

# SUN POWER SYSTEM

## for solar power plants

Remote diagnostic monitoring and efficiency analysis  
In real-time via internet

- **SOLAR RESOURCE ASSESSMENT**  
Continuous solar radiation measurements
- **YIELD ANALYSIS**  
Off-line or on-line
- **REAL-TIME MONITORING**  
Web Posting
- **REMOTE ALARM**  
Automatic SMS and email alert message

Brochure nº 9742.0004



SOLAR AND  
METEO SENSORS



REMOTE TERMINAL UNIT  
DATA LOGGER & TRANSMITTER



WEB-POSTING  
Real-time graphic presentation  
and data download via internet



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### SOLAR POWER PLANT (THERMAL OR PHOTOVOLTAIC)

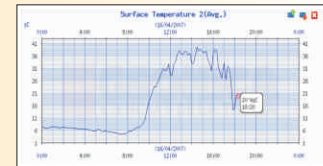


PLANT SENSORS  
and  
WEBCAMS

INPUT SIGNALS

DATA, ALARM AND STILL IMAGES  
TRANSMISSION VIA INTERNET  
(GPRS/CDMA) – WEB POSTING  
SMS and email Alarm messages

WEBPOSTING BY THE  
WEBTRANS Platform



#### SOLAR RADIATION

- Global
- Direct
- Diffuse
- Daily/Monthly Insolation

#### ARRAY PARAMETERS

- DC Voltages and Currents
- Battery Voltage
- DC Power
- Modules Temperature
- Thermal fluid temperature and flow

#### GRID PARAMETERS

- AC Voltage and injected currents
- AC Power

#### METEOROLOGY

- Turbulent Wind Effects
- Wind Speed and Direction
- Precipitation (rain, snow, hail)
- Temperature and Relative Humidity

#### STILL IMAGES

- Optional color Webcams for still images transmission

ANY OTHER Plant Parameter



REMOTE TERMINAL UNIT 2000/3000  
DATA LOGGER TRANSMITTER



OTHER LOCAL  
CONNECTIONS  
ETHERNET, etc...

#### SYSTEM PROVIDES:

- Quick look and off-line Analysis
- Identification of failed components or abnormal operation conditions
- Minimization of trouble-shooting efforts and maintenance work
- Prevention of key components damage
- Improvement of overall plant performance

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## SYSTEM DESCRIPTION

GEONICA introduces the Sun Power System, a turnkey integral solution specifically designed for the remote monitoring and efficient analysis of solar power plants, thermal or photovoltaic, in real-time, via Internet.

Solar resource assessment is the first objective to be covered, in order to determine, during a certain time, the site conditions regarding the available solar energy. So the Power System has been designed for allowing the measurement of all solar radiation parameters, such as global, direct and diffuse radiation, by means of highly sensitive pyranometers and pyrhemimeters supported by very precise solar trackers.

Once the solar plant is in operation, other three fundamental issues have to be considered:

- Real-time monitoring of all the main or critical plant parameters. This will provide the possibility of a quick identification of failed components or abnormal operation conditions of the plant.
- An efficient remote alarm management procedure by means of the urgent transmission of SMS alert messages to cellular phones and emails to central computers, in order to minimize the troubleshooting efforts and to prevent damages in key plant components.
- Off-line analysis of the plant efficiency, in order to know the overall performance of the thermal or photovoltaic installation.

These three issues will allow to enlarge the operative life of the plant and, at the same time, to assure the maximum investment profitability.

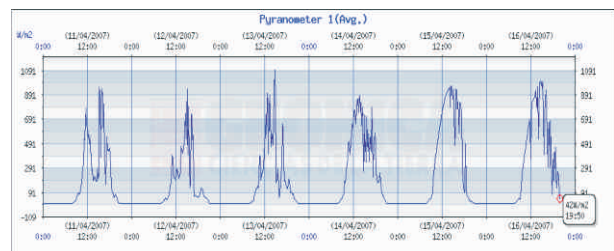
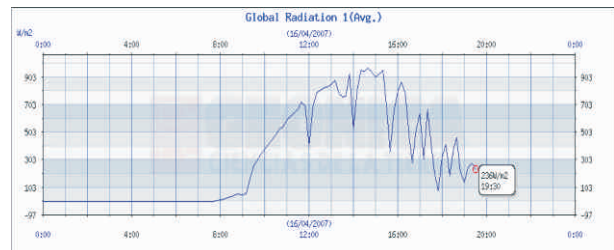
## WEB POSTING

A very valuable option offered by GEONICA with the Sun Power System, is the possibility of web posting, in such a way to provide worldwide access via INTERNET, to the historical and instant values of all the parameters measured at the solar plant.

