

Sustainable Photovoltaics Integration in buildings and Infrastructure for multiple applications

www.sphinxproject.eu

Introduction : The SPHINX project aims to create cost-effective and quickly deployable BIPV elements using disruptive matrix shingling technology. These modular, pre-fabricated elements will vary in size and functionality, such as lightweight, semi-transparent, and modular tiles. The project involves developing new manufacturing technologies implemented at pilot lines and demonstrating these innovations at five different sites. An additional goal is to bring back BIPV product fabrication and the full supply chain to Europe, relocating from the current production sites in the US and China.

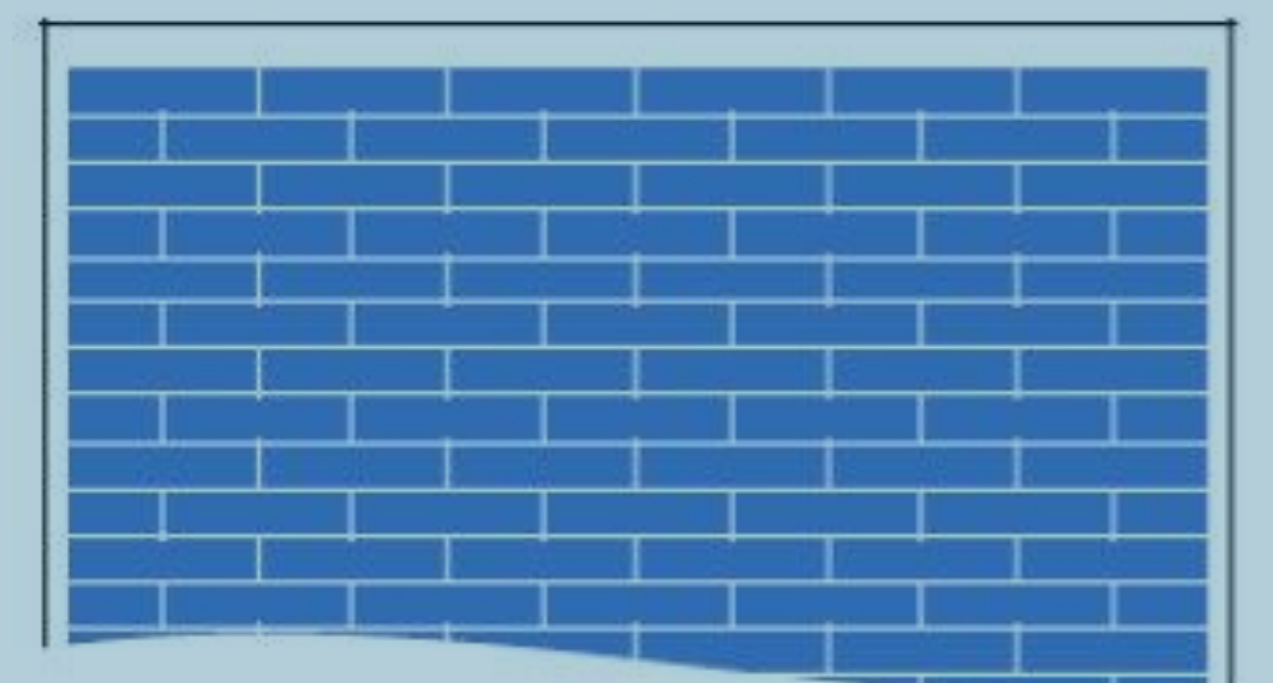
Objectives

- Development of technical solutions in **integrated PV products for buildings and infrastructure**.
- Development of **tools and processes for pilot line demonstration** of industrialized production and prefabricated modular solutions of the SPHINX PV products made in Europe.
- **Integration and demonstration** of the proposed IPV product solutions in the construction value chain with combined functionality and validation of their performance.
- Demonstrate favourable **business model** case(s) for the SPHINX products.
- **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.
- **Assess and improve the environmental impact of production process**, equipment and materials and increased circularity for the SPHINX IPV products.

