Concentrating Photovoltaic modules using advanced technologies and cells for highest efficiencies

Fact Sheet

Project Information

CPVMatch

Grant agreement ID: 640873

Project website

DOI
10.3030/640873

Project closed

EC signature date
9 April 2015

Start date
1 May 2015

End date
31 October 2018

Funded under
SOCIETAL CHALLENGES - Secure, clean and efficient energy

Total cost
€ 4 949 596,25

EU contribution
€ 4 949 596,25

Coordinated by
FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV
Germany

This project is featured in...

29 July 2019

Objective

It has been proven that the only realistic path to close the gap between theoretical and practical ultra-high efficiency solar cells is the monolithic multi-junction (MJ) approach, i.e. to stack different materials on top of each other. Each material/sub solar cell converts a specific part of the sun´s spectrum and thus manages the photons properly. However, large area multi-junction cells are too expensive if applied in standard PV modules. A viable solution to solve the cost issue is to use tiny solar cells in combination with optical concentrating technology, in particular, high concentrating photovoltaics (HCPV), in which the light is concentrated over the solar cells more than 500 times. The combination of ultra-high efficient cells and optical concentration lead to low cost on system level and eventually to low levelised electricity costs, today well below 8 €cent/kWh and at the end of this project below 5 €cent/kWh. Therefore, to achieve an optimised PV system (high efficiency, low cost and low environmental impact), world-wide well-known partners in the field of CPV technology propose this project to run and progress together the development of highly-efficient MJ solar cells and the improvement of the concentrator (CPV module) technique.

The central objective of the project is to realise HCPV solar cells and modules working at a concentration level ≥800x with world record efficiency of 48 % and 40 %, respectively, hence bringing practical performances closer to theoretical limits. This should be achieved through novel MJ solar cell architectures using advanced materials and processes for better spectral matching as well as through innovative HCPV module concepts with improved optical and interconnection designs, thus including novel light management approaches. The ambition for this project is not less than to achieve the highest efficiencies on solar cell and module level world-wide, thus Europe will be the top player for the CPV-technology.

Fields of science (EuroSciVoc)

engineering and technology > environmental engineering > energy and fuels > renewable energy > **wind power**

engineering and technology > materials engineering > **coating and films**

natural sciences > physical sciences > **optics**

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

engineering and technology > environmental engineering > energy and fuels > renewable energy > solar energy > **photovoltaic**

Programme(s)

H2020-EU.3.3. - SOCIETAL CHALLENGES - Secure, clean and efficient energy MAIN PROGRAMME

H2020-EU.3.3.2.4. - Develop geothermal, hydro, marine and other renewable energy options

H2020-EU.3.3.2.2. - Develop efficient, reliable and cost-competitive solar energy systems

H2020-EU.3.3.2.1. - Develop the full potential of wind energy

Topic(s)

LCE-02-2014 - Developing the next generation technologies of renewable electricity and heating/cooling

Call for proposal

H2020-LCE-2014-2015

See other projects for this call

Sub call

H2020-LCE-2014-1

Funding Scheme

RIA - Research and Innovation action

Coordinator

FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV

Net EU contribution

€ 1 192 898,75

Total cost

€ 1 192 898,75

Address

HANSASTRASSE 27C
80686 Munchen
Germany

Region

Bayern > Oberbayern > München, Kreisfreie Stadt

Activity type

Research Organisations

Links

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

Participants (8)

RICERCA SUL SISTEMA ENERGETICO - RSE SPA

Italy

Net EU contribution

€ 600 000,00

Address

VIA RAFFAELE RUBATTINO 54
20134 Milano

Region

Nord-Ovest > Lombardia > Milano

Activity type

Research Organisations

Links

Contact the organisation Website
Participation in EU R&I programmes

HORIZON collaboration network

Total cost

€ 600 000,00

UNIVERSIDAD POLITECNICA DE MADRID

Spain

Net EU contribution

€ 696 428,75

Address

CALLE RAMIRO DE MAEZTU 7 EDIFICIO RECTORADO
28040 Madrid

Region

Comunidad de Madrid > Comunidad de Madrid > Madrid

Activity type

Higher or Secondary Education Establishments

Links

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

Total cost

€ 696 428,75

AZUR SPACE SOLAR POWER GMBH

Germany

Net EU contribution

€ 674 535,00

Address

THERESIENSTRASSE 2
74072 Heilbronn

Region

Baden-Württemberg > Stuttgart > Heilbronn, Stadtkreis

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

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

Total cost

€ 674 535,00

ASSE SRL

Italy

Net EU contribution

€ 696 410,00

Address

PIAZZA SAN GIOVANNI 2
34122 TRIESTE

SME

Yes

Region

Nord-Est > Friuli-Venezia Giulia > Trieste

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

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

Total cost

€ 696 410,00

AIXTRON SE

Germany

Net EU contribution

€ 496 463,75

Address

DORNKAULSTRASSE 2
52134 Herzogenrath

Region

Nordrhein-Westfalen > Köln > Städteregion Aachen

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

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

Total cost

€ 496 463,75

COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

France

Net EU contribution

€ 199 935,00

Address

RUE LEBLANC 25
75015 PARIS 15

Region

Ile-de-France > Ile-de-France > Paris

Activity type

Research Organisations

Links

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

Total cost

€ 199 935,00

FUNDACION TECNALIA RESEARCH & INNOVATION

Spain

Net EU contribution

€ 196 500,00

Address

PARQUE CIENTIFICO Y TECNOLOGICO DE BIZKAIA, ASTONDO BIDEA, EDIFICIO 700
48160 DERIO BIZKAIA

Region

Noreste > País Vasco > Gipuzkoa

Activity type

Research Organisations

Links

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

Total cost

€ 196 500,00

CYCLECO SAS

France

Net EU contribution

€ 196 425,00

Address

AVENUE ROGER SALENGRO, 18
01500 Amberieux En Bugey

SME

Yes

Region

Auvergne-Rhône-Alpes > Rhône-Alpes > Ain

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

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

Total cost

€ 196 425,00

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