

Case Study

SCHIRRA SOLAR CONSULTING

Commercial Rooftop Überlingen



Überlingen, Germany



Solar Frontier CIS thin-film modules are highly efficient even under low tilt angles of only 15°.

Site Overview

Location	Überlingen, Germany
Coordinates	47.48° N, 9.10° E
Average global irradiance	1,009 kWh/m ² /yr
Average temperature	9.2 °C, 48.6 °F
Average precipitation	914 mm/yr, 36.0 in/yr

Technical Overview

Date onstream	July 2011
System capacity	68.12 kWp
Panel type	SF130-L (130 W)
Number of installed panels	524
Tilt angle, orientation	15°, 71° W/-109° E
Expected output	64,507 kWh/yr
Total CO₂ reduction	57,086 kg/yr, 125,852 lbs/yr
Inverter	4 x Diehl AKO Platinum

Financing Bank

—

The CIS thin-film modules of Solar Frontier convinced us in several respects. On the one hand, there is the efficient output even under suboptimal conditions, and on the other hand, there is the environmental friendliness, as the modules are free of lead and cadmium. The ecological aspect of the modules was a compelling factor for our customer, because this installation was part of an asbestos remediation measure.

*Dirk Schirra,
Managing Director Schirra Solar Consulting*

Schirra Solar Consulting GmbH, located in Wasserburg on Lake Constance, is a professional solar energy partner particularly for small and medium-sized crafts enterprises. Founded in 2009, Schirra Solar plans and installs turnkey solar systems.

Schirra Consulting GmbH has several sales offices and collaborates with a number of other solar energy specialist firms.

In July 2011, a commercial rooftop installation on a warehouse with 524 Solar Frontier CIS thin-film modules was connected to the grid in Überlingen at Lake Constance by Schirra partner firm, Schlesies. The installation has a total capacity of 68.12 kWp and is expected to produce 64,507 kWh annually. The installation is expected to offset about 57 tons of CO₂ emissions.

The challenge for this photovoltaic installation was to compensate two alleged disadvantages at the same time: a low roof tilt angle of only 15° and the majority of the roof space facing northeast. The installation was split into 308 modules on the northeast side of the roof and 216 modules facing southwest.

The Solar Frontier CIS modules used, perform significantly better than traditionally used silicon solar modules even and especially under these challenging conditions. The expected superior performance of the Solar Frontier modules is mainly based on their better low light behavior.

About Solar Frontier

Solar Frontier is committed to creating the world's most ecological, economical solar energy solutions. Our proprietary CIS technology (denoting key ingredients copper, indium, and selenium) has the best overall potential to set the world's most enduring standard for solar energy. For more information visit www.solar-frontier.com