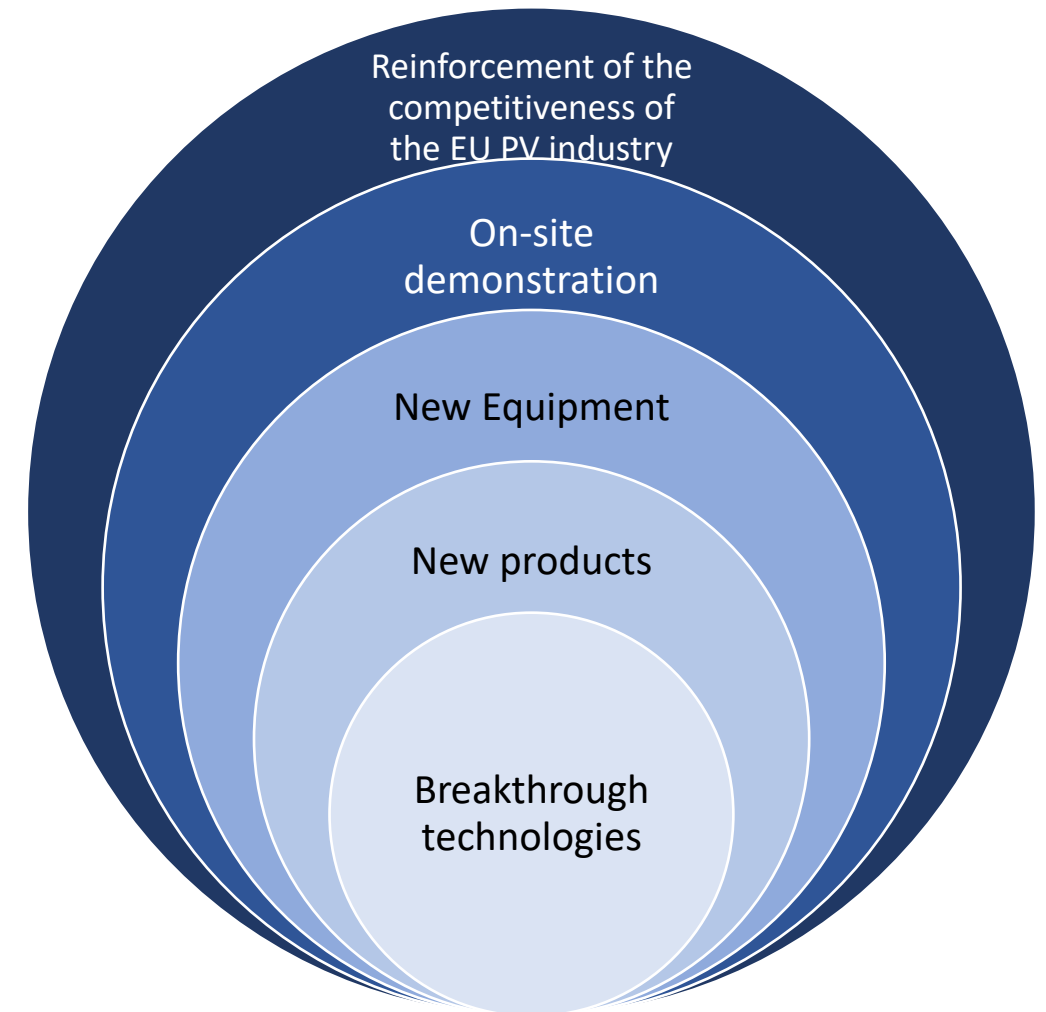


Project Introduction



Main Goal

Achieve (pre-fabricated, modular, with various size) **BIPV elements** with the EU-based disruptive **matrix shingling interconnection** technology prepared via a flexible production pilot line for different sizes and combined functionality needs. This will allow for **short construction times** and **low costs** at the building and infrastructure locations.



