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Photovoltaic modules manufacturer

Inspiring green energy since 2010

www.spolarpv.com

Founded in 2010, SpolarPV Technology Co., Ltd has been specialized in the design, manufacture and marketing of solar cells, solar modules, and solar power systems. The company is located in Nanjing, the capital city of Jiangsu Province, covering 6,000 m2, boasts advanced automatic production lines: stringer machines, laminators, and complete sets of automatic manufacturing equipments as well as imported finished product testing equipments, with which, SpolarPV has an annual production capacity of 800MW.

Based on the market need and the aim to provide quality series products for various application scenarios in different countries and regions, the company was very in advance in China to introduce BIPV modules for well cooperation with energy-efficient buildings and passive architecture.

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Agenda

1 Market Situation

2 Development Standards

3 Levelized Cost of Energy

4 Market Development

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1 Market Situation

Climate Change and Energy Act-Driven

Depending on the region, construction law requires customers to produce at least renewable energy sources by themselves. From 10% to 50% of the predicted consumption. Architects are not satisfied with the current photovoltaic products: the aesthetics of the architecture is disturbed and the integration is insufficient.

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Market Conditions of the Products

Classic photovoltaic

- Single glass Module requires an aluminum frame
- Powerful photovoltaic cells are black (or blue)
- Installation of the PV module is visible (additional fault)
- Area caused by standard size (other media)
- Requires fire protection measures

The advantages of SpolarPV BIPV

- The Module with double pieces tempered glass
- Front glass with digital original ceramic color
- Patent invisible suspension
- 4 Standard sizes for customizable glass cut
- Glass-Glass module requires no fire protection measures

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Market Situation Rules

The advantages of the SpolarPV BIPV

Most photovoltaic systems are installed on the roof. Solar modules fully integrated into the building envelope – particularly facing south, east and west facades – offer many advantages.The modules integrated in the facade and roof are not only used for solar generation but also have traditional functions such as windproof, weather, sound insulation and heat insulation. The digital imprint of images can create a uniform elevation image.

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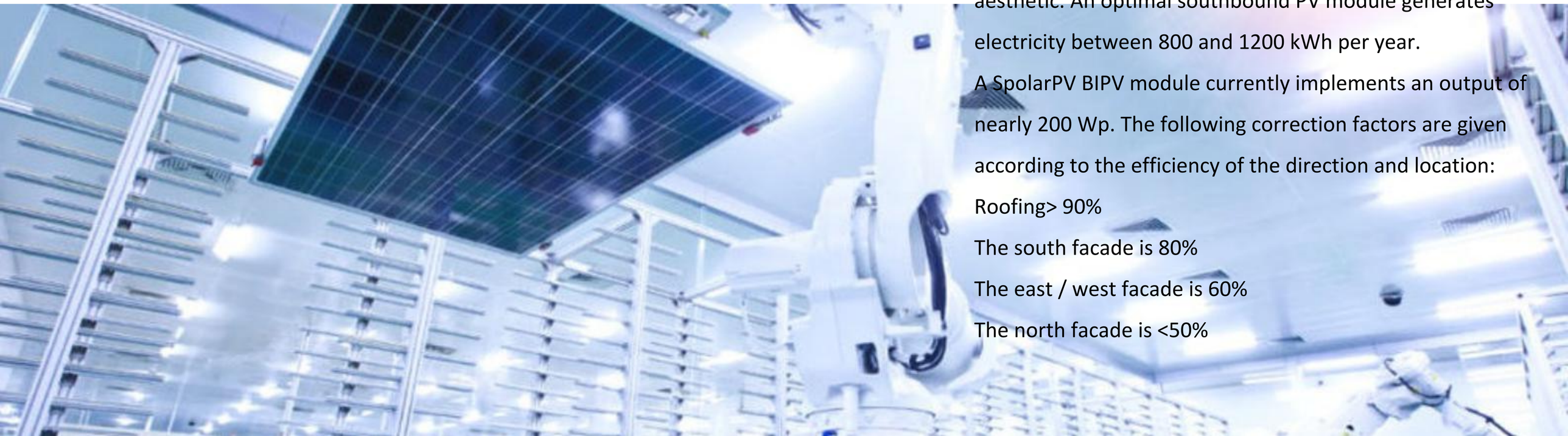
2 Development Standards



Current technical level

SpolarPV has made progress in BIPV technology and has a fully automated production line. Which allows for uniform printing of any images on glass. The structured front glass provides an optically close image of the specific designs. Thus, the active BIPV surface can be fused with architectural aesthetic. An optimal southbound PV module generates electricity between 800 and 1200 kWh per year.

