

CASE STUDY

More Energy by Design Special Focus: Flexible Design

OVERVIEW

Installer: Sun Integration

Installation Date: July 2012

Location: Shumei America,
Pasadena, California, U.S.

Installed capacity: 45kW

Modules: Mitsubishi PV-MLU255HC

Power Optimizers: 177x OP300-MV

Inverters:

3X SE7000A-US; 3X SE6000A-US

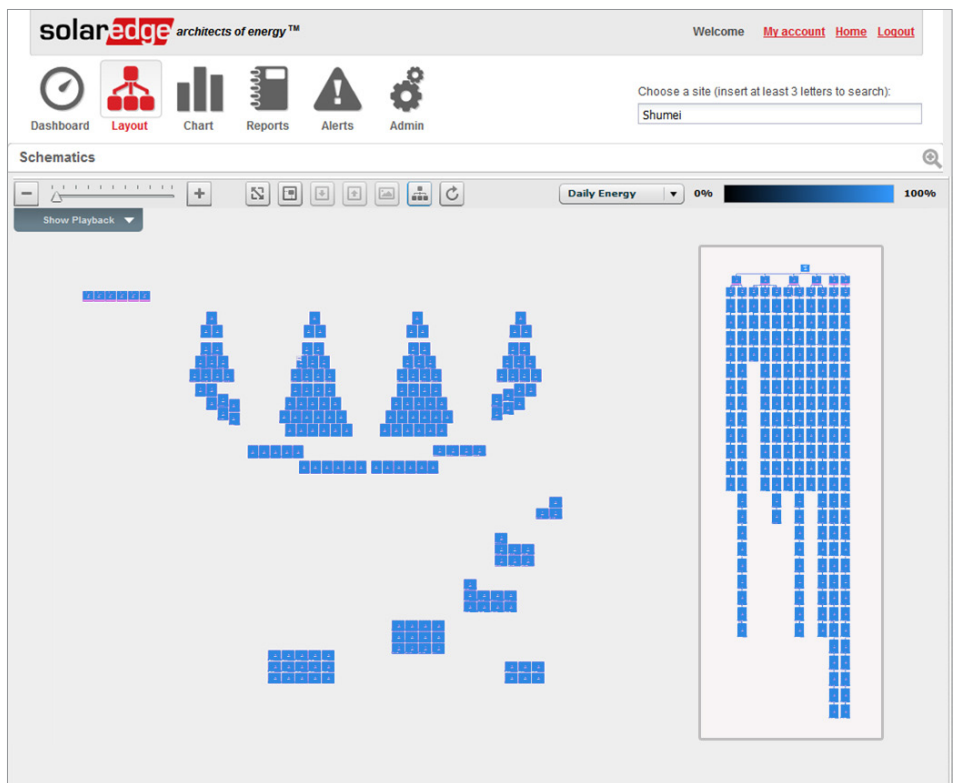
Module-Manufacturer Mitsubishi Electric was contacted by the Shumei members in North America with regards to installing a PV system on the roof of their main spiritual center in Pasadena, California. It is very important for the Shumei members to help the environment and set an example in Pasadena of environmental stewardship as well as provide a future of sustainable energy.

This unique multi-faceted and multi-leveled roof space of 9 different orientations and tilts posed two challenges: how to design the layout for this complicated space and how to handle the partial shading from the support structure. In addition, several elements cause high mismatch between the modules in the array: cities in California are famous for uneven sun conditions, pollution and soiling due to infrequent rainfall. The site layout also includes partial shading, temperatures which can vary across the array and uneven exposure to sunlight which leads to different modules' power output.

To address these challenges, Mitsubishi partnered with the installer Sun Integration and SolarEdge in order to provide a PV system that would work efficiently under the given conditions. SolarEdge power optimizers perform per module maximum power point tracking (MPPT) removing the challenge of module mismatch because each module is managed individually. Therefore, modules with lower output do not influence others in the string. As a result, only a small amount of energy is lost due to partial shading and no energy is lost due to mismatch.

In addition, the PV site on the Shumei National Center was easier to design due to the maximum flexibility enabled by the SolarEdge power optimization solution. The SolarEdge system allows for longer strings and strings of different lengths which enabled full roof utilization on the 9 different facets and reduced the costs on BoS components.

Another important benefit of SolarEdge is that the PV site can be monitored at all times to avoid any system issues. The SolarEdge monitoring portal



The monitoring portal displays a virtual site map of the physical layout with longer strings and strings of different lengths and the landscape layout of the entire array

allows for superior maintenance support through module-level monitoring. Performance data is available in real-time for each individual module as well as immediate alerts on any irregularities that may occur, which results in maximum uptime of the system. With high-level visibility into the system performance on a virtual site map, the monitoring portal ensures lower O&M costs and more kWhs for the Shumei organization.

Finally, this region is predisposed to temperamental winds and dry heat. Therefore, it was vital that a safe solution be incorporated. The SolarEdge

system provides a unique SafeDC™ mechanism guaranteeing automatic DC voltage shutdown and safety for maintenance personnel, firefighters and other first responders in the case of emergencies.

"SolarEdge gave us the opportunity to install a system on this unique roof space and to help fulfill the Shumei's wish to demonstrate environmental leadership." said Seta Alexanian of Sun Integration. **"The SolarEdge monitoring portal allows my maintenance team to monitor every module we installed in order to keep the system performing optimally."**