

Enabling Back-Contact TANDEM PV modules

Publieke samenvatting / Public summary

Aanleiding

Back-contact solar cells offer high performance, flexibility of module design, and high cell packing density without mechanical stress. 2 terminal perovskite/crystalline silicon tandem cells have reached efficiencies over 29% and are close to market introduction. Combining the advantages of both by merging tandem and back-contact architectures is highly attractive.

Doelstelling

The goal of the project is to develop a practical technology for back-contact 2-terminal (2T) perovskite/crystalline silicon tandem cells, with industrially relevant processes, and demonstrate suitable module processing. This contributes to the efficiency and cost reduction goals of the MMIP2, and benefits implementation of PV in the built environment.

Korte omschrijving

The metal-wrap-through (MWT) back contact architecture will be applied, as interdigitated back contact (IBC) cells are incompatible with 2T tandem cell architecture. • Tandem cells will be prepared by TNO, on silicon heterojunction (SHJ) bottom cell half-fabricates from Enel. The development for integration of the metal-wrap-through connection will be done by TNO. • TNO will modify and validate back-contact module materials and processes to be suitable for the tandem cells, building on its existing know-how of back-contact as well as tandem module technology. • Lightyear will provide relevant support to TNO to assess suitable laminate design and process for MWT-SHJ cells, which will involve

Projectinformatie / Project information

Projectnummer / Project number

TKITOE2121201

Subsidiebedrag / Grant amount

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Algemene informatie / General information

Penvoerder / Secretariat

TNO

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moisture sealing and low temperature interconnection, which is a large part of the modification necessary for tandem cells. • All partners will contribute to a cost and performance comparison with c-Si technology.

Resultaat

This project will deliver back-contact perovskite/SHJ tandem cells and modules. The target efficiency for the prototypes in the project is 27%. In combination with results from other projects the efficiency outlook is beyond 30%. Comprehensive characterization and module process development and testing will conclude on outlook towards industrialization.

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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