TREATY

VISIT MHP'S BIOGAS PLANTS

Nurturing deep tech talents for clean and sustainable energy transition.

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ABOUT MHP AND THE CHALLENGES IT FACES

On the 17th of July 2024, the students of the training courses that take place within the TRATY project visited the biogas plants of MHP.

The use of renewable energy sources is one of MHP's priorities. High quality, safe and environmentally friendly products, green energy and clean nature are the global standards that MHP strives to implement in its companies.

In this regard, MHP faces the following challenges:

- Achieving energy independence through the use of renewable energy sources;
- Reducing greenhouse gas emissions;
- Producing environmentally friendly organic fertilizers;
- Protecting the environment and combating climate change.

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ABOUT MHP'S BIOGAS PLANTS

Today, MHP successfully operates two biogas plants. The biogas plant is a high-tech facility that converts organic agricultural waste into green energy according to the world's highest environmental standards. MHP's biogas projects are an important contribution to the company's energy independence and environmental responsibility. The implementation of biogas projects allows MHP to efficiently dispose of production waste, generate clean green energy, significantly reduce greenhouse gas emissions and produce environmentally friendly organic fertilizers. The production and use of biogas as an energy source has a number of well-founded advantages that have been proven by international and national practice. Wind and solar power plants are currently being actively built in Ukraine. Unlike wind and solar energy, biogas can be produced continuously, regardless of weather conditions.

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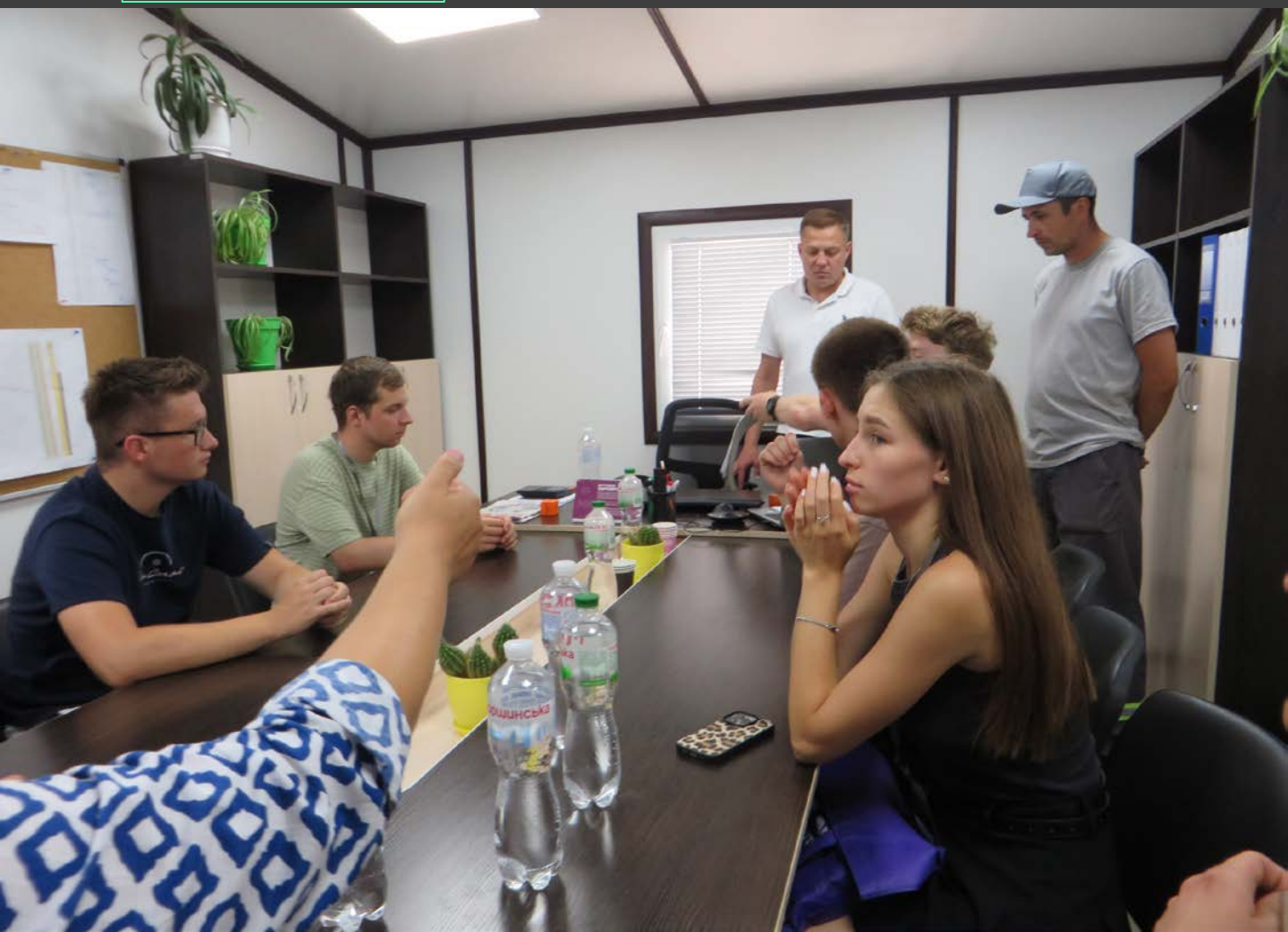
HISTORY OF MHP BIOGAS PLANTS