A SpolarPV BIPV module currently implements an output of nearly 200 Wp. The following correction factors are given according to the efficiency of the direction and location:

Roofing> 90%

The south facade is 80%

The east / west facade is 60%

The north facade is <50%

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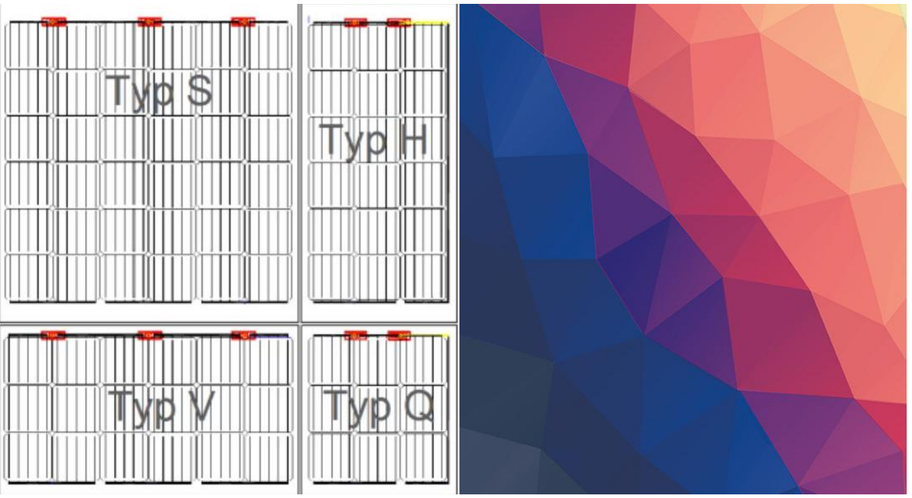

Development Criteria

4 Dimensions, Colors, Structure

Glass-Glass laminate

High-power solar cells

Intelligent performance control

Hail Level 4 (Ø40mm/23m/s)

Snow load of 8,200 N/m2

Protection level is IP68

Non-flammable

Anti-salt mist

Ammin-resistant

Standard standardized EN 61215,61730

Performance is guaranteed for 30 years

Unique SpolarPV BIPV

According to the latest methods to guarantee development, production and recycling. Using photovoltaic on the facade requires special attention to selective shading. On the product side, one IC circuit per cell guarantees the optimal energy output.

The front glass is optionally laminated with the 3D structural glass. It is thus possible to ensure the appearance of the printed pattern as selected.

Printing techniques are varied, and nothing is undesirable.

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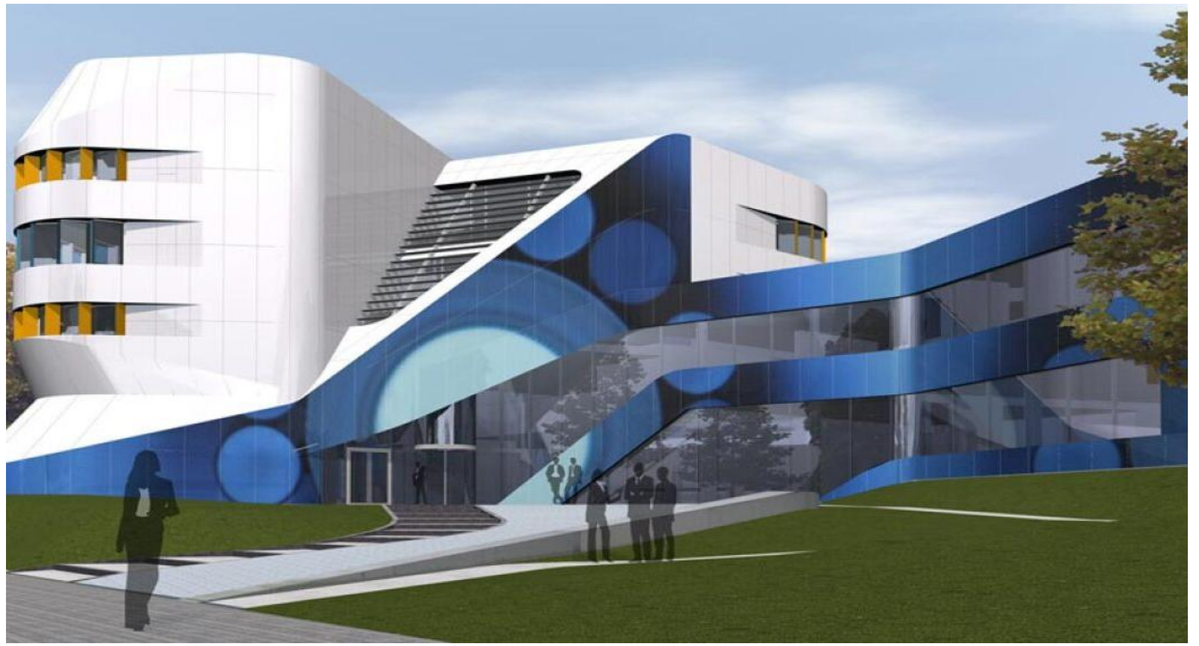
Examples of using the BIPV printing technique



