hiperion

MAX SOLAR POWER

HYBRID PHOTOVOLTAICS FOR EFFICIENCY RECORD USING INTEGRATED OPTICAL TECHNOLOGY

> 30%
Efficiency

As easy to install and operate as a conventional module

+ 50%
More energy

The HIPERION project prepares an **innovative high efficiency photovoltaic (PV) module for mass production.**
Thanks to the HIPERION innovative module and its unique manufacturing process, **solar electricity costs on rooftops are drastically reduced by significantly boosting the efficiency and the energy yield.**
HIPERION aims to allow European PV manufacturers to gain a **competitive advantage** against mainstream solar modules and to regain market shares on this growing market.

www.hiperion-project.eu

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N° 857775

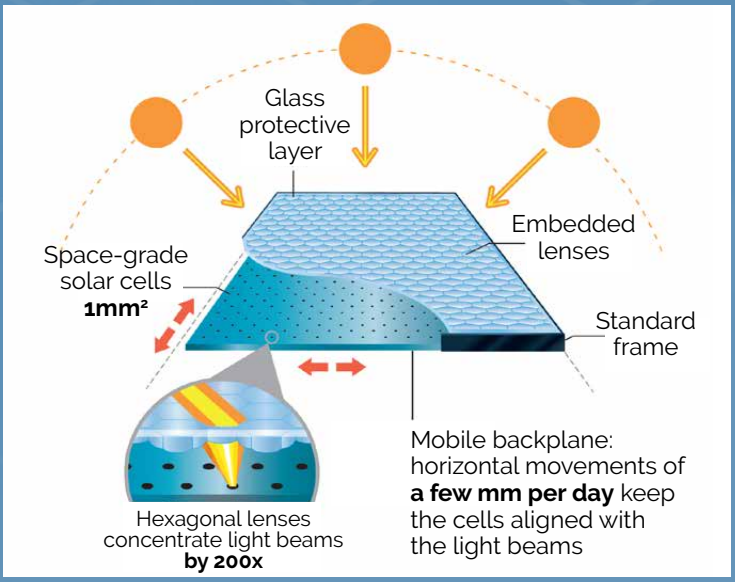
HIPERION PV MODULE INNOVATION

HIPERION innovative module architecture is based on a disruptive planar optical micro-tracking technology.

Sunlight is concentrated on an array of high efficiency micro solar cells.

The micro solar cells are mounted on top of a conventional silicon backplane, integrated within a static frame.

Standard flat form factor panel is mountable on any rooftops or ground-mounted racks.



HIPERION tandem approach

Boost energy production under **direct sunlight** + Harvest **diffuse sunlight** with the optimised PV backplane = **MOST EFFICIENT FLAT PV MODULE**

CONVENTIONAL PV

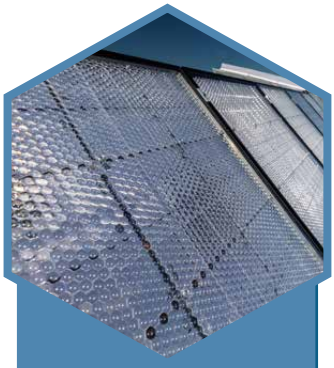
- SIMPLE & RELIABLE
- ROOFTOP & UTILITY
- DIFFUSE LIGHT HARVESTING
- LOW EFFICIENCY

~20%

CONCENTRATED PV

- COMPLEXITY
- UTILITY-SCALE ONLY
- NO DIFFUSE LIGHT HARVESTING
- HIGH EFFICIENCY

>30%



HIPERION

- INTEGRATED TRACKING
- ROOFTOP & UTILITY
- DIFFUSE LIGHT HARVESTING
- HIGH EFFICIENCY

>30%

HIPERION objectives

1 **Develop an industrial process to manufacture highly efficient hybrid solar modules** which combine photovoltaic and concentrated photovoltaic technologies. This goal will be achieved by building a pilot production line and by developing tailored assembly techniques.

2 **Deliver unique and highly efficient solar modules** capable of providing real-time record of energy generation per m² (50% - 80% depending on weather conditions). HIPERION modules will be easy to install, with an estimated lifetime of 25 years, and they will generate more than 30% STC (Standard test conditions) efficiency under direct sunlight and 15% STC efficiency under diffuse sunlight.

3 **Perform a technical and economical assessment of the blueprint solution,** including qualification testing, performance and reliability validation at several commercial pilot sites across Europe.

HIPERION impacts

INNOVATIVE PRODUCTION PROCESS

HIPERION will trigger new investments in the European PV industry by establishing an innovative pilot line, capable of assembling the HIPERION disruptive module architecture though an industrial manufacturing process. Based on this, HIPERION will strengthen its intellectual property on the process level in Europe and internationally.

EQUIPMENT DEVELOPMENT FOR PV TECHNOLOGIES

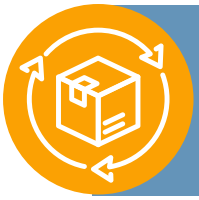
HIPERION will trigger new investments in the European PV industry via tailored equipment development for mainstream power PV technologies. HIPERION will integrate the latest photovoltaic silicon modules on the market and the III-V cells technology.

