

# Popular Scenic Reservoir in Taiwan Now Includes 13.7MW SolarEdge System

The Wu-Shan-Tou system is expected to generate 17GWh and save 8,906 tons of CO<sub>2</sub> emissions per year

The Irrigation Agency of Taiwan's Council of Agriculture, part of the Executive Yuan branch of Taiwan's Government, issued a tender to install a floating PV system on the Wu-Shan-Tou Reservoir to generate clean energy and meet the government's renewable energy targets. The selected EPC would be eligible to take advantage of the government's Feed-in-Tariff (FiT) program to generate revenue for a 20-year period.

The Wu-Shan-Tou Reservoir, located in Tainan, Taiwan stores water for household, public, agriculture, and industrial use, and is also a well-known tourist destination known for its scenic landscape. The abundant sunlight and smooth water surface made it an ideal location for a floating PV system.



Xingye Green Energy, a subsidiary of Star Energy won the government tender with a proposal featuring a SolarEdge commercial floating PV solution. SolarEdge was the optimal choice for this type of installation due to its advanced safety features, ease of Operation and Maintenance (O&M), and ability to extract more energy from each floating solar module.

The SolarEdge system is expected to generate 17,000,000 kWh and save 8,906 tons of CO<sub>2</sub> emissions per year.



## Built-in Safety Features Protect People, Environment, and Investment

Safety was one of the biggest factors when planning this installation. The reservoir is a popular fishing location, and many farmers nearby use the fresh water for fish farming. In addition, boat tours are offered around the reservoir to local visitors, and the system is installed near the National Tainan University of Art, so many students come to visit the area. Maintenance personnel also need to access the floating system for O&M, so ensuring a safe working environment is critical.

SolarEdge was the only system considered for this project because of its superior, multi-layer safety features. SafeDC™ automatically reduces the DC module voltage to touch-safe levels during grid failures or when the inverter is shut down to protect installers and maintenance staff. AFCI features prevent, detect and mitigate arc interruptions and electrical hazards. Arc faults are uncommon but can happen when PV system connectors or cables are damaged, degraded, or improperly connected. In the event of an arc fault, the inverter automatically shuts down so that necessary checks can be performed. This gave the investors peace of mind when installing a floating PV system in such a populated area.

## Maximum Power Point Tacking (MPPT) Mitigates Module Mismatch

Another factor that made SolarEdge the optimal solution for the Wu-Shan-Tou Reservoir was its ability to mitigate module-level mismatch, enabling each module to perform at its maximum capacity. Mismatch is common in floating PV solutions because the water's movement changes the module orientation to different tilts throughout the day. What's more, many flocks of birds settle in the reservoir, causing partial shading to the modules at various times, and leaving droppings that can significantly impact the module's production. Cloud cover, dew water, modules degradation and temperature difference also have an effect.

With a traditional string inverter, one underperforming module can affect the whole string. SolarEdge solves this problem by using its Power Optimizers on every two modules, alleviating these losses so that each module is performing at its maximum, delivering greater energy output over the system's lifetime.