This optional service is offered by WEBTRANS Platform, which is supported by a powerful Server located at GEONICA's facilities.

All the parameters measured at the solar plant, are displayed in the WEBTRANS pages as clear graphical presentation.

## WEBPOSTING BY THE WEBTRANS Platform



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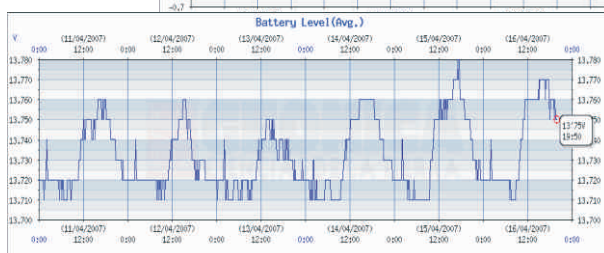
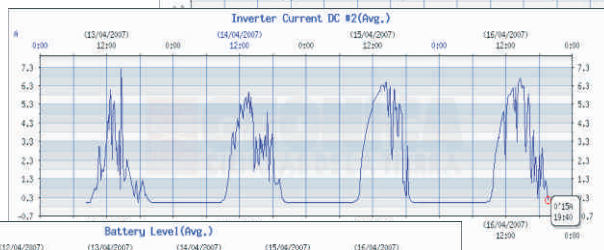
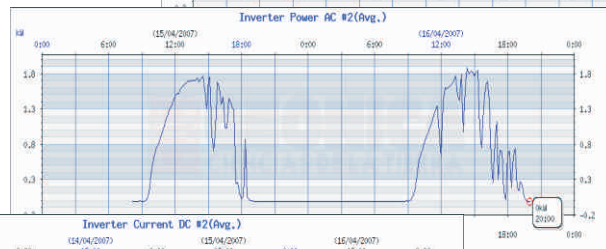
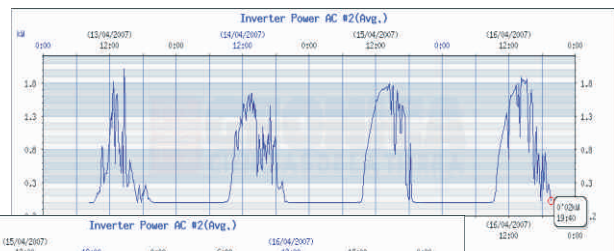
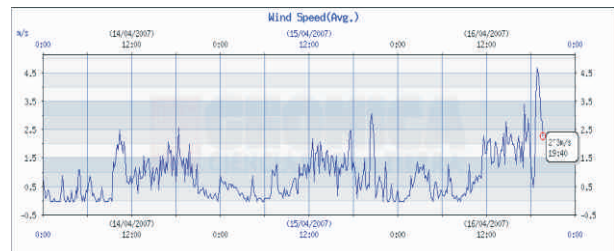
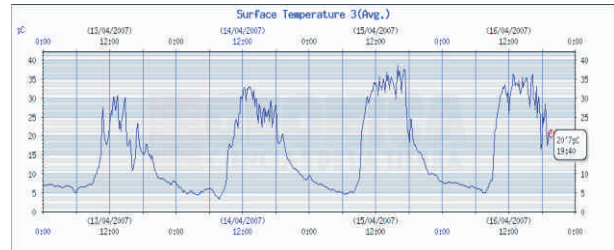
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## WEBPOSTING BY THE WEBTRANS Platform

At the same time, the historical data can be also downloaded to your own computer. In all cases, only a user's name and password are required for accesibility, assuring a total confidentiality to your own information.

The remote Acquisition and Transmission Unit Model 2000C/3000C Series (the heart of the Sun Power System) includes a GPRS cellular modem that allows the trasmission of data, and also still images when connecting optional color webcams to the remote unit. Data and image transmission to the WEBTRANS Platform, is carried out in near-real-time, or at programmable intervals of 5, 10, 20 or 30 minutes.

An advanced and useful graphical presenttation of historical data is showed in the standard layout of the WEBTRANS Platform, but the portal can be also designed according to customer's preferences.



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