Line concentrating modules using IBC Strip cell Architectures

Publieke samenvatting / Public summary

Aanleiding

Mainstream solar PV modules produce approximately 240-270 Watts of peak power (Wp) in full sunlight. These modules are produced at a cost level in the range of 0.50-0.60 €/Wp. The module manufacturing costs excluding cells are in the order of 0.25 €/Wp and can hardly be further reduced due to the materials that are mandatory to package the solar cells in a reliable way. High efficiency modules rely on high-efficiency solar cells, which are more costly than mainstream solar cells. As a solution to this, LineSolar has developed an innovative module concept by replacing expensive solar cell material with cheap optics.

Doelstelling

The objective of the LISA project is to develop a breakthrough photovoltaics (PV) module technology at a spectacular low manufacturing cost level of 0.33 €/Wp, including solar cells. This is more than 30% below state-of-the-art module manufacturing costs as produced in Asia. The socalled MLC technology replaces high-cost silicon solar cell material with low-cost light-concentrating optics. The MLC module technology fits to all 4 ambitions as stated in the 2012 innovation contract Solar Energy. The LISA project contributes to the development of high-efficiency (IBC) solar cell technology, high-efficiency module technology, cost reduction of modules and leads to a drastic reduction of silicon and silver consumption and thus is environmentally attractive.

Projectinformatie / Project information

Projectnummer / Project number
TEZ0114004
Subsidiebedrag / Grant amount
€ 315.000,00

Algemene informatie / General information

Penvoerder / Secretariat
Linesolar BV

Publicaties en materialen / Publications and attachments

- **28.01.2019**

  Eindrapport LISA 2017 (TEZ0114004)

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Korte omschrijving

The LISA project consists of a technology co-development between LineSolar and ECN. ECN will develop the solar cell processes as needed in MLC modules. LineSolar will develop the module manufacturing processes. To prove the viability of the MLC technology, several prototype MLC modules will be built and tested within the LISA project.

Resultaat

The resulting MLC solar module combines several features into a unique design with the following features: 1 High cost savings: A flat lens concentrates the sunlight onto a fraction of a solar cell. This will drastically reduce the required solar cell area per module, and thus the total cost of the solar module will be radically reduced. 2 Efficiency boost: Semiconductor physics shows that solar cells work at a higher efficiency thanks to the concentration of sunlight. The MLC module is expected to produce 310 Watts of peak power, while it has the same size as standard modules. 3 Cost savings for a complete PV installation: The high output power of 310 Wp per module is 20% more than what is currently offered in the market. Thus, fewer solar modules are needed to achieve a certain system capacity. 4 Environmental savings: One of the bottlenecks is the consumption of purified silicon and silver. The consumption of silicon and silver will be drastically reduced. 5 Improved aesthetics. More than 90% of the module area is not used to harvest sunlight. Therefore, MLC modules can be manufactured with a custom color.

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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