Partial shading caused by clouds

## Optimized Design for Floating PV

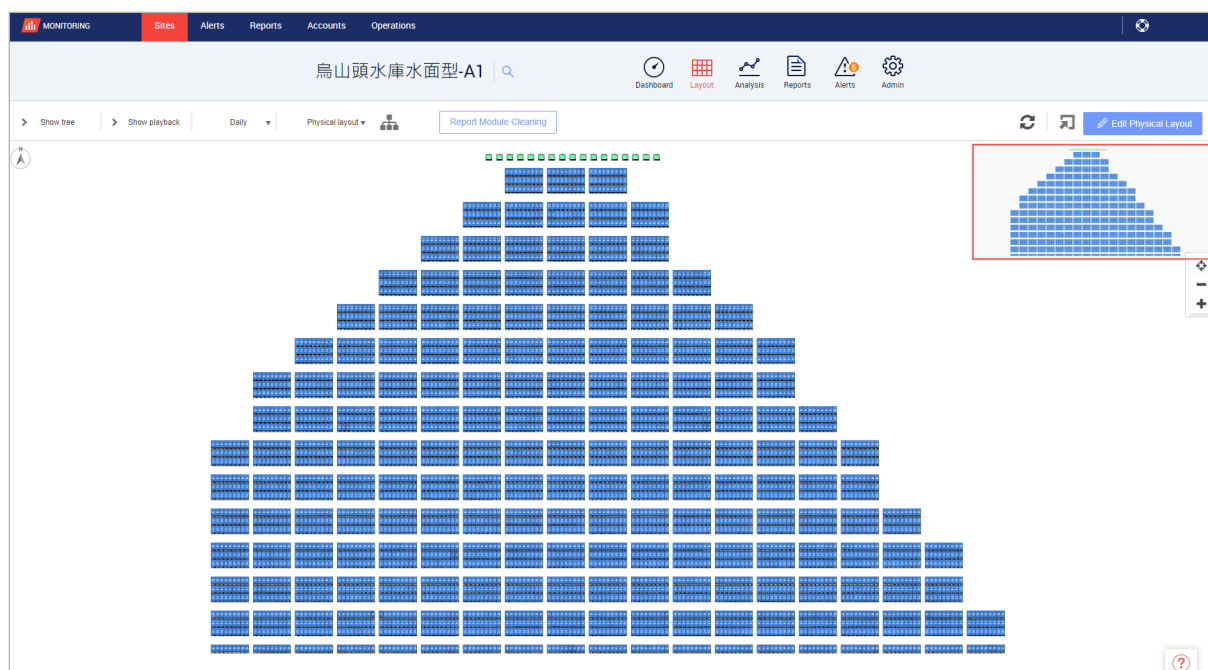
SolarEdge PV inverters are highly resistant to the harsh aquatic conditions of floating PV plants. The inverters can operate at humidity levels of up to 95%, with a wide operating temperature range of -40°C to +60°C for inverters, and -40°C to +85°C for Power Optimizers. They are dust and waterproof certified with IP65 rating and are resistant to ammonia commonly present in fishponds.

SolarEdge floating PV solutions also require less DC cabling compared to string inverter solutions – reducing the amount of cabling needed and supporting the irregular system shape with the inverters installed on the shore which is standard for floating PV installations. Whereas traditional string inverters require the string lengths to be the same, SolarEdge's solutions maintain a fixed string voltage to always ensure operation at the highest efficiency, even though the string lengths and temperatures may be different.

## Easy O&M from Anywhere

Star Energy is responsible for 20 years of O&M at this site, which would typically require routine site visits. For a 34,463-module installation built on water and split into two parts that are only accessible by boat, they wanted the O&M to be as easy and efficient as possible.

SolarEdge's Monitoring Platform enables real-time troubleshooting and data analysis accessible from any location. Star Energy can use the Monitoring Platform to pinpoint issues that may arise down to the module level, reducing the need for site visits and the time spent on site.



View of the Wu-Shan-Tou Floating PV site on SolarEdge's Monitoring Platform. O&M providers can view the exact location of system data of each module to pinpoint any issues that may arise.



## Installation at a Glance:

- Installation Date: May 2022
- Installer / EPC: Star Energy
- Location: Tainan, Taiwan
- Installed Capacity: 13.7052MW
- Modules: 34,263 x 400W TSEC
- Power Optimizers: 16,983 x P801
- Inverters: 153 x SE100k, 4 x SE33.3k

## The Bottom Line

When selecting system components for a floating PV system, there are several considerations to explore for maximizing ROI. These components directly impact energy output, operation and maintenance on water, and personnel safety. In addition, the durability and reliability of these components is critical since floating systems are intended for use for at least 20 years. The SolarEdge Floating PV solution maximizes the benefits of floating PV systems for system owners, installers, and O&M providers.

## About SolarEdge

SolarEdge is a global leader in smart energy, delivering innovative commercial and residential solutions that power our lives and drive future progress. Leveraging world-class engineering and worldwide experience, SolarEdge developed a ground-breaking intelligent inverter solution that changed the way power is harvested and managed in photovoltaic (PV) systems. As a result of this and other innovations, today SolarEdge is the world's #1 solar inverter company in revenue with millions of systems installed in 133 countries. SolarEdge addresses a broad range of smart energy market segments through its PV, storage, EV charging, battery, and grid service solutions.

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