

NOOR ENERGY 1 DUBAI

950 MW Hybrid Solar Project

GEONICA obtains the contract for the design, supply, installation, setup and maintenance of the Solar Irradiation and Meteorological Measurement System for the largest combined CSP+PV solar power plant in the world



950MW CSP+PV HYBRID SOLAR PLANT PROJECT IN DUBAI

The 950 MW solar hybrid project (700MW CSP & 250MW PV) fourth phase of the Mohammed Bin Rashid Al Maktoum Solar Park, is the largest single-site concentrated solar power plant in the world using a state-of-the-art combination of a central tower and parabolic trough concentrated solar power (CSP) technologies to collect energy from the sun. This will be supported with Photovoltaic panels to take the full phase to 950 MW.

The project, which was awarded to a consortium led by ACWA Power in 2017, will deliver electricity at a levelised tariff of USD 7.30 cents per kilowatt-hour; a cost level that competes with fossil fuel generated electricity without subsidy for reliable and dispatchable solar energy through the day and night. The plant will support the Dubai Clean Energy strategy 2050 to increase the share of clean energy at Dubai to 25% by 2030, and will allow a saving of 2.4 Million tons of CO₂.

Participants in Dubai 700MW CSP + 250 MW PV Project:

- Owner & Offtaker: **Dubai Electricity & Water Authority, DEWA**
- Developer: **ACWA Power**
- EPC Contractor: **Shanghai Electric Power Generation Engineering Co.** www.shanghai-electric.com
- Solar Energy and Meteorological Measurement System: **GEONICA (Spain)** www.geonica.com
- Tower Technology: **BrightSource**
- Parabolic trough technology and solar field construction **Abengoa (Spain)**

GEONICA participates as subcontractor of Chinese company **Shanghai Electric** for the design, supply, installation, setup and maintenance of the complete Solar Energy and Meteorological Measurement System (**SEMS**), including **12 SEMS-2000 Solar & Meteo Stations** distributed over the whole area of the plant, consisting each one of: **METEO DATA Datalogger & Tracker Controller, power supply, communications, tower, SUNTRACKER-2000 with active tracking, set of solar and meteorological sensors**, for the measurement of the following parameters:

- Direct Normal Irradiance (DNI) (by Pyrheliometer mounted on the solar tracker)
- Global Horizontal Irradiance (GHI) (by Pyranometer)
- Diffuse Horizontal Irradiance (DHI) (by shaded Pyranometer on the solar tracker)
- Wind Speed and Direction at 5m and 10m heights, by means of two ultrasonic wind sensor (no moving parts)
- Air Temperature and Relative Humidity
- Barometric Pressure
- Precipitation by means of **DATARAIN-4000** electronic weighing technology sensor with automatic emptying



SUNTRACKER-2000
Highly Accurate, very Low Power Consumption & lightweight Solar Tracker

The **12 SEMS Solar-Meteo Stations** are complemented by another **7 METEODATA Wind Measurement Stations**, mounted each one on a 10 meters tower with two ultrasonic wind speed and direction sensors at heights of 5 and 10 meters.