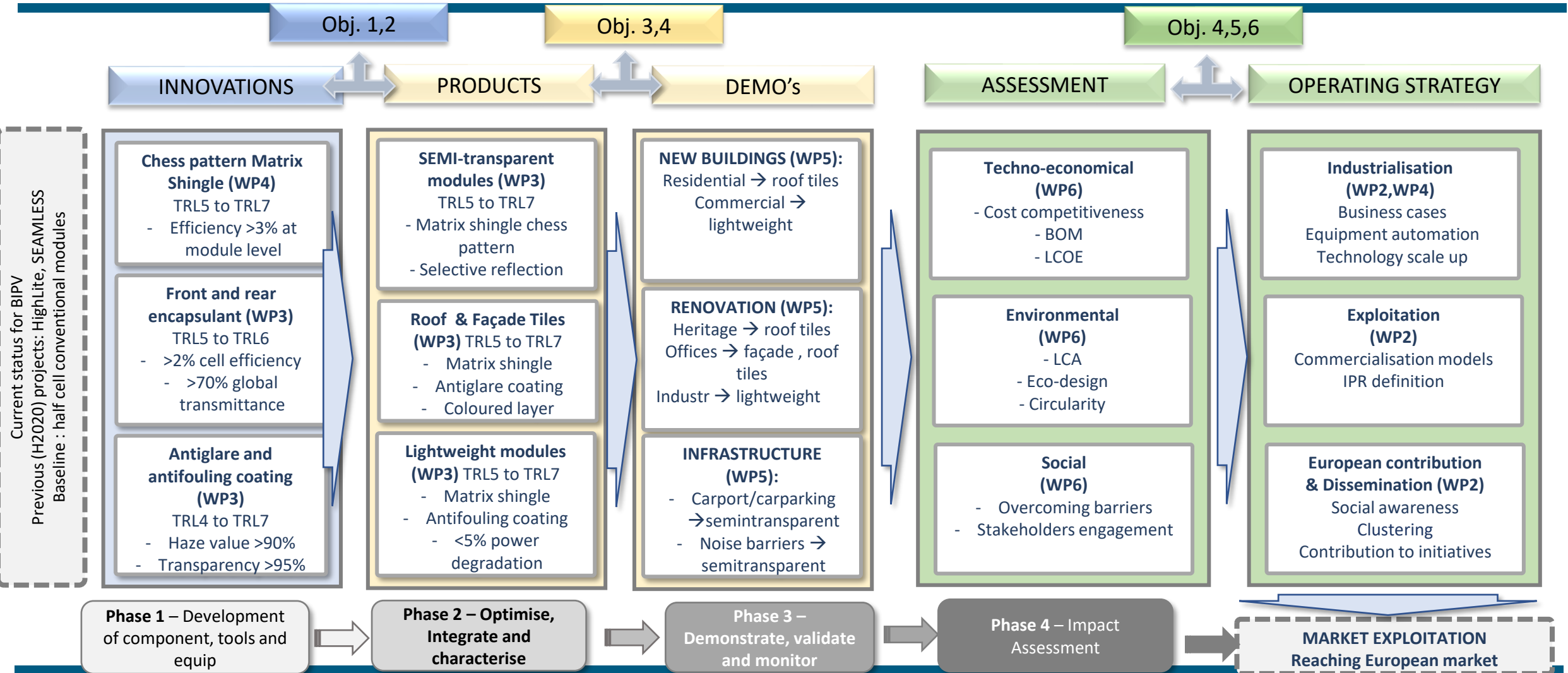
Project Objectives



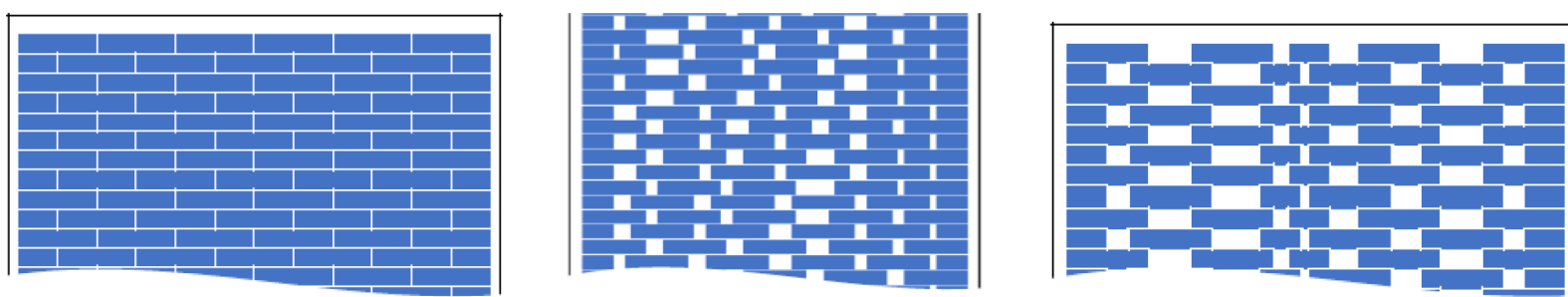
1. Development of technical solutions in integrated PV products for buildings and infrastructure.
2. Development of tools and processes for pilot line demonstration of industrialized production and prefabricated modular solutions of the SPHINX PV products made in Europe
3. Integration and demonstration of the proposed IPV product solutions in the construction value chain with combined functionality and validation of their performance
4. Demonstrate favourable business model case(s) for the SPHINX products
5. Engagement of stakeholders and end-users including the PV and (construction and infrastructure) building industries to effectively contribute to Renovation Wave, Mission on climate-neutral and smart cities and the New European Bauhaus (NEB) initiative
6. Assess and improve the environmental impact of production process, equipment and materials and increased circularity for the SPHINX IPV products.



