High-Efficiency Si PERovskite Tandem Solar Cells eXtra Large

Publieke samenvatting / Public summary

Aanleiding

A proven method to improve the power output is to create tandem devices. In this context, perovskite/c-Si tandem technology can make an impact: the high-power output, results in a lower footprint for PV systems, and offers a route to lower the levelized cost of electricity.

Doelstelling

HIPER XL will demonstrate environmentally benign, stable, efficient and cost effective, four terminal (4T) bifacial hybrid tandem solar cells with unprecedented power output, manufactured with scalable process routes. The concept of bifacial perovskite/c-Si tandem modules was published for the first time by HIPER XL consortium members in April 2020.

Korte omschrijving

Within HIPER XL, four terminal (4T) bifacial hybrid tandems are developed based on commercial cSi cells provided by Oxford PV and semi-transparent perovskite top devices. The semi-transparent perovskite modules are precessed using three different process routes and compared. These process routes include: thermal deposition (vacuum), solution processing and hybrid two step vacuum and solution processing. Transport materials and processes are developed together with industry compatible process tools. The semi-transparent perovskite modules and integrated in hybrid tandem devices. These devices are test under laboratory conditions (indoor) as well as

Projectinformatie / Project information

Projectnummer / Project number
TKITOE1921202
Subsidiebedrag / Grant amount
€ 359.000,00

Algemene informatie / General information

Penvoerder / Secretariat
TNO

Volg Topsector Energie op X / Follow Topsector Energie on X

@TSEnergie

outdoor conditions. The economic potential and environmental impact are assessed.

Resultaat

The project delivers industrial processes and concepts for industrial process tools to manufacture four terminal bifacial hybrid tandem devices with an output power of 28 mW/cm2. With an aperture area of at least 100 cm2. This contributes to reduce the LCoE by at least 50% in 2030 compared to the 2015 value with the introduction of novel PV technologies (Set-plan strategic target no. 2).

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
Voor meer informatie over de Topsector Energie, ga naar **www.topsectorenergie.nl**.

Voor meer informatie over de TSE / Energie-Innovatie regelingen die RVO aanbiedt, ga naar **www.rvo.nl/tse**.