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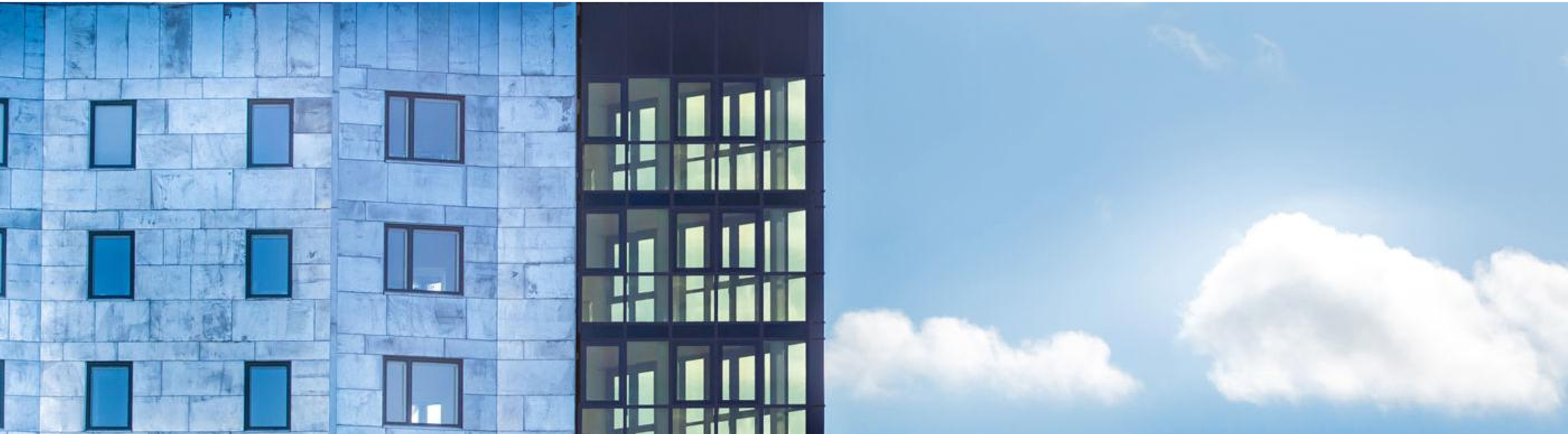
3 Levelized Cost of Energy (LCOE)

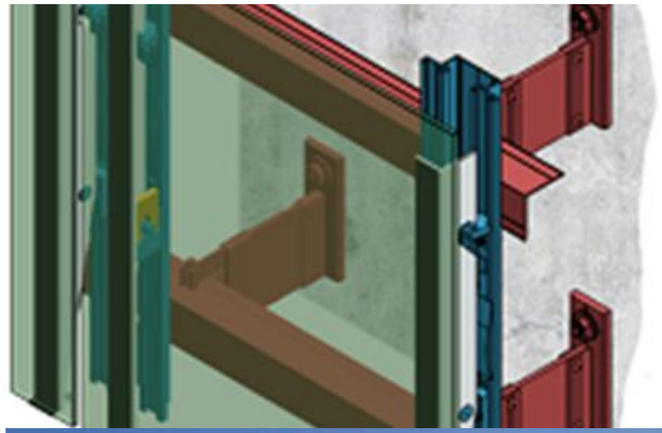
- Levelized Cost of Energy(LCOE) = Total Life Cycle Cost / Total Lifetime Energy Production.
- Total life cycle cost mainly contains BOS(Balance of System), module capital cost, project operation cost, and tax.
- Therefore, as a cost-effective solar project which has low LCOE, it should have minimum total cost and maximum electricity output.