The director and management of MHP's biogas plants explained the stages of biogas plant construction to the students.

In spring 2012, MHP began construction of the first Biogas plant at the Oril-Leader poultry farm in the Dnipropetrovs'k region. In December, the company commissioned the first digester.

- In 2013 the Biogas plant was commissioned with a capacity of 5 MWh, which is equivalent to supplying 15,000 homes with electricity and 1,500 homes with heat.
- In 2014, the Biogas plant has reached its full capacity. It is the first Biogas plant of this capacity and technology level in Europe to run on chicken manure and waste from a broiler processing complex. International organizations have confirmed the efficiency and relevance of the project in terms of environmental and safety standards. The cost of the project is $15 million.

➢ **Learn more**



HISTORY OF MHP BIOGAS PLANTS

In 2019, the first stage of the Ladyzhyn Biogas plant with an energy capacity of 12 MW was commissioned. The plant is located in the village of Vasylivka, Tulchyn district, Vinnytsia region, and is part of the Vinnytsia Poultry Farm complex. The Biogas plant was built in two phases with an installed capacity of 24 MW, making it the largest Biogas plant for processing organic poultry waste in the world. The electricity generated by the first phase of the Biogas plant is enough to supply 35,000 families with electricity at any one time. At the same time, on an industrial scale, this energy is enough to power about 40% of the capacity of MHP's agro-industrial cluster. In addition, the Biogas plant produces organic biofertilisers with a high content of nutrients needed by plants. The scale of the Biogas Ladyzhyn plant is truly impressive: it is the first in Ukraine to have 12 tanks with a diameter of 41 m, a height of 6.5 m and a working volume of 8,000 cubic meters.

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PRODUCTION OF MHP'S BIOGAS PLANTS

After that, the students were introduced to the MHP's Biogas plants products.

Biogas

The total volume of natural gas replaced by green heat at the Oril-Leader biogas complex is over 5.4 million cubic meters.

Environmental impact

The environmental impact in terms of reduction of greenhouse gas emissions since 2013 is about 500 thousand tones of CO_2 equivalent. The operation of the first stage of the Ladyzhyn biogas complex helps to reduce greenhouse gas emissions by about 100 thousand tones of CO_2 equivalent per year.

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PRODUCTION OF MHP'S BIOGAS PLANTS

Organic biofertilisers

Another important product of biogas complexes is organic biofertiliser, which has a high content of nutrients necessary for plants.