Matrix shingling technology

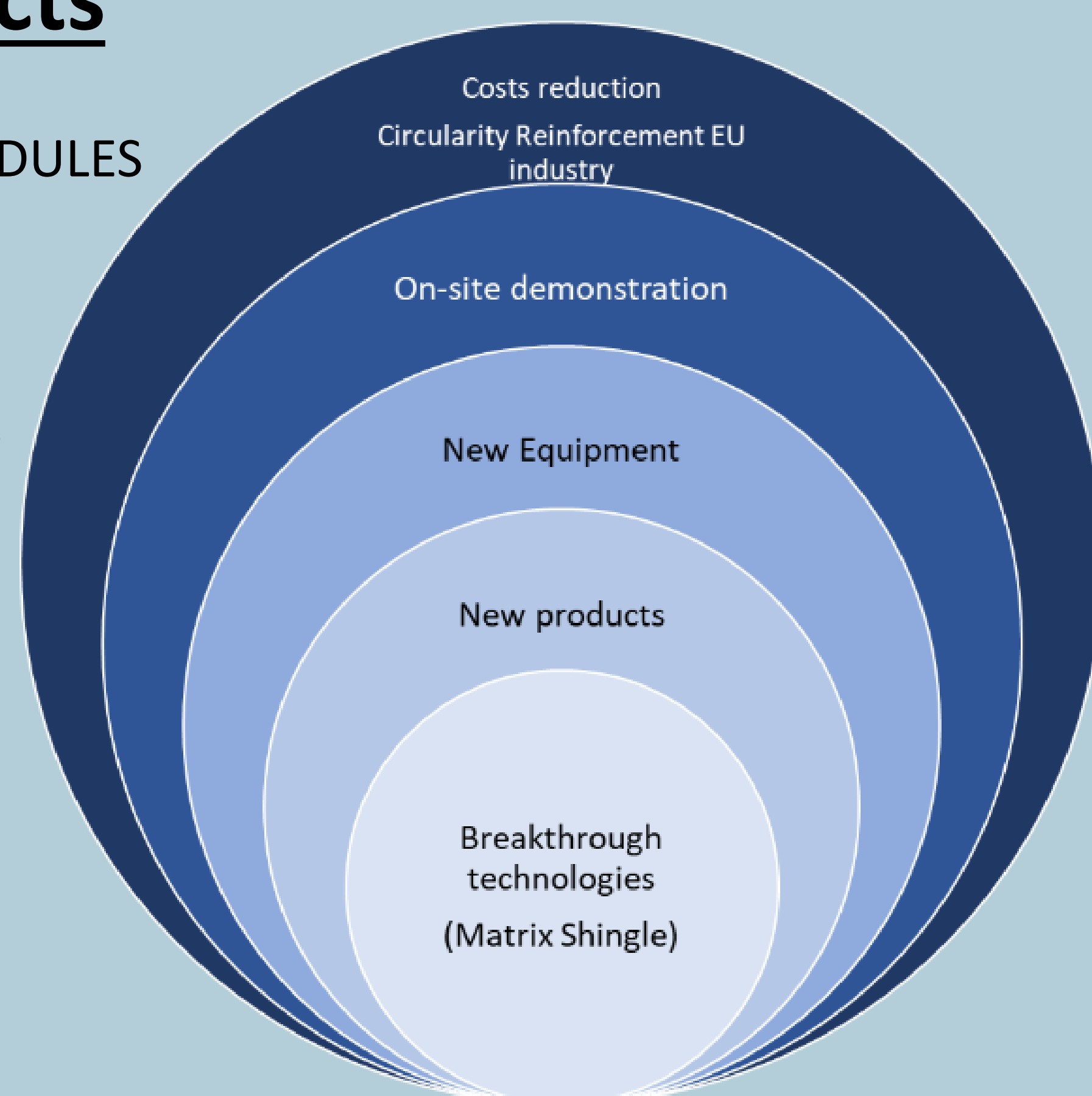
This technology offers many advantages over conventional solder interconnection, such as :

- 2-6 % higher module efficiency
- Homogeneous appearance
- 100 % lead free interconnection
- Excellent module reliability
- Flexibility
- Less hot-spot and fire risks
- Up to 200 % more power under partial shading



SPHINX's products

- SEMI-TRANSPARENT MODULES
- ROOF & FAÇADE TILES
- LIGHTWEIGHT MODULES



Functional layers

Encapsulants



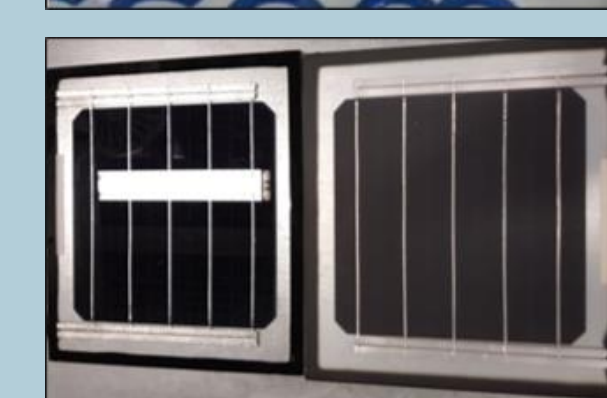
UV downshifting front foil for energy boost and UV protection

IR-reflecting colored rear foil for energy boost, improved aesthetics and heat management

Coatings



Anti-soiling coating with long lifetime in field and improved module performance in dusty environment



Anti-glare coating providing long-lasting diffusing properties for improved aesthetics

All developments will upscaled and integrated in module production line

Applications :

CARPORTS



NOISE BARRIER



ROOFS



FAÇADES



BUILDINGS WITH WEIGHT CONSTRAINTS