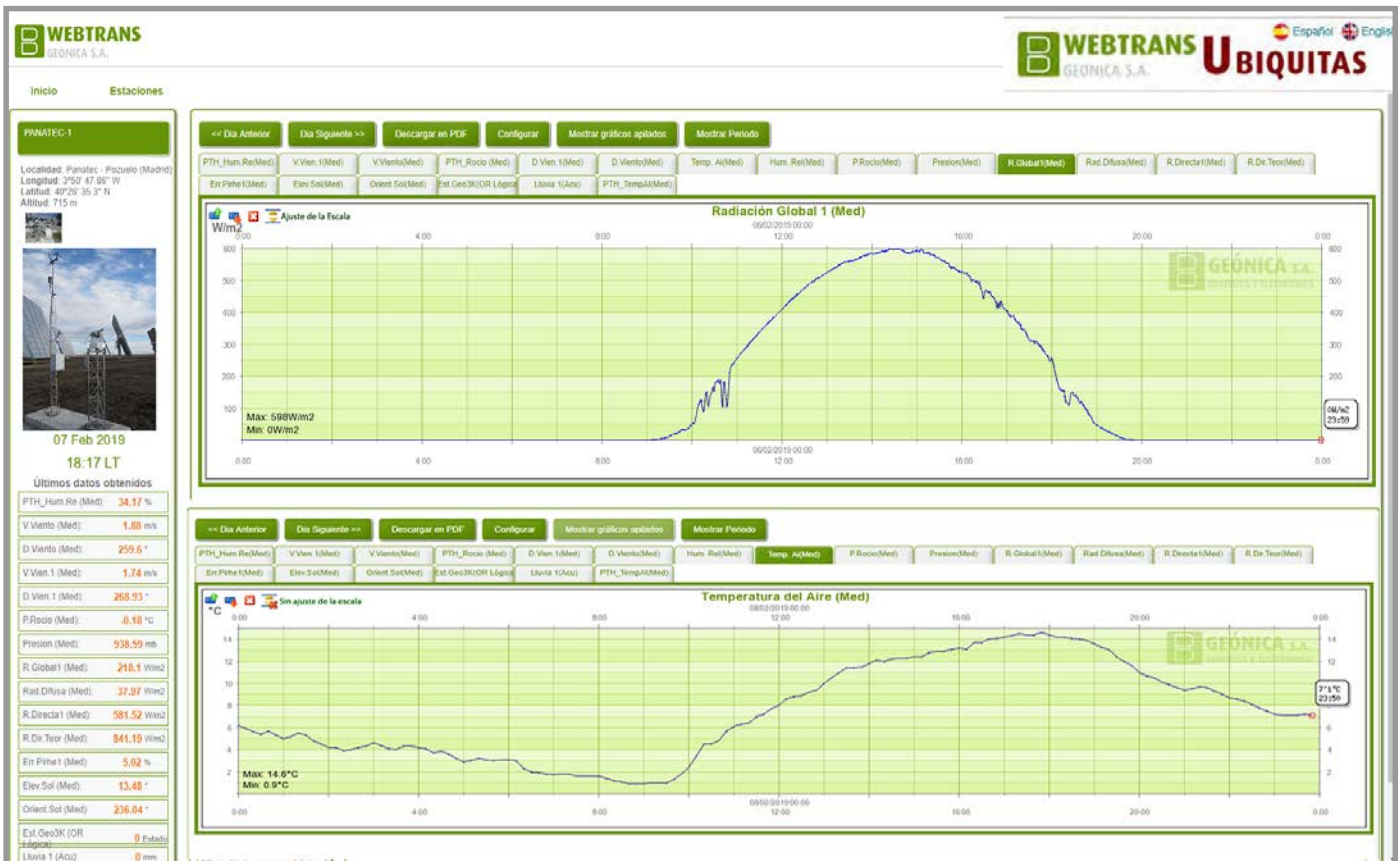


Model METEODATA
Datalogger/Tracker Controller/Transmitter Unit
3G / GPRS, Line, Radio or Satellite

Each of the **19 (12 + 7) SEMS remote stations with METEODATA** dataloggers transmits the solar radiation and meteorological parameters through an Ethernet / Fiber Optic interface to a local SCADA, and in a redundant mode, data can also be transmitted through GPRS / 3G cellular network to a Central Server **GEO-DRC** with **GEONICA SUITE** software package that stores the data in a SQL Database.

All communications are managed by the advanced **GEONICA SUITE** software package, which also allows carrying out the complete programming of the remote stations from the Central Server or from any other device with Internet connection.

All **SEMS** measurement stations also include a safe **Autonomous Power System**, consisting on a suitable battery pack connected either to the VAC power network or to a solar panel with charge regulator, selecting automatically the most suitable recharge alternative via a built-in electronic comparison device.



GEONICA Management Software

The fourth phase solar project has already achieved 8 world records:

- World largest single-site investment project in CSP based on IPP model: USD 4.400 million
- World largest capacity of single CSP+PV project: 950MW
- World largest area of single CSP+PV project: 44 square kilometres
- World biggest quantity of molten salt used in single CSP project: 550,000 tons
- World tallest CSP tower: 260m
- World leading tower wireless heliostat technology: 70,000 heliostats
- World largest trough in commercial CSP project: 8.2m
- Lowest levelised cost of electricity: USD 2.4 cents per kilowatt hour (kWh) for the 250MW photovoltaic solar panels technology and 7.3 cents per kWh (2.9 cents in daytime, and 9.2 cents in night time)

