Photovoltaic with superior crack resistance

Fact Sheet

Project Information

PHYSIC

Grant agreement ID: 737447

DOI
10.3030/737447

Project closed

EC signature date
18 November 2016

Start date
1 January 2017

End date
30 June 2018

Funded under
EXCELLENT SCIENCE - European Research Council (ERC)

Total cost
€ 149 500,00

EU contribution
€ 149 500,00

Coordinated by
SCUOLA IMT (ISTITUZIONI, MERCATI, TECNOLOGIE) ALTI STUDI DI LUCCA
Italy

Objective

Cracks in silicon solar cells composing photovoltaic (PV) modules are induced during production (soldering of busbars onto solar cells, other defects), transportation, installation and exposure to the environment. The economic impact of cracking in PV modules has been assessed in about 6 Euro/(kWp year) due to the cost of repair/substitution and the missing production while cracks are not yet observable with the naked eye. This has a clear huge technological and economic impact on the market that can be estimated in 180 MEuro/year of losses, by considering a conservative amount of 30 GWp of new installations in the World per year. If cracking cannot be avoided due to the brittleness of Silicon, the proposed idea to be taken to proof of concept is to limit its effect as much as possible. A new generation of PV

modules displaying a superior resistance against cracking is proposed, starting from the fundamental discovery within the CA2PVM ERC StG project that residual thermo-mechanical compressive stresses in Silicon cells are beneficial to induce crack face contact and electric recovery. An innovative pre-stressing technique will be designed to increase the residual compressive stresses in Silicon and achieve the crack closure state for any crack and therefore avoid electrical power-losses. An exploitation strategy based on patenting of the technical solution, writing of a business plan, and founding a spin-off/start-up company with a team with interdisciplinary skills will be implemented. This will allow for fund raising and exploitation of the idea also based on the already established industrial contacts.

Fields of science (EuroSciVoc)

natural sciences > chemical sciences > inorganic chemistry > **metalloids**

Programme(s)

H2020-EU.1.1. - EXCELLENT SCIENCE - European Research Council (ERC) MAIN PROGRAMME

Topic(s)

ERC-PoC-2016 - ERC-Proof of Concept-2016

Call for proposal

ERC-2016-PoC

See other projects for this call

Funding Scheme

ERC-POC - Proof of Concept Grant

Host institution

SCUOLA IMT (ISTITUZIONI, MERCATI, TECNOLOGIE) ALTI STUDI DI LUCCA

Net EU contribution

€ 149 500,00

Total cost

€ 149 500,00

Address

PIAZZA SAN PONZIANO 6
55100 Lucca
Italy

Region

Centro (IT) > Toscana > Lucca

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation Website
Participation in EU R&I programmes
HORIZON collaboration network

Beneficiaries (1)

SCUOLA IMT (ISTITUZIONI, MERCATI, TECNOLOGIE) ALTI STUDI DI LUCCA

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Last update: 6 September 2024

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