

Abu Dhabi island microgrids

The developers behind the 80kW project, Dubai-based company Enerwhere, say they are now preparing to connect it up to the rooftop and ground-mounted solar already installed on the island to help power its 5-star resort.

Muekstein has promised to release more detailed information about the project in coming weeks, and to share any learnings on the impact of the sea water environment on the panels and their output.

According to the website of the Zaya Nurai Island resort, the solar installed by Enerwhere before the addition of the floating PV array generated 35 per cent of the man-made island's energy needs, with the remainder coming from "efficient electronic fuel injection" diesel generators.

As Greentech Media observed in August last year, there has been growing interest in offshore solar, including from a Belgian consortium proposing to build a solar farm in the North Sea, in combination with offshore wind or aquaculture.

The idea has also been pursued in the United Arab Emirates, where the Dubai Electricity and Water Authority (DEWA) last June issued a request for proposals to study, develop and construct floating solar photovoltaic plants in the Arabian Gulf.

Dubai-based Enerwhere has built an 80 kW floating array at a resort island in Abu Dhabi. The installation features bespoke modules from GCL and Sungrow inverters. The developer told pv magazine the business case was based on the fact the cost of diesel generator operation in such locations can run to \$0.25/kWh.

The project, which will supply power to the resort, was built on seawater as the island could not host a ground-mounted array. "For a resort island like Nurai Island this is still far better than taking up valuable beach real estate which tourists are willing to pay much more for," said Enerwhere chief operating officer Stefan Muekstein.

The GCL Poly dual-glass modules with IP68 junction boxes used in the project were designed for marine applications. "The modules need to be absolutely waterproof to survive the constant salt spray from the waves for 25 years," Muekstein told pv magazine.

The project developer used floating structures, anchors and foundations from an unnamed UAE-based marine engineering firm. Enerwhere used standard high-power string inverters from Chinese producer Sungrow which were installed on land and connected to a mini-grid on the island. "This floating solar installation is an 80 kWp pilot but even in that category it's one of the first solar PV plants on open ocean and saltwater anywhere in the world," said Muekstein.

"At the moment this kind of engineering doesn't come cheap," he added. "The cost of such an installation make sense in places like small islands where electricity from conventional diesel generators can cost as much as \$0.25/kWh."

The Enerwhere representative predicted the cost for saltwater installations will fall dramatically once the number of arrays rises, enabling roll-out in grid connected markets with lower conventional energy prices. "We think there are immediate opportunities for floating solar systems like ours for the islands in the Middle East, including the World Island in Dubai, and potentially offshore oil platforms and the Maldives," said Muckstein.

In the calm waters off the Dubai resort island waves are relatively low and floating systems are subject to relatively mild stress compared with turbulent locations such as the North Sea, where saltwater floating projects are being tested. Muckstein said waves at Nurai Island usually top out at two meters.

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