



Case Study | Masdar City

SunPower technology powers world-class research and education center in Masdar City

SunPower modules have been chosen to power one of the most ambitious and futuristic projects in the world: Masdar City, an emerging global clean technology cluster located in what aims to be one of the world's most sustainable urban developments powered by renewable energy.

This groundbreaking City, located on the outskirts of Abu Dhabi is home to companies, researchers, and academics from across the globe, creating an international hub for organisations focused on renewable energy and clean technologies.

The PV system is located on the roof of the Masdar Institute of Science and Technology building, the first to be completed in Masdar City. In 2010, 3,171 SunPower™ E19 / 315 W panels were installed on a canopy structure that provides shade for the roof terrace as well as clean, renewable solar power for the facility. The sophisticated campus provides the ideal setting to drive real innovation and a concrete path to the technologies critical to powering tomorrow.

In 2014, 625 SunPower E20/327 W photovoltaic solar panels - 1,000 square-metres - were installed on the roof of Masdar's new headquarters complex, which will also house the International Renewable Energy Agency (IRENA). The headquarters will be one of the most advanced, sustainable multi-use complexes in the United Arab Emirates. It will be the cornerstone of Masdar City. The Masdar and IRENA headquarters aims for a four-pearl certification under the Estidama Pearl Building Rating System, one of the strictest energy efficiency and sustainability standards in the world.

Project Overview

Location:	Masdar City, Abu Dhabi, United Arab Emirates
Completed:	Phase 1: November 2010 Phase 2: June 2014
System Size:	Phase 1: 1 MW Phase 2: 201 kW
Number of Panels:	3,796
Product:	SunPower E19/315 W & SunPower E20/327 W
Covered Surface Area:	6,146 m²
Annual Energy Production:	1.8 GWh
System Owner:	Masdar

Benefits

- Higher Performance at High Temperatures
- High efficiency technology maximises energy output in the space constrained canopy structure
- Superior light capture thanks to anti-reflective coated glass and broader spectral response
- Panels blend harmoniously into the design of the modern building

"With its reputation for reliable, high quality technology, SunPower's high-efficiency solar panels were selected to maximise the solar power generated by the system and achieve our renewable energy goals."

Alan Frost,
Director of Masdar City



The Masdar Institute campus, which consists of a main building, a knowledge centre and student quarters, uses around 51% less energy than average buildings in the United Arab Emirates: 30% of the base electrical load of the campus is provided by SunPower solar panels, which produce approximately 1.8 GWh yearly.

The building is wired throughout with an energy metering system that monitors energy consumption and produces easily accessible data to students and faculty, for use as a research tool. In addition to the SunPower PV plant, the building incorporates a wide range of state-of-the-art green building technologies that will enable Masdar City to achieve its sustainability goals.

SunPower panels: the perfect solution

Designed by Fosters + Partners, one of the most well-known and innovative architecture firms, the Masdar Institute building is a model of sustainability.

During project design, the architects were looking for high efficiency PV modules which could maximise the energy output on the space-constrained canopy structure and at the same time blend harmoniously into the features of this modern building. SunPower E series modules, with their aesthetic design and high efficiency of 20.1%, were the perfect solution and ensured a reliable energy production also in case of sand blasting and saltiness.

Due to lower temperature coefficients and lower Normal Cell Operating Temperatures (NOCT), SunPower panels generate more energy at higher temperatures compared to standard crystalline modules, while standing the test of time in extreme weather conditions. Thanks to the special anti-reflective, hydrophobic coated glass (ARC) which improves light absorption and reduces surface dust, they are very well suited for regions affected by dust storms, such as Middle East and Africa, as they maintain their record breaking energy production. The ARC glass also protects the module surface from humidity and sand blasting that could cause a loss in the module's performance.

© 2014 SunPower Corporation. All Rights Reserved. SUNPOWER, the SUNPOWER logo, are trademarks or registered trademarks of SunPower Corporation in the U.S. and other countries. All other trademarks are the property of their respective owners.