

Automation of Heat Reduction at JKP Energana Sombor

With support from the United States Agency for International Development's (USAID) Better Energy project, and designed with the technical expertise of E3 International, pilot projects at district heating companies in Niš, Sombor and Knjaževac were implemented prior to the 2022-2023 heating season to showcase best practices in district heating system technologies and operations that can improve system operations, save energy and reduce operating costs.

DHP	Monetary savings (USD/yr)	CO ₂ reduction (t/yr)
Niš	37,000	302
Sombor	91,845	1,565
Knjaževac	18,170	12

JKP Energana Sombor (Sombor DHP) Automation of Heat Production

The district heating system in Sombor was originally designed and built as an industrial heat supply system. Unfortunately, the plan was not realized due to the



lack of industrial facilities built near the heating plant, so a heat pipeline of about 1,500 meters was later built to the first residential development, and the purpose of the heating plant was transformed into a city heating plant. Production of heat takes place at 5 locations: "Main Heating Plant" - capacity of 3 boilers of 10 MW each; Boiler room "Muzej" - capacity of 2.2 MW boiler; and Boiler room "Suvajska" - capacity of 2.2 MW boiler; all of which use gas as fuel. In addition to these three boiler houses, 2 more facilities - "Nike Maksimovic" - capacity of 0.4 MW boiler and the boiler room "Radisceva" - capacity of 1.1 MW boiler - use fuel oil as fuel.

The Better Energy project completed the replacement of existing control technology in 17 substations which

distribute heat from the boiler house Kotlarnica Nova Toplana with new control system that has automatic adjustment capabilities. Boiler room "Nova Toplana" has installed power of 30 MW (natural gas) - 3 gas boilers, each 10 MW. While each boiler has necessary sensors and loggers from which to monitor boiler operation, changes to operating parameters are made manually. This approach to boiler control is very inefficient and can be improved by the installation of automatic control and SCADA (*Supervisory Control and Data Acquisition*) systems. By implementing this new technology, Sombor DHP will improve overall system efficiency, reduce operating costs, improve service quality to customers, and align their business with the Strategic Projects of the Republic of Serbia in terms of reducing CO₂ emissions and dependence on imported energy sources. In addition to the SCADA system, the project also included the automation/optimization of 17 out of 136 thermal substations that supply residential apartment buildings.



Costs and Savings

Savings at Sombor DHP resulting from the pilot project are in the form of reduced natural gas consumption from the boiler house - 457,500 m³, which is a reduction of 15% in natural gas consumption, as compared to the same period last year and as a result of the Better Energy pilot project. Based on data collected from the start of the 2022/2023 heating season through April 2023, the monetary savings amounted to \$91,845, while the CO₂ emissions were decreased by 1,565 ton/yr. At an investment of \$100,000, the project has a simple payback of just under 1 year.

Disclaimer

*This activity was largely implemented by E3 International under its engagement on the USAID Serbia **BETTER ENERGY PROJECT** in cooperation with Chemonics International.*