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COMBINED SYSTEM FOR POWER SUPPLIER COMPOSED OF WIND GENERATOR AND SOLAR PANELS

Overview of sytem

It offers the best solution for producing the electricity from all renewable energy systems, being suitable for almost any application, taking into account climate changes. The wind and solar systems are complementary during the year: the energy produced by the wind in summer is smaller but it is offset by greater efficiency of the solar energy. The system is composed by the batteries to ensure continuity of consumers supply during day-night variations.

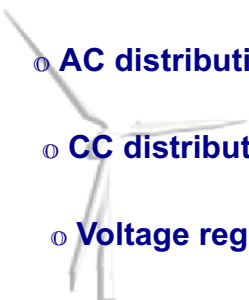


Technical characteristics

- rated installed power: 2 kW
- supplied voltage: single-phase 230V, 50 Hz
- D.C intermediate circuit with 24 V_{D.C} voltage
- electrical distribution: - for D.C, 24 V
- for A.C., 230 V, 50 Hz
- self-operating from batteries:
-2 h for rated load;
- harmonic content in output voltage <5%
- conversion rating: 50%
- controlled charging of battery by the two specialized controllers mounted in parallel and operating on the principle of resistive diversion for load-on
battery with repeated cycles with advanced discharge
(up to 80% capacity)

Components

- Wind generator
- Solar panels
- AC distribution cabinet
- CC distribution cabinet
- Voltage regulators cabinet



COMBINED SYSTEM FOR POWER SUPPLIER COMPOSED OF WIND GENERATOR AND SOLAR PANELS

1. Wind generator and solar panel assembly

Whisper winder Generator:

Characteristics:

- Rated power: 1 kW
- Diameter of rotor: 3 m
- Weight: 30 Kg
- Wind speed at start: 3,1 m/s
- Power: 1000 W la 10,5 m/ws;
- Voltage: 24 V

Wind generator is equipped with its own controller with the role of voltage regulator and rectifier for 24 V DC supplying the 24 V voltage.



Photovoltaic panels:

They are produced in Germany by the *Solara* and they are guaranteed by the manufacturer for 26 years of operation.



Characteristics:

- Maximum power: 125 W
- Short circuit current: 8 A
- Voltage for no-loaded circuit: 21,7 V
- I for Pmax: 7,14 A
- Weight: 11,5 Kg

2. AC distribution cabinet fully equipped (DCA)

DC - AC Inverter:

It is located in the AC distribution cabinet it is fed to the DC voltage of 24 V and provides the voltage with standard parameters 230 V, 50 Hz for supplying AC consumers.



Component of cabinet:

- o CA single-phase energy meter
- o CA automatically switch bipolar: 20 A
- o Ferromagnetic ammeter: 30 A
- o CA ferromagnetic voltmeter: 250 V
- o Set of four batteries

-rated voltagee 24 V
-capacitate 330 Ah

Characteristics:

- Rated voltage: 24 V c.c
- Output voltage: 230 V c.a.
- Rating: 94 %
- Frequency: 50 Hz \pm 0,4 %
- Harmonic content: < 5 %
- waveform: pure sinusoidal

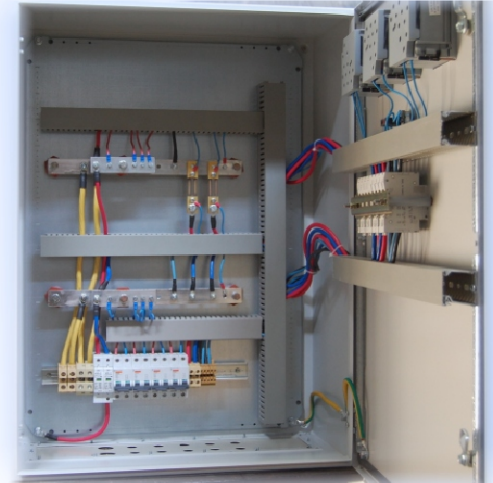
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3. AC distribution cabinet fully equipped (DCC)

- It achieves connecting of the three generators to the DC network with rated voltage of 24 V;
- It achieves the connection in the buffer of batteries;
- It provides energy-outlet for AC distribution cabinet;
- It provides the voltage for consumers of DC current.

Component of the cabinet:

- o DC magnetoelectric voltmeter: 40 V c.c.
- o Magnetoelectric ammeter: 60 V, 100 A
- o Shunts for ammeters
- o DC single-pole circuit-breaker: 63 A, 160 A, 20 A
- o Clamps for electrical connections



4. Voltage regulator cabinet fully equipped

Testing regulator

- It provides constant voltage to the bars of 24 V DC, if the voltage supplied by wind generator-photovoltaic panels assembly is not constant due to climatic conditions;
- It serves to direct the excess energy to four power resistors mounted outside the cabinet;
- The testing regulators type C40 are supplied by the company XANTREX.

Characteristics:

- **Rated voltage:** 12, 24 V c.c, configurable
- **Maximum output voltage:** 55 V c.c.
- **Rated load current:** 40 A
- **Peak current:** 55 A
- **Automation functions**

