



Halffabrikaat PV als sleutel naar succes voor BIPV

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Short Introduction



Jack Smit



Project Manager



Peter Toonssen



Program Manager



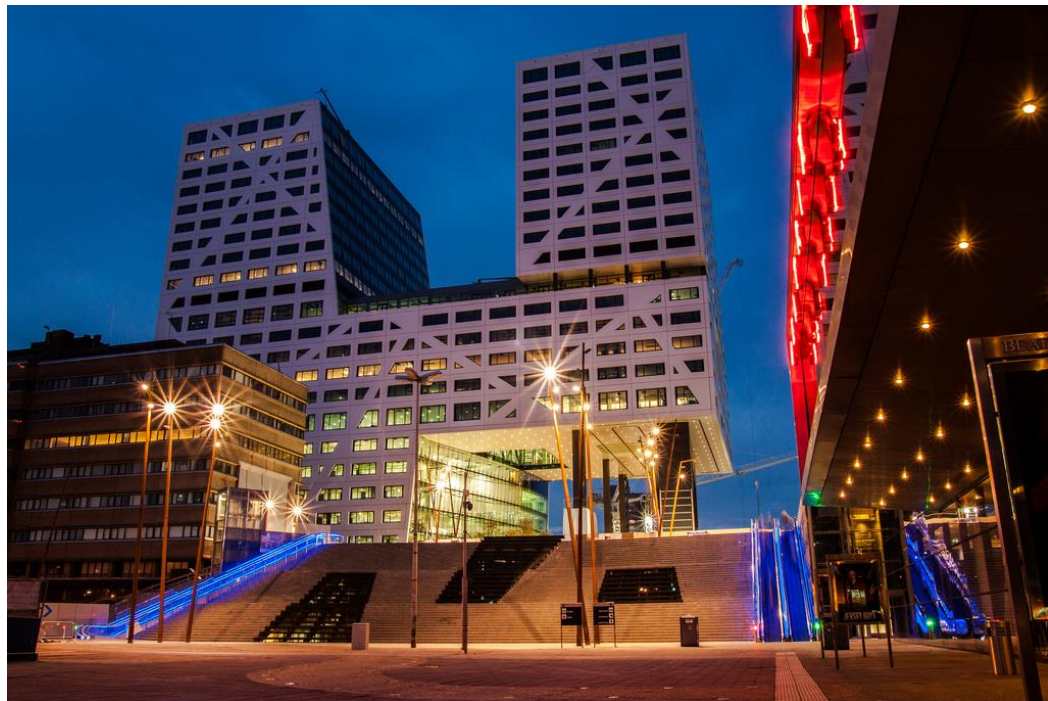
Chairman

Composieten: Een duurzaam (bouw)materiaal





Composiet gevels in de nieuwbouw. Primaire aandacht voor Isoleren.





Composiet gevels in renovatie en hergebruik van gebouwen



Integratie van PV in composiet gevels.

- **Composiet is vooral een materiaal dat ontwerpvrijheid biedt aan ontwerpers en architecten. Die vorm- en ontwerpvrijheid vrijheid moet je ook terug vinden in PV.**
- **Dat is het voordeel PV film: flex op maat.**
 - Nog te onderzoeken is de integratie van PV film rechtstreeks in het composiet productie proces. (RTM / vacuüm infusion)
 - Uitwisselbaarheid van PV bij storingen.
 - Styreen bestendigheid van de drager van de PV.
 - Integratie van PV en PT in één element. (rendements verhoging)
 - Integreren van een vormvrij materiaal (PMMA) als drager voor de PV in het composiet element.
 - Direct toepasbaar – uitwisselbaarheid gegarandeerd.

Solliance is...



SOLLIANCE IS A PARTNERSHIP OF EUROPEAN RESEARCH ORGANIZATIONS AND INTERNATIONAL INDUSTRIAL PARTNERS WORKING IN THIN FILM PHOTOVOLTAIC SOLAR ENERGY

Bringing together research and industry

- Providing insight and know-how to all partners in the value chain
- Accelerating thin film PV developments with our industrial partners

Materials	Equipment	PV Manufacturers	End users
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Introduction



Why Integration of PV ?

