



Reference Project

Larnaca, Cyprus



PV system exposed to extreme heat and dust

CIS system in vicinity of a stone quarry in Cyprus achieves excellent yields

149 kWp

Challenging application:
extreme heat & very high
dust loads

Perfectly suitable for
Mediterranean climate

Higher yield than crystalline
modules

Sufficient power for approximately
40 households in Cyprus

Saves 215 tonnes of CO₂
per year

Extreme heat in south of Cyprus places heavy demands on modules

It is October; Christos Pharconides is standing beside a warehouse near a stone quarry in Larnaca, Cyprus. On the roof of the building 966 matt black CIS PowerModules supplied by Solar Frontier glint in the sunlight. The Managing Director's firm, ERGO HOME ENERGY LTD, recently installed the PV system which has a capacity of roughly 149 kWp after giving the customer, the owner of the warehouse, technical advice on planning and which modules to select. The system has been generating environmentally friendly electricity since it was first installed in autumn 2014.

Larnaca is located in the south of the island of Cyprus and the PV modules have to cope with temperatures of up to 40 °C in the summer months – without any drop in yield where possible. "The building's corrugated aluminium sheet roof creates additional build-up of heat in the immediate vicinity of the modules" explains Pharconides, pointing to the roof. "The surface of the modules can reach temperatures as high as 80 °C. This is why we opted for Solar Frontier's CIS modules; they have excellent temperature stability and cope well with the blistering heat which only has a slightly adverse effect on the performance of the system."



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Site information

Location	Larnaca, Cyprus
Geographical coordinates	34.44° N, 33.16° E
Annual global solar radiation	1,997 kWh/m ²
Annual average temperature	20.8 °C, 69.4 °F
Annual precipitation	376.9 mm

Technical overview

Date connected to grid	15/10/2014
Installed capacity	149.73 kWp
Module type	SF155-S (155 W)
Number of modules	966
Angle of inclination, alignment	17°, 14° (S)
Predicted yield	254,000 kWh
CO ₂ savings	215,000 kg/year
Inverter	FRONIUS SYMO

High yields despite dust loads produced by adjacent stone quarry

The warehouse is located in the immediate vicinity of a working stone quarry. When selecting a suitable module technology for the solar installation, it was vital to take into account the dust constantly produced by the quarry. "The high levels of airborne dust mean that the PV modules are heavily and continuously soiled. The excellent low-light performance of Solar Frontier's PowerModules was a great help in this respect, because the modules achieve really respectable yields even when they are covered in dust" says Pharconides. "We carried out measurements comparing very dusty and clean modules and these revealed a negligible difference in yield and this confirmed that Solar Frontier was the right choice for us."

Monitoring demonstrates yields are higher than those of crystalline modules

Early indications predict the system will have a yield of approximately 1700 kWh/kWp. Since the system was connected to the grid, this energy has been sufficient to meet the needs of about 40 households in Cyprus, each consuming an average of 6,300 kWh.

Managing Director Christos Pharconides is absolutely thrilled with the performance of the black CIS modules. The firm's own monitoring portal, which keeps track of all its installations, shows that the CIS system has a higher yield than all of its systems that use crystalline module technology. "Solar Frontier is the perfect choice for Mediterranean climates!"

About Solar Frontier

Solar Frontier has set itself the goal of developing the world's most ecologically benign and economical solar energy solutions. Our proprietary CIS technology (the abbreviation stands for the key components Copper, Indium and Selenium) offers the greatest overall potential for setting extremely sustainable solar energy standards worldwide.

For more information, see: www.solar-frontier.eu