SPHINX Approach

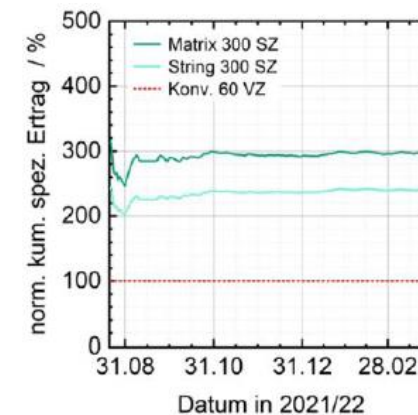
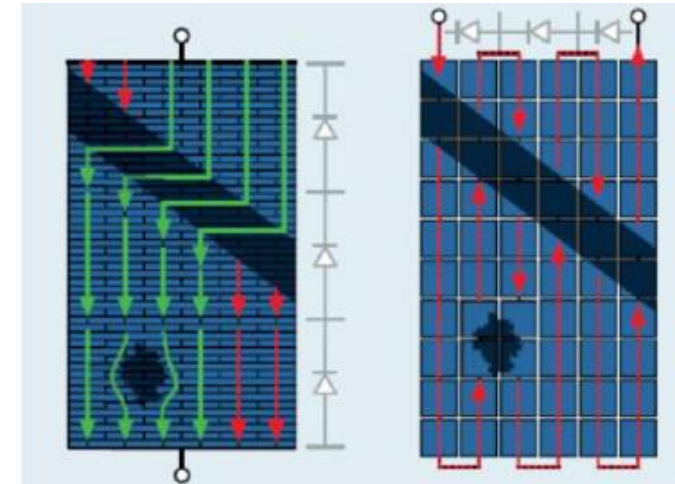


Matrix shingle



Matrix shingling offers the following advantages over conventional solder interconnection:

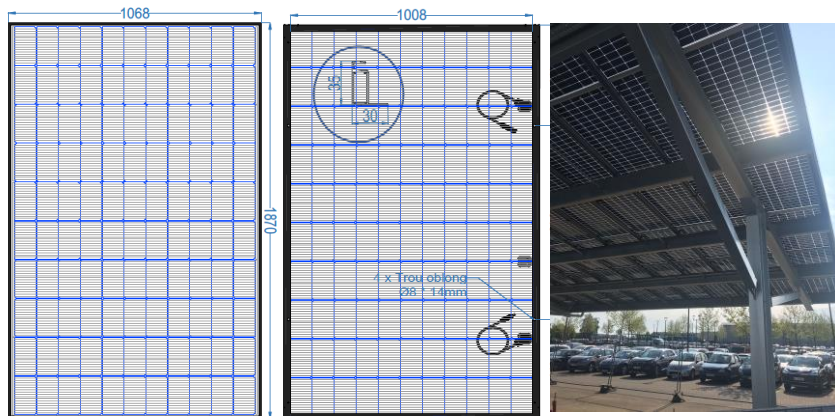
- 2-6% higher module efficiency than conventional half-cell modules thanks to better area usage, lower series resistance losses and edge passivation
- homogeneous appearance
- 100% lead-free cell interconnection
- excellent module reliability
- flexibly adaptable to any building and infrastructure geometries
- less hot spot and fire risks
- up to 200% more power under partial shading compared to conventional full-cell modules (see Figure 1-3), suitable for all cell technologies (PERC, TOPCon, HJT)
- manufacturing costs comparable to conventional soldering.