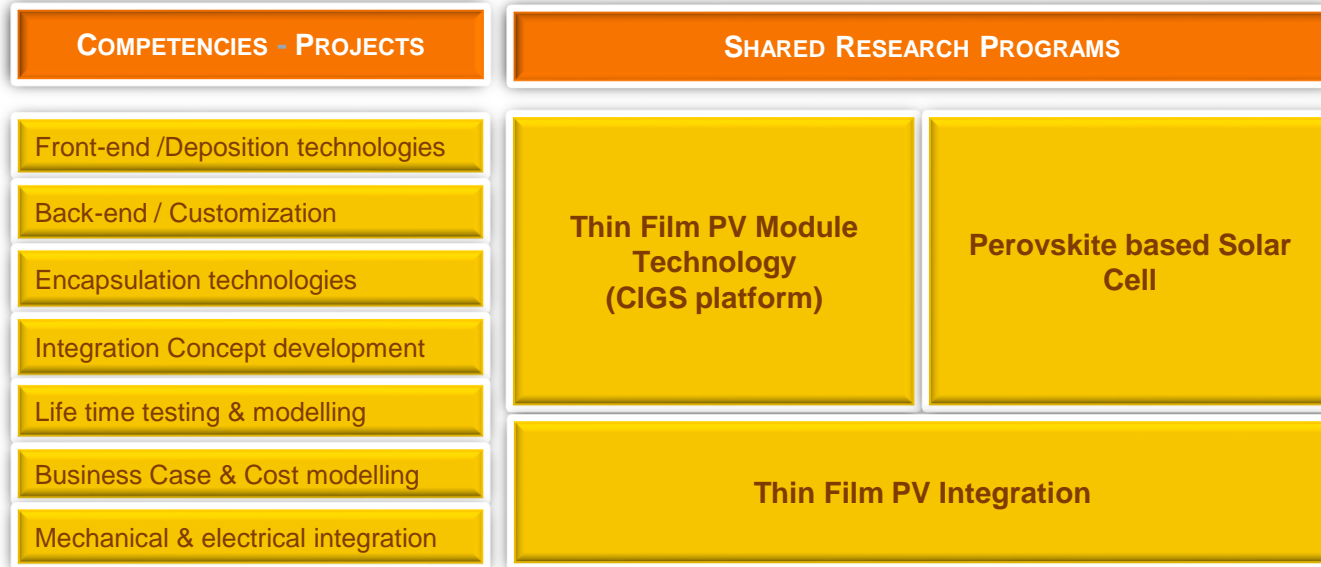
- **Opportunity for expanding portfolio/adding product value**
- **Opportunity for new business approach; selling/leasing energy instead of selling products**
- **Reduction of assembly related labour and material costs**
- **Better esthetics**

2020 Ambition

- **Development of production technologies for low-cost, high efficient and stable rigid and flexible thin film PV modules**
- **Demonstrate unique features of thin film PV in real projects**
- **Enable economically feasible zero-energy buildings with thin film solar by introducing technologies for customization**
- **Enable large scale industrial activity for PV integrated products**



Solliance program structure



Mission

Develop technologies for **mass customized series manufacturing** of products with integrated PV functionality

Our contribution

Development of PV semi-fabricates and processes for seamless integration in manufacturing/supply chains for target applications

Target applications

1. BIPV (roof and facade)
2. Infrastructure (incl offshore)
3. Transport



Solliance Impression

- Production facilities (semi-industrial pilotlines for PV production research S2S & R2R)



- Products



Focus on flexible PV substrates because of

- Freedom in design
- Lightweight
- Robustness/less-brittle
- High synergy with low cost mass manufacturing



 MiaSolé
A Hanergy Company



Connecting 2 separate worlds



Building industry

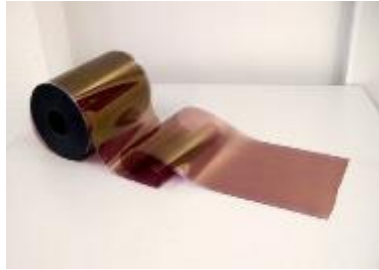
- High mix of product variety
- Low degree of industrialization / automation
- Low degree of integration in products

Solar industry

- Low mix of product variety
- High degree of industrialization / automation
- Low degree of integration in products



