

FLOATING SOLAR POWER SYSTEMS RIDE THE WAVES



Wind power is the fastest-growing segment in the U.S. energy mix, but solar power systems also are growing. In 2020, solar accounted for 43 percent of all new electricity-generating capacity in the U.S. and will account for more than 324 GW of new capacity over the next 10 years, according to Solar Energy Industries Association. The great bulk of that development has been land-based projects, but floating solar systems are beginning to show promise. Fitch Solutions is bullish on the technology, projecting last year that 10 GW of new capacity will be deployed by 2025. So far, most projects are in Asia where land is scarce. Some are being installed in reservoirs and still water, but new technology is pushing floating solar arrays into the ocean.

Two Norwegian firms, Moss Maritime and Ocean Sun, are developing offshore systems with different technologies.



MOSS MARITIME

- ◆ Modular concept
- ◆ Floaters, similar to pontoons
- ◆ Solar panels protected by frame from vibrations, bending
- ◆ Flexible connections between modules allow movement and follow wave contour
- ◆ Conventional mooring system
- ◆ Design target: 10 MW
- ◆ Testing shows viability through 8-meter waves
- ◆ Pilot project now under development with Norway's Equinor

OCEAN SUN

- ◆ Design based on biomimicry of the giant water lily, which floats on the surface
- ◆ Thin 1-mm polymer membrane supports PV modules, lowering capital costs, and is walkable
- ◆ Hydroelastic properties allow structure to move with wave harmonics
- ◆ Operating temperature is reduced due to direct heat transfer to water below, improving efficiency
- ◆ Cooling effect increases yield by about 5 percent compared to systems that sit higher above water
- ◆ Third party verified
- ◆ CFD analysis showed system can withstand Category 4 typhoon winds
- ◆ 250-kW trial received EU funding for pilot project off Canary Islands