Technical Specification

Test facility 2. Renewable Energy Sources Laboratory (RESL)

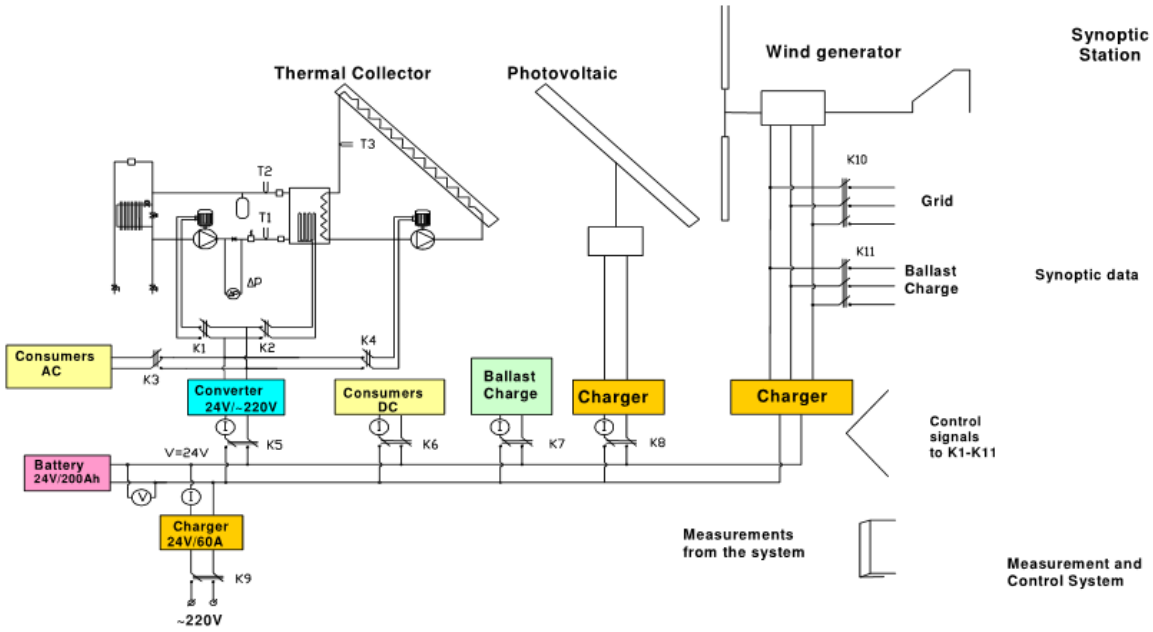
Renewable Energy Sources Laboratory is oriented to research and education in the field of renewable energy sources (electrical aspects). The Flexible Hybrid system is the main part of the laboratory. This system comprises the following elements:

- Digital meteorological station; wind generator with rated power of 2,2kW; photovoltaic with maximum power of 294W; lead-acid battery 24V/200Ah; inverter-rectifier of 1500W rated power; solar thermal collector with vacuum tubes;
- Monitoring system based on hardware from National Instruments.
- Physical model of wind generators realized from a special design three stands with synchronous and asynchronous machines, inverters and different algorithms for control in real time. Simulation models of DER devices and control systems was created in MATLAB/SIMULING environment and validated utilizing the stands.

Proposed services:

Researches on energy conversion and transfer in the system:

- Wind turbine (constant speed) – generator (asynchronous or synchronous) – grid;
- Wind turbine (variable speed) – generator (asynchronous or synchronous) - electronics converters – grid;
- Photovoltaic – electronic converters – grid;
- Hybrid solar collectors.



The laboratory members carry out experimental and theoretical research of PV systems, wind energy conversion systems, power electronic converters, hybrid systems with RES, integration of PV generators of different technologies in the buildings. Last year the laboratory has got a PV systems experimental facility in the frame of the University Research Complex of TU - Sofia (DUNK 01/3).

Current researchers

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