Supply chain



PV-supplier

- Uniform product
- High volume
- high yield



Semi-fabricate manufacturer

- Bespoke product
- Series production
- Highly integrated product



Producer of I-PV products

- Series production
- Multiple variants
- Process quality oriented



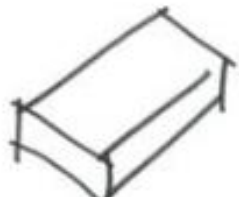
End user

- High volume need
- Product assembly
- Plug&Play



Solliance role

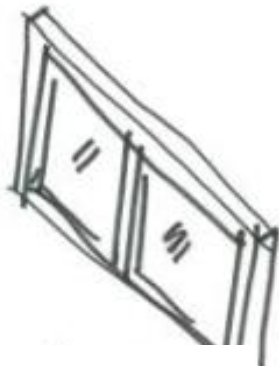
- Integration friendly PV technology
- Concepts for integratable modules
- Process technology for product integration



block



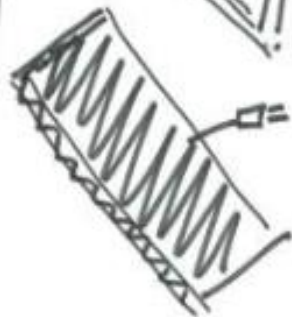
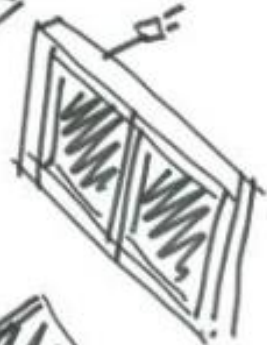
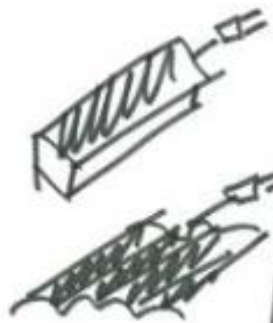
roofing tile



window



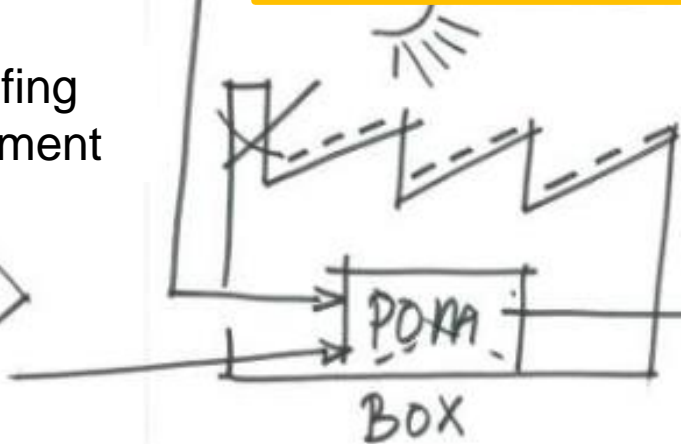
Solar semi-fabricate



roofing element



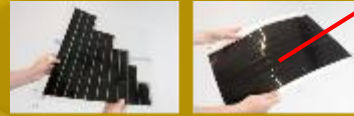
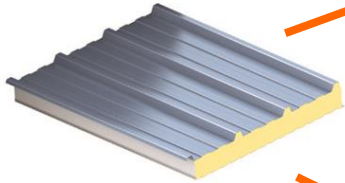
façade element



PV Semi-fabricate Development

Customer specified specs
of end-product
(eg facade element)

Encapsulation formula
Barrier layer(s)
Protective layer(s)
Topcoating
Electrical design
Cell architecture
In-stack electronics
Electrical components/system design



Production Technology
specs



Solliance spin-off: SolarFilmIndustries

- Zonne-energie als een functie ipv als een eindproduct
- Industriële productie van op maat gemaakte halffabricaten
- Eerste toepassing: daken & gevels



Agro sector
15 GWp / 100 km²



Sociale woningbouw
Renovatie & nieuwbouw
25 GWp / 150-200 km²



Architectuur
Renovatie & nieuwbouw

Our co-developers/partners

POLYPLASTIC
ACRYLIC GLAZING SOLUTIONS

MARKETS SOLUTIONS ACRYLIC SERVICE ABOUT US

Shape acrylic based solutions for you!
Discover the possibilities for your market

