce after 1st January 2018.

Considering the shortfall in electricity for covering the consumption in the eastern part of the Republic of Croatia from own source, but also of the heat energy for the town of Osijek, a gas-fueled combi-cogeneration power plant such as the CCPP Osijek 500 would be a long-term secure and stable production source. In this way, the production from the existing old production units would be substituted and the lack of necessary capacities and the redundancy of heat sources in the town Osijek would be compensated. By the application of modern technological solutions, CO<sub>2</sub> emissions per unit of consumed gas would be cut in

half, with respect to the emission in the existing blocks. Inside the boiler plant, a special exchanger for solar integrated circle has been envisaged for the possible connection of the future solar field with the aim of increasing the power plant degree of utilization and reducing CO<sub>2</sub>.

In addition to the high efficiency of such plants with a combined cycle (gas and steam turbines), in the cogeneration manner of operation with simultaneous electricity and heat generation, their flexibility is important because of the increasing inclusion in the system of renewable energy resources. Such power plants can compensate the variable generation from renewable resources within a short time, in Croatia and the surrounding countries and provide the regulation services for maintaining the stability of the electric power system. The new capacity will reduce the need for electricity import, but also compensate 1.100 MW from the old Croatian thermal power plants and the Croatian thermal power plants not complying with the strict environmental regulations of the EU.

As reported by the HEP News, this type of power plant can be constructed within a relatively short time period, i.e. in less than 30 months, which can fix the lag in the construction of production facilities.