3 innovative PV solutions for building

SEMI-TRANSPARENT BIFACIAL PANEL

Produced by:



Application: CARPORTS



Application: NOISE BARRIERS



SOLAR TILES



Application: ROOFS



Application: FACADES



LIGHTWEIGHT PANELS



Application: BUILDINGS WITH WEIGHT CONSTRAINTS



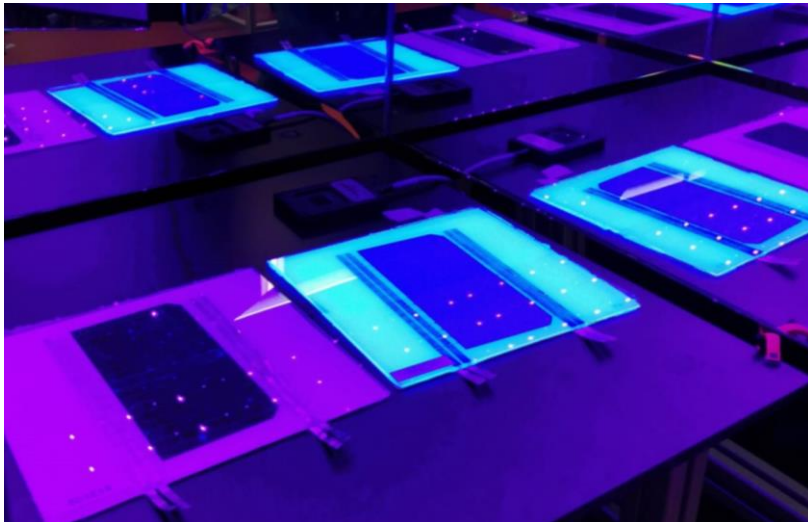
Installed by:



Functional layers

ENCAPSULANT LAYERS :: csem

UV downshifting foil for energy boost and UV protection



Colored IR reflecting layer for bifacial boost, temperature management and improved aesthetics (no picture available)

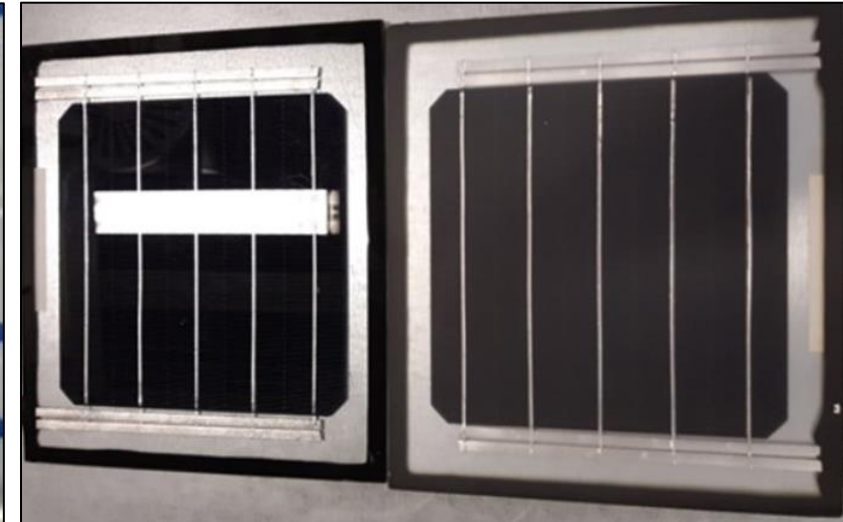
COATINGS :: csem

ANTI-FOULING



Mitigation of power losses over time by decrease impact of soiling (self-cleaning)

ANTI-GLARE



Mitigation undesired reflection by increasing haziness and give a pleasant coloration aspect

Summary Facts & Figures



- 3 years project
- Total Project Costs: ~9,000,000 euro
- Funding
 - EU : ~5,248,000 euro
 - CH : ~2,200,000 euro
- 13 partners from 5 EU countries
 - 8 full beneficiaries
 - 1 affiliated partner
 - 4 associated partners



Acknowledgment / Disclaimer



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the European Union

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