

Robust, desert-proof modules

Publieke samenvatting / Public summary

Aanleiding

The MENA region has ambitious plans to install 30 GW by 2020, and 65 GW by 2030. These plans can only become reality if PV systems show long lifetime and high output over time, at low maintenance costs. In desert areas this is not likely, as backsheets are sensitive to UV irradiation and high operating temperature, and dust settlement reduces output. Regular cleaning improves the output, but increases maintenance costs of PV plants.

Doelstelling

To develop an intrinsically robust module, able to withstand harsh desert conditions – high temperature, high irradiance, dust – without fast reduction in power output in the field and without adding manufacturing complexity. The aim is to determine the bill of materials, develop the manufacturing process and test a system of 500 modules in Qatar for 2 years, resulting in annual yield determination and LCOE costs below 0,14 euro/kWh for those conditions.

Korte omschrijving

The consortium will use the existing back contact technology of ECN and Eurotron, which is based on back contact cells interconnected on a patterned conductive backsheet. Instead of a backsheet, the conductive metal layer will be adhered to glass. The manufacturing process will be adapted by Eurotron. ECN will execute reliability testing of the components. Coatings will be applied to control module operating temperatures (IR reflective coatings) and enable dust mitigation (anti-soiling coatings). Dedicated reliability tests for the coatings

Projectinformatie / Project information

Projectnummer / Project number

TEZ0214001

Subsidiebedrag / Grant amount

€ 426.006,00

Algemene informatie / General information

Penvoerder / Secretariat

Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek TNO

Publicaties en materialen / Publications and attachments

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will be set up and executed by ECN. To predict quality assurance for desert conditions, enhanced stress tests will be set up and performed by ECN. The manufacturing process and bill of materials will be transferred to QSE, where 500 modules will be manufactured for field testing. Output monitoring and yield measurements for reference modules, modules with and without coatings and for cases with and without cleaning will lead to a LCOE determination, as well as to establishment of the relation between stress tests and field performance (quality assurance).

Resultaat

The main results of the project are: 1 Glass-glass based MWT modules with proven reliability 2 Manufacturing process glass-glass MWT module 3 10 Test modules with coatings, tested under more extreme conditions than IEC 4 Test platform for coatings 5 Cost of ownership model to demonstrate LCOE 6 Monitoring and yield verification for field system in Qatar, measured for 2 years in the field

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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