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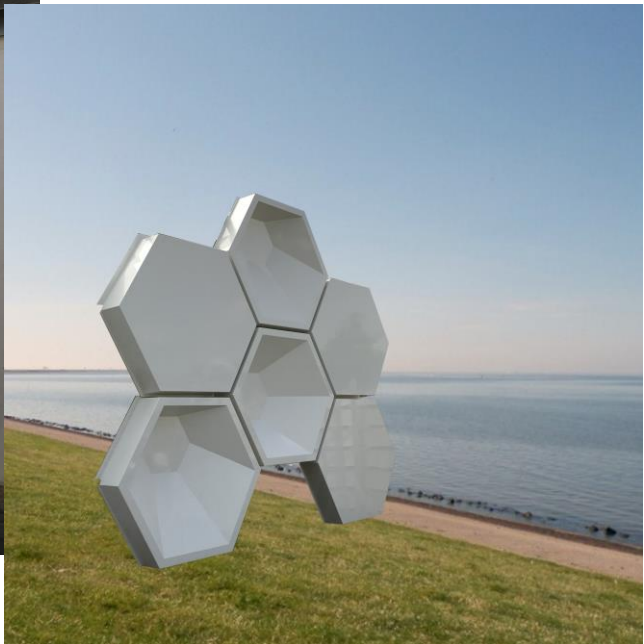
PRODUCTS SOLUTIONS NEWS AND EVENTS COMPANY

The Leader in Flexible, Lightweight, Powerful Solar

MiaSolé leads the paradigm shift from rigid solar panels and all their limitations to flexible solar and all of its possibilities

Handwritten notes on the diagram:
- acrylgebaseerde afdekking
- LED strip
- 1e binnenrand: 6x30 = 180 cm
- 2e binnenrand: 6x20 = 120 cm
- buitenrand: 6x40 = 240 cm
- we hebben 2x5 m 10a beschikking.....
- LED strip => wireless oek met na montage aan buitenzijde worden toegevoegd!!!

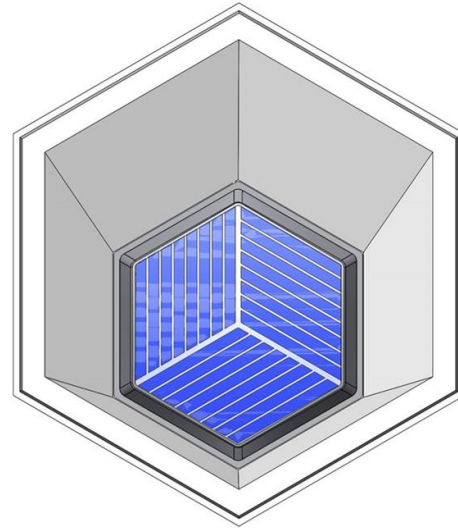
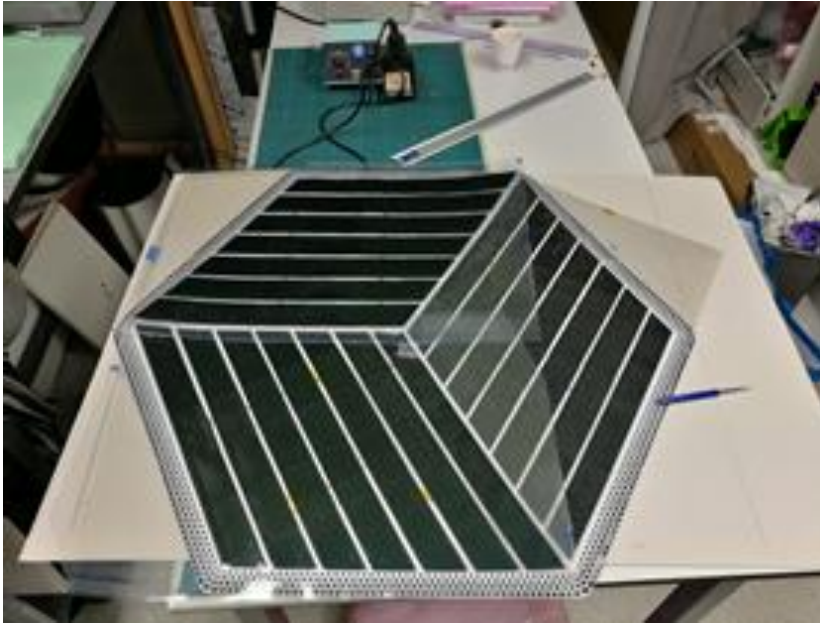
The Flexipol facade product



The **POLYPLASTIC** freeform PMMA inlay as cover for PV
ACRYLIC GLAZING SOLUTIONS



flex-PV semi-fabricate design



Final product; Sunlight harvesting/Illuminating