PERFORMANCE & COST COMPETITIVENESS

Thanks to its high efficiency modules, HIPERION will offer a final product with performance and cost competitiveness. HIPERION will yield a competitive total installation cost in target markets, lower solar electricity cost on rooftops, higher margins for manufacturers and increase the return on investment of the full PV installation value chain.

REGAIN MARKET SHARES

HIPERION solution will regain market shares against mainstream PV panels. It will enable more PV applications (e. g. standalone PV applications, zero-energy buildings, electric vehicle stations and parking lots) and provide added value for the rooftop market. HIPERION will also decrease the levelized cost of energy, improve the internal rate of return for homeowners and increase the manufacturing gross margin. On the long term, HIPERION will reduce cost of electricity in the utility market.

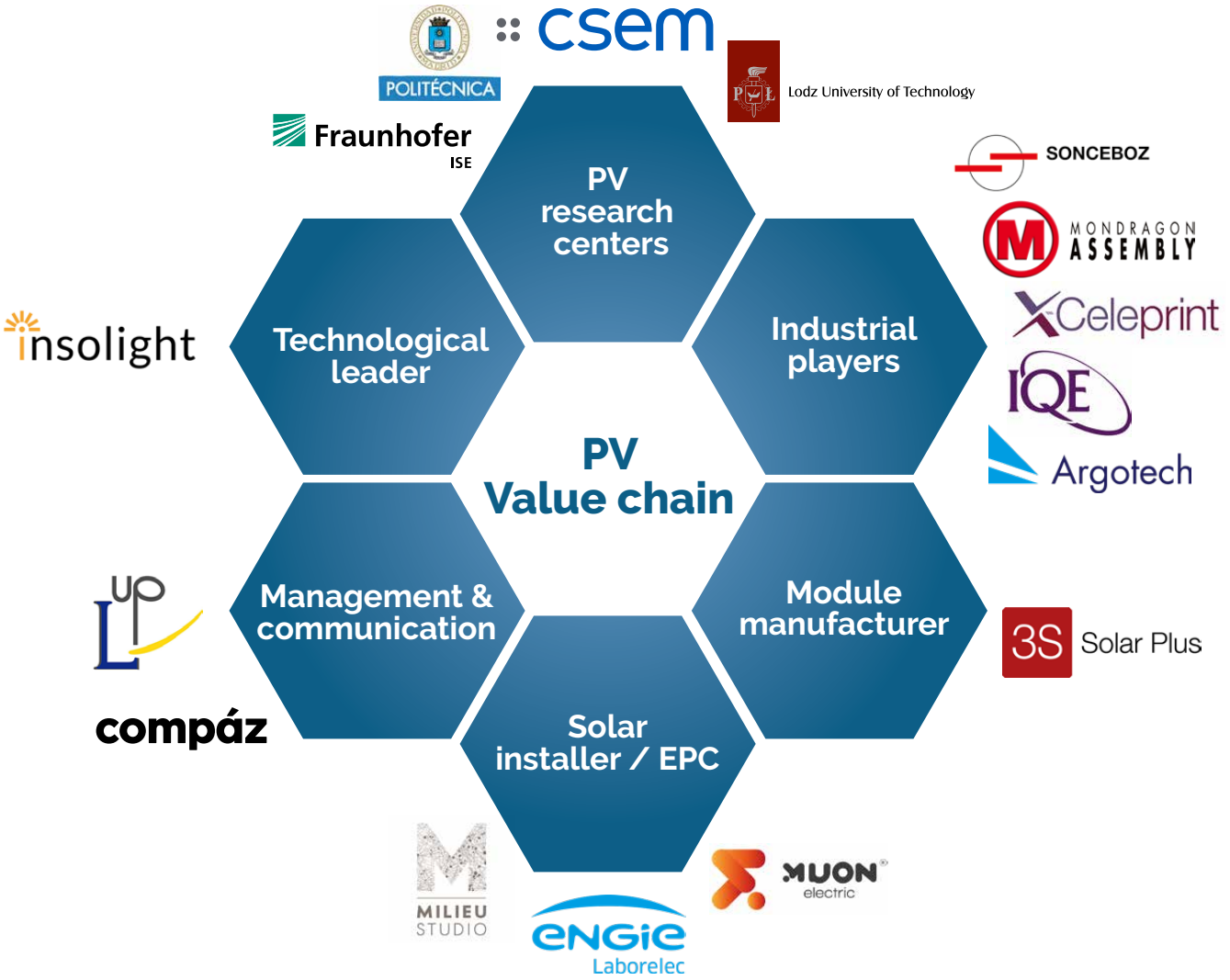


SECURE & SUSTAINABLE SUPPLY CHAIN

HIPERION will create a more secure and sustainable supply chain for the European PV market and preserve the European strategic position in this new field. HIPERION will also strengthen the European expertise and know-how in several fields such as advanced optics, micro-mechanical components and multi-junction III-V solar cells and metrology.

HIPERION consortium

The HIPERION consortium, led by CSEM, comprises 16 partners covering the complete photovoltaic value chain.



16 Partners	**10** Countries	**48** Months
10 590 511 € EU Funding	**13 534 524 €** Total Budget	**1 236** Person-Months

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Project name: **H**YBR**I**D **P**HOTOVOLTAICS FOR **E**FFICIENCY **R**ECORD USING **I**NTEGRATED **O**PTICAL TECH**N**OLOGY

Funding scheme: Innovation Action (IA)
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