

MONITORING

By means of the Elpower monitoring software, it's possible, by the connection of a PC to the RS 232 interface of the CLEANISLAND PCS, to display all the operating parameters including the supplied power and energy, to display the alarms and to activate the data logging. This function allows to acquire the main operating parameters with 0,5 sec frequency; an Excel file is created each hour and all the daily files are stored into a dedicated folder.

It's available, as option, a remote control kit composed of an embedded PC and a 4G router mounted into the PCS cabinet. The monitoring software running inside the PC allows to have the a.m. functions also from remote.

Moreover the remote control kit allows to Elpower to give a support for the commissioning and for the after sales service from remote, because with the monitoring software is also possible to modify the set-up and the firmware and to manage the on board oscilloscope. These functions are only available for Elpower technicians.

A RS 485 interface is available to communicate with MODBUS RTU protocol.

As option is available a communication electronic card that increase the connection capability as follows: 2 x RS 485, 2 x CAN BUS and 1 x TCP/IP.

EMS – ENERGY MANAGEMENT SYSTEM

HARDWARE

Elpower EMS consists of 2 main parts:

1. Dedicated hardware with embedded watt-meters, digital and analog I/O, RS-485 communication interface, RTC
2. Plant monitoring software running on a Windows based embedded PC

The plant management logics (priority of power sources, timings, ..) are implemented in the firmware of the EMS board and can be parameterized via software.

The dedicated hardware allows to control external sources (e.g. genset) via I/O and/or communication interface like Modbus and to have 2 three-phase measurement points (for example loads and power supply) or 6 single-phase points.

LOGICAL FUNCTIONS

When the system operates in automatic mode (controlled by EMS), 3 main operating modes can be identified

1. Grid following with battery charging via renewable sources

The PCS follows the grid or the grid formed by external sources (e.g. Gensets) on the AC side and uses all the energy provided by the renewable sources to charge the batteries.

2. Grid following with battery charging via external sources

When a scheduled grid forming timeslot is required and batteries are not charged enough, the EMS informs the PCS to use the grid or the external power sources (genset) to charge the batteries

3. Grid forming

When the battery is charged, the EMS informs the PCS to use storage and renewable sources to form the AC grid and supply the plant loads, the EMS turns off the gensets.

