12th EUROPEAN EXHIBITION OF CREATIVITY AND INNOVATION
"EUROINVENT"
21-23 May 2020, Iași - România

Technical University of Moldova,
Departament of Machine Projecting Basics

AEOLIAN-SOLAR HYBRID SYSTEM FOR DOMESTIC WATER HEATING

Dr. Sc., Academician, prof. Ion BOSTAN; *Dr. Sc., prof.* Valeriu DULGHERU; *PhD., engineer (RO)* Cătălin DUMITRESCU; *PhD., engineer (RO)* Liliana DUMITRESCU; *PhD., assoc. prof.* Radu CIOBANU; *PhD., assoc. prof.* Oleg CIOBANU.

Request OSIM nr. A/00579, of 10.08.2018

Goal:

Expanding technological possibilities, increasing conversion efficiency and operational safety.

Solution:

✓ The hybrid solar-solar heating system, which includes a vertical-axis wind turbine with a whirlpool heat generator and a solar thermal installation, ensures that the needs of the consumer with hot water, including heating during the cold period of the year, are fully met (day and night), especially in rural areas;

✓ Endowment of the hybrid wind - solar system for domestic water heating with thermal generator with eddy currents ensures the increase of the efficiency of conversion of wind energy into thermal energy;

✓ The endowment of the hybrid wind-solar domestic water heating system with a vortex brake ensures the regulation of the heat transfer temperature in the system and protects the solar thermal installation with vacuum tubes against overheating during the hot period of the year;

✓ The execution of the periodic connection mechanism of the polar wheel of the eddy current brake, with the main shaft of the wind turbine with vertical axis in the form of a plugged tube filled with inert gas, connected with a stock, and depressions executed in the main shaft ensure constructive simplicity and costs reduced.

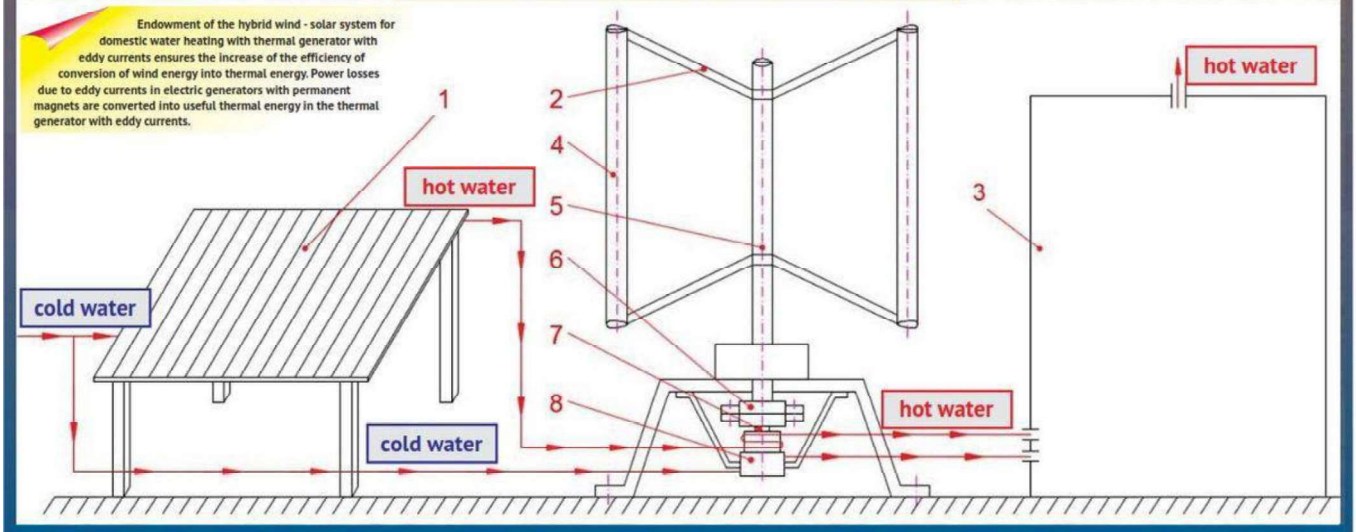
Advantages:

- ✓ Construction simplification;
- ✓ Uses the maximum wind and solar energy potential at various times of the year;
- ✓ The wind turbine also compensates for the lack of thermal energy at night (when the solar thermal installation does not produce thermal energy);
- ✓ The wind turbine with thermal generator and eddy current brake also ensures the protection of the solar thermal overheating installation.

Stage:

Computerized model.

Hybrid wind - solar domestic water heating system.



TECHNICAL UNIVERSITY OF MOLDOVA
Departament of Machine Projecting Basics
Tel: (+373 22) 50-99-39, e-mail: valeriu.dulgheru@bpm.utm.md