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## THE ROLE OF LADIZHYN TPP IN UKRAINE'S ENERGY SECURITY AND THE NEED FOR ITS RESTORATION

V. M. BAKULINA, Senior Lecturer; O. V. BRANITSKA, student  
*National University of Life and Environmental Sciences of Ukraine*  
E-mail: [bakulina\\_valentina@nubip.edu.ua](mailto:bakulina_valentina@nubip.edu.ua)

Ladizhyn Thermal Power Plant (TPP) was commissioned in 1975. The construction of the plant was part of a large-scale program for developing Ukraine's energy system during the 1970s and 1980s. Thanks to its location on the Southern Bug River, the plant ensured reliable cooling of equipment, contributing to stable operation.

Ladizhyn TPP is one of the key energy facilities in Ukraine, providing stable electricity supply to the Vinnytsia region and neighboring areas. However, with the onset of military actions in Ukraine, the country's energy infrastructure suffered significant damage. This thermal power plant, like many other strategically important facilities, came under threat. As a result of military shelling, the plant sustained severe damage, which significantly affected its capacity and ability to meet the region's energy needs.

The restoration of this TPP is a vital part of the process of reconstructing Ukraine's energy infrastructure amidst wartime conditions. Given the plant's importance for the country's energy security, its reconstruction requires not only the repair of damaged power units and infrastructure but also the implementation of modern technologies to enhance the station's efficiency and resilience to potential future threats. In this context, it is crucial to address technical challenges and consider

pathways for recovery, as well as the significance of the TPP's reconstruction for the stable operation of the national energy system.

Throughout its history, Ladizhyn TPP underwent several modernizations, which improved its efficiency and reduced its environmental impact. In the 1990s, the reconstruction of turbines and boilers was carried out, increasing the plant's capacity. The thermal power plant is one of the largest in Ukraine. Its installed capacity is about 1,500 MW, enabling it to supply electricity not only to Vinnytsia but also to other regions in the southern and central parts of the country.

The plant consists of several power units, each equipped with steam turbines and boilers, ensuring high stability in electricity generation. All the plant's power units operate on coal, which is the main fuel for TPPs.

At the same time, coal as the primary fuel is one of the main sources of CO<sub>2</sub> emissions and other pollutants. To reduce the environmental impact, the plant is equipped with flue gas cleaning systems and water treatment facilities. However, due to coal use, atmospheric emissions remain significant, raising environmental concerns.

As of today, the thermal power plant is one of the primary energy facilities in southwestern Ukraine. However, to maintain its efficiency and reduce its environmental impact, further modernization of equipment and a transition to more environmentally friendly energy sources are necessary. Following numerous shellings and damages caused by military actions, the plant's reconstruction has become an urgent necessity. According to reports, critical infrastructure components ensuring the uninterrupted operation of the TPP were damaged due to recent attacks.

The reconstruction of Ladizhyn TPP after numerous attacks is a crucial step to ensure its continued effective operation and stable electricity supply in the region. Successful modernization will not only restore its operation but also improve its resilience to future threats.

In the future, there are plans to expand the plant's capacity and implement cutting-edge technologies to significantly reduce its ecological footprint. One of the development directions is the potential transition to alternative fuels, such as biomass.

### References

1. Yakovenko I., Bakulin Y. & Bakulina V. (2020). Classification methods of civil buildings reconstruction. *Theoretical and scientific foundations of engineering* : coll. mon. Boston : Primedia eLaunch, 2020, pp. 70–96. <https://doi.org/10.46299/isg.2020.MONO.TECH.II>

2. Бакулін Є.А., Яковенко І.А., Бакуліна В.М. Інженерний захист та підготовка територій : навч. посіб.; за ред. канд. техн. наук Бакуліна Є.А. К. : НУБіП України, 2020. 212 с.

3. Яковенко І.А., Бакулін Є.А. Методика проведення комплексного обстеження кам'яних і армокам'яних конструкцій. Збірник тез доповідей XX Міжнародної конференції науково-педагогічних працівників, наукових співробітників та аспірантів «Проблеми та перспективи розвитку технічних та

біоенергетичних систем природокористування: конструювання та дизайн» (19–20 березня 2020 року). К.: НУБіП України, 2020. С. 64–67.

4. Бакулін Є.А., Бакуліна В.М., Костира Н.О. Об'ємно-просторові рішення будівель і споруд : навч. посіб. К. : Вид. центр НУБіП України, 2024. 264 с. URL: <https://dglib.nubip.edu.ua/handle/123456789/11201>

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