

Submerged solar

Publieke samenvatting / Public summary

Aanleiding

There are floating PV systems available for shielded water areas. The big challenge for floating PV systems is in large solar farms on waters like the IJsselmeer. Therefore we will design and develop a waterborne systems which can withstand the rough water conditions. We will use the know how of Marin on semi-submerged crafts and devices and the potential of bifacial PV on the reflective surface of water to realize an economic feasible system.

Doelstelling

The goal of the project is to develop a PV system, which is not affected by waves. The floaters will be placed submerged and the panels will be placed above the water surface. By placing the bi-facial panels in the optimum position within a highly reflecting environment we expect to realise a very low price per kWh.

Korte omschrijving

This project will be a collaboration of Sunfloat, Tempres, FemtoGrid, DirectCurrent BV, Venster Techniek, and DSM whereas Wavin BV and Rijkswaterstaat are supportive to the project. Three renown knowledge institutions are involved: ECN, Marin and EnTranCe. We have identified three main phases; Design and construction of the semi-submerged devices; design of bifacial layout- and marine proof electrical set-up resulting in fase three, the design of 2MW farm supported by a 30kWp pilot on the IJsselmeer. The wave resistant design will make use of the newest modelling techniques and infrastructure of Marin to produce three prototypes. The prototypes will be build (VensterTechniek,

Projectinformatie / Project information

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Algemene informatie / General information

Penvoerder / Secretariat

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Publicaties en materialen / Publications and attachments

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Openbare samenvatting

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Wavin, Sunfloat) and tested by Marin and EnTranCe. Phase two will model and design the bifacial PV on the water surface, including the use of light trapping foils and coating (DSM). A marine proof modular electric grid will be design and realized (Femtogrid/Direct Current) In phase three the pilot will be build to be able to design the first product; a 2 MW solar farm. In collaboration with Rijkswaterstaat the systems will be piloted under real life circumstances.

Resultaat

The project will deliver a functioning prototype of 30 kWp and a design for 2 MW solar farm of a rough water resistant PV system. The prototype will be tested for a minimal duration of one year at a site in the IJsselmeer or a similar body of water. The installation will be wave resistant up to a minimum of 1 metre wave height. By using the reflection and cooling effect of the water effectively, the yield of the system will be at least 20-30% higher than a land-based monofacial system.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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