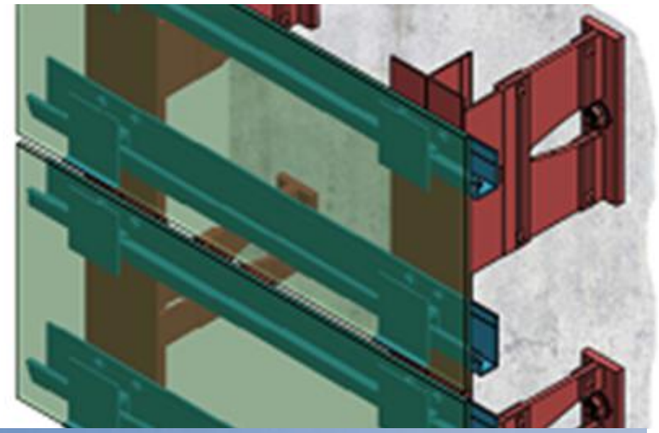


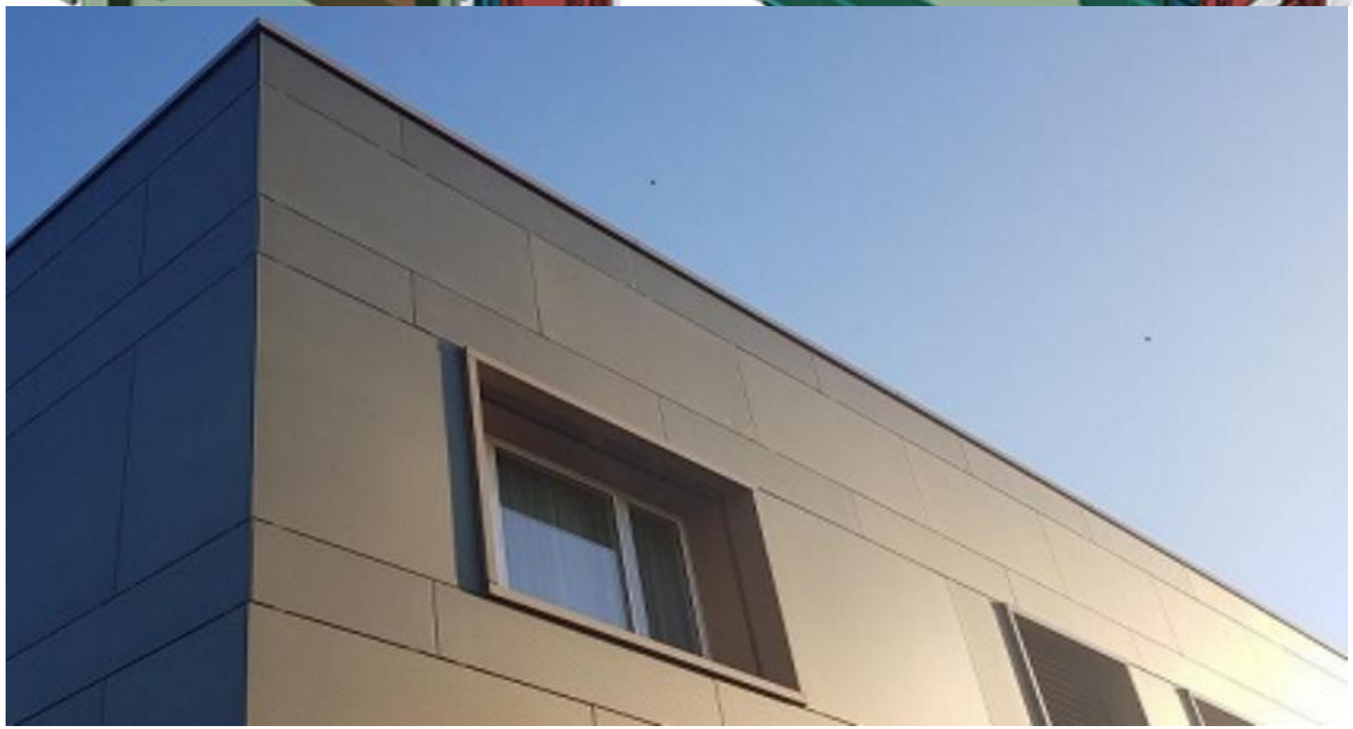
LCOE & SpolarPV BIPV

SpolarPV BIPV modules have attractive LCOE among other regular products, especially in BOS, module cost, and electricity output:

1. In terms of BOS, SpolarPV BIPV products have an invisible-frameless design. The module has a non-frame mounting system which could dramatically decrease the aluminum usage in the whole project and then reduce the BOS.







LCOE & SpolarPV BIPV

2. Regarding the energy output, the SpolarPV **Optimax** BIPV module has the following features to ensure outstanding electricity production:

2.1 Non-hotspot effect design.

The SpolarPV **Optimax** module have a significant improvement on hotspot issues which has a serious influence on safety and power generating. This attribute is specially designed for module shading situations such as roof top and building facades shaded by surroundings.

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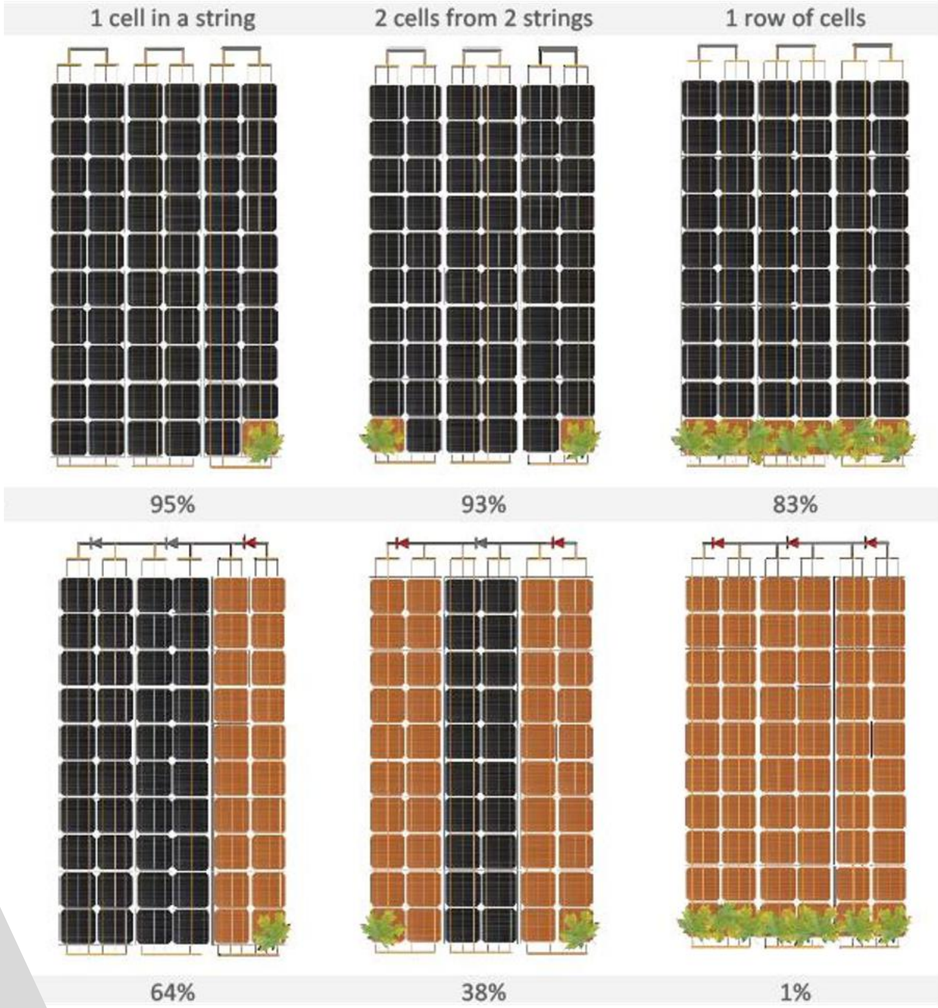
LCOE & SpolarPV BIPV

2.2 higher energy-generating during the total lifetime under some extreme circumstances, when the panel totally shaded, regular panels would fail to produce energy. But the **Optimax** panel still has the ability to generate over 80% electricity and also avoids hot-spot influence. Generally **Optimax** module have an extra large amount of energy generation compare to regular solar panels during the whole project lifetime.



