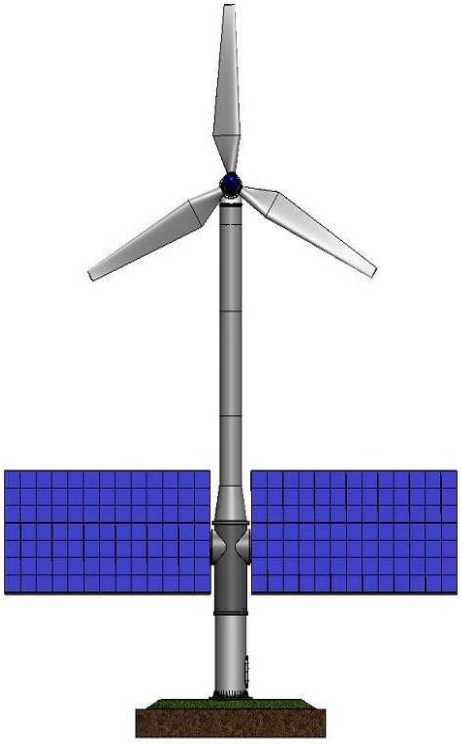
Hybrid system ©HELIOZEFIR D21-P100-T36 for agriculture, trade and industry



The HELIOZEFIR D21-P50-T30 is a hybrid system that can work as on-grid, but is particularly recommended for island operation. It is a combination of a **100** kW horizontal wind turbine with a rotor diameter of 21 m (a total height of 46.5 m) and a photovoltaic system with an output of **67** kW_p (182 PV modules) mounted on a 2-axis tracking system integrated with the tower of the wind power plant.

The hybrid system is also equipped with the battery storage system, which means that the proportion of self-consumption can be increased up to 100%. The second, also important function is the so-called peak load capping. The battery storage covers the peak loads that exceed the total output of the hybrid system.

Components of HELIOZEFIR:

- 100kW wind power plant on a 36m tower (total height 46.5m)
- PV system with 67kW_p output with its own tracking system integrated with the wind turbine tower
- Inverter for wind turbine
- Inverter for PV system
- The system is controlled by the SIEMENS PLC controller based on the bidirectional power measurement on the internal 0.4 kV bus
- Battery storage with integrated inverter

All components with control cabinet heating system are located in the tower of the system.

Battery storage:

- The battery storage is equipped with an integrated inverter, network analyzer and intelligent battery charging system, and is designed for up to 8000 charging cycles.
- Battery storage capacity is optimized for each individual energy supply system under two conditions:
  - Insufficient battery capacity, means that a considerable amount of energy has to be taken from the grid and, at the same time, your own production is restricted if there is a surplus.
  - Batteries that are too large allow you to use your own energy generation completely, but unnecessarily increase installation costs.

Special software for controlling the PV tracker is provided for places where icing can occur in order to protect it from damage when the wind turbine set is started.

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Compact structure on a common foundation, easy to install and resistant to destruction.

For locations with average solar radiation (1000kWh / m² per year) and annual average wind speed of 5.0m / s (at a height of 10m), the hybrid system may exceed the production limit of **350.000** kWh / year.

The hybrid system is also equipped with a remote control and monitoring ZEFIR-SCADA system. With access via Internet, the user can start or stop the system remotely. He also has access to current working parameters and local weather data, and can call up recorded historical information from the selected time intervals.

Technical specification:

Wind turbine:

- Power: **100**kW
- Rotor diameter: **21**m
- Total height: 46,5m (Hub height: **36**m)
- Wind tracking system

PV-plant:

- Power: **67**kWp
- 182 PV- Monocrystalline modules, each **370**Wp, Efficiency: **19,6**%
- Sun tracking system

overall performance: **167**kW

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