Safe and reliable PV modules

Publieke samenvatting / Public summary

Aanleiding

The renewable energy goals for 2020 and beyond call for a massive growth of the PV capacity installed. Extensive installation of BIPV and Infrastructure Integrated PV (I2PV) is needed, also on places with adverse conditions, e.g. module shading and temperature increase. Simultaneously the standards for safety and reliability need to be improved to comply with building industry practices and regulations. This is only possible when thermal runaway of bypass diodes can be prevented, without increasing manufacturing costs.

Doelstelling

The project aim is to develop and test a junction box with low cost solar bypass diodes that is not sensitive to thermal runaway. Modules with this junction box can serve new markets such as BIPV and I2PV and use high efficiency and bifacial solar cells. Lifetime and effective module efficiency are increased. Because manufacturing costs per module are similar, manufacturing costs (€/ Wp) and LCoE (€/kWh) are reduced.

Korte omschrijving

Activities 1 ECN will make a review of field failures of bypass diodes and commonly used diodes and junction boxes. 2 ECN will together with the project partners set up a test method, based on a literature review and the draft IEC norm for thermal runaway testing currently under development 3Solned will develop a junction box with improved thermal performance, based on an existing junction box design and a novel type of Schottky diode. 4 NXP will provide samples of these novel Schottky diodes

Projectinformatie / Project information

Projectnummer / Project number
TEID115015
Subsidiebedrag / Grant amount
€ 127.507,00

Algemene informatie / General information

Penvoerder / Secretariat
Stichting Energieonderzoek Centrum Nederland

Publicaties en materialen / Publications and attachments

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from internal development (not financed from this project). The novel Schottky diodes are expected to have much better thermal characteristics at similar manufacturing costs as existing Schottky diodes. It will not have the disadvantages of 'active bypass diodes' (high manufacturing costs, EMI sensitivity, interaction with advanced MPP tracking algorithms.) 5 ECN will test this improved junction box as well as conventional junction boxes, both from Solned and other junction box suppliers. 6 Solned and NXP will assess the market for improved junction boxes and bypass diodes and define value propositions for their products.

Resultaat

Results 1 a slim junction box with low cost solar bypass diodes that is insensitive to thermal runaway and compatible with advanced MPP-tracking algorithms 2 test results on its behaviour in comparison to competing products 3 market assessment and value proposition for the products developed

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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