

Renewable energy sources in Campus and their capacity (in kilowatt-hour)



Campus 1. Solar battery (photo 1), rechargeable batteries (photo 2,3), transformer (photo 4).





Campus 1. Heliocamera for solar energy accumulation



Eco Gazebo with free Wi-Fi and solar panels

### Description:

1. The solar battery is located on the roof of the building opposite Building 4, where the sun's rays fall at the most efficient time.

Solar energy through cables is accumulated in batteries, then it is fed to transformers where direct current 12V is converted into alternating current 220V. The energy generated in this way can be used for lighting, charging phones, personal computer or netbooks.

Rated power of the battery 200 W, the voltage on the panel is 12V.

2. A Heliocamera for accumulating solar energy is installed on the roof of the Research Laboratory for Building Materials, Construction and Architecture. The heliostatic camera is used for the final heat treatment of concrete blocks.

In the upper cover of the heliostatic camera there is a plate that stores solar energy. Below in the chamber is water, which is a heat carrier. Water circulates along the sides and bottom of the receiver, inside

of which there is concrete. The heated water gives off the heat of the phase transition to the product. In this way, heat exchange occurs, as a result of which the concrete heats up with an increase in strength without the use of additional energy.

Carry out and implement scientific work, a grant was received under the "Green Economy" program approved by N.A. Nazarbayev. The results of this work were presented at international scientific and practical conferences: in 2014 in Weimar (Germany), in 2015 in Japan, in 2019 in Belgorod (Russia).

3. On campus 1, the university initiated the installation of an Eco-gazebo with free WiFi and the ability to charge small electrical appliances (smartphone) from a solar battery.

In total, the university has three sources of renewable energy:

1. Solar battery, uses solar power
2. Heliocamera, uses combined Heat and Power
3. Ecogazebo with solar panels.

The capacity of the three renewable energy sources on campus is approximately 5500 kWh /year.

**Additional evidence link (i.e., for videos, more images, or other files that are not included in this file): <https://green.auezov.edu.kz/en>**