The advantages of such organic fertilisers are:

- Versatility;
- Increased humus content;
- Improved water and air regime of the soil;
- A full range of essential NPK, macro- and micro-elements, organic compounds that improve soil structure and humic acids;
- The ability to increase yields;
- Ability to deoxidize soils; Compliance with ecological and organic farming methods;
- Ability to be used at any time of the year;
- Absence of pathogenic organisms.

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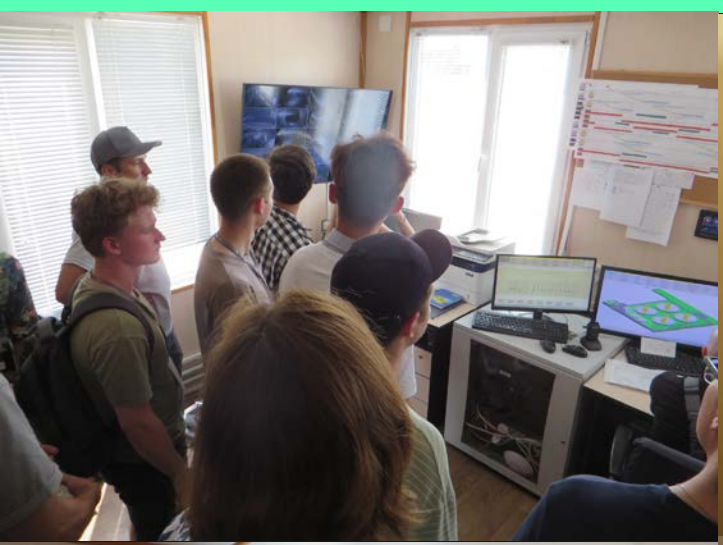
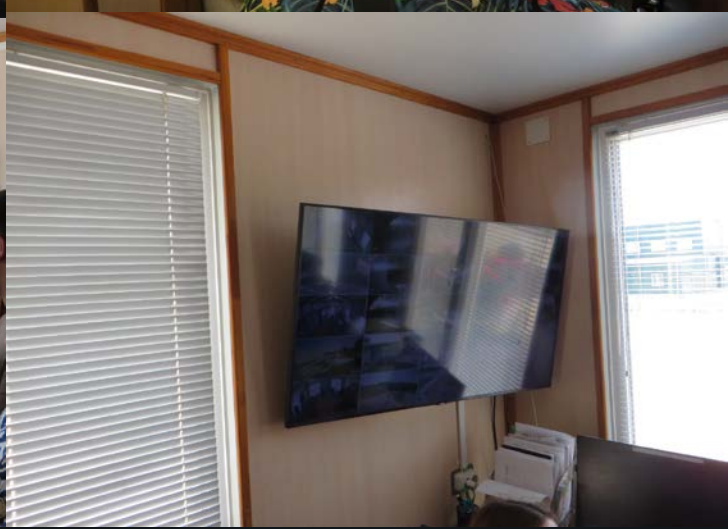
BIOGAS PLANT AUTOMATION AND CONTROL SYSTEM

The final stage of the visit was an introduction to the biogas plant automation and control system.

The system is based on the Siemens CPU315-DP2 industrial controller with the Simatic ET200S distributed peripheral system and the OP277 Touch operator panel with touch control, together with sensors and actuators. It provides automatic control of biogas plant processes, protection and regulation of process parameters. All nodes communicate via PROFIBUS and MPI networks using the RS-485 physical interface. The control programme has been created using the Simatic Step7 development system and stored on a flash memory card.

➢ **Learn more**





RESULTS OF THE VISIT

The visit was very interesting and informative from a practical point of view. The students were very satisfied and expressed their sincere gratitude to the plants management. It was agreed with the management of the Biogas plants to continue such excursions. In particular, it is planned to organize a series of excursions for everyone in autumn of 2024.

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