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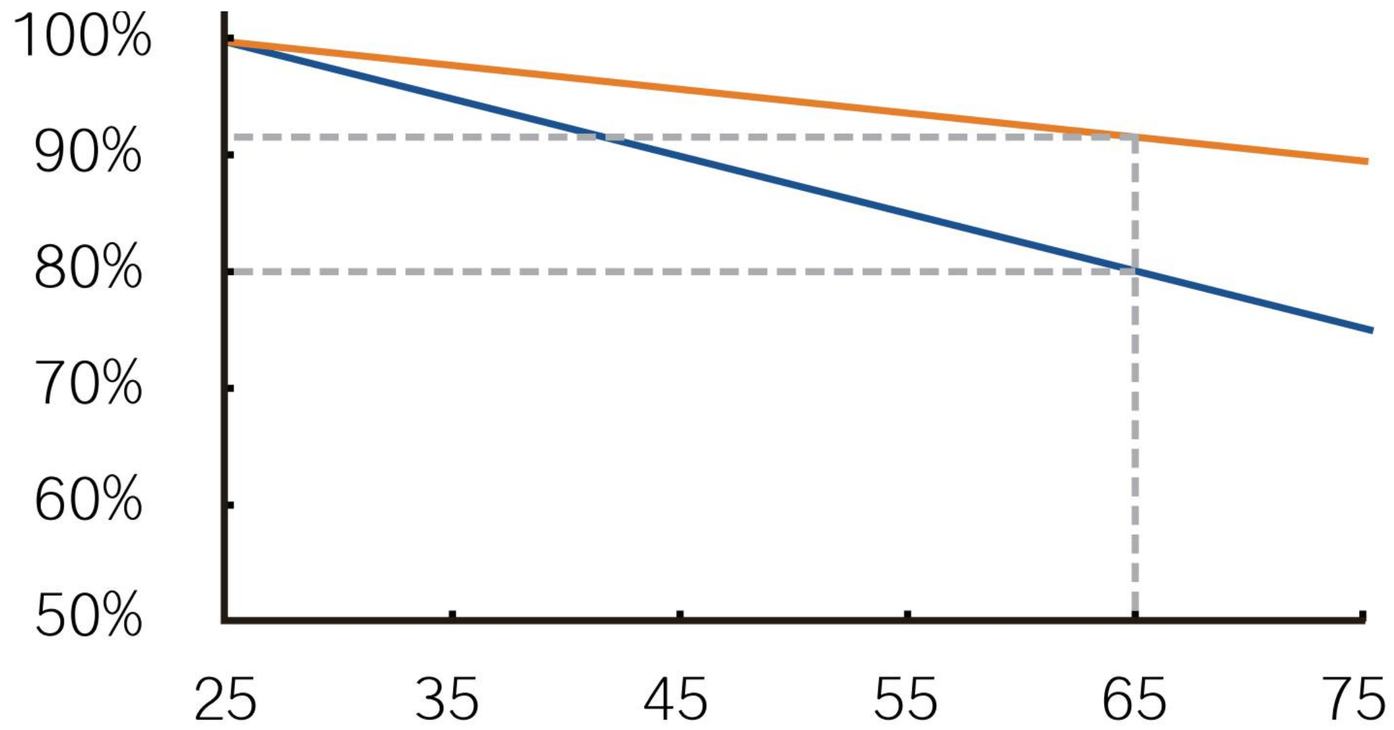
LCOE & SpolarPV BIPV

2.3 Low-Temperature coefficients.

The SpolarPV **Optimax** BIPV module has an lower average panel temperature coefficient which leads to a lower panel operating temperature and has a higher open-circuit voltage, especially considering the desert high temperature environment.



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4 Market Development

Strong, transparent markets exist

Natural stone, wood and glass are future materials for the building enclosure. The existing compact facade will be heat refurbished with additional insulation.

The **SpolarPV** BIPV is an ideal complement. The product combines the needs of renewable energy production in buildings and the lasting aesthetic of the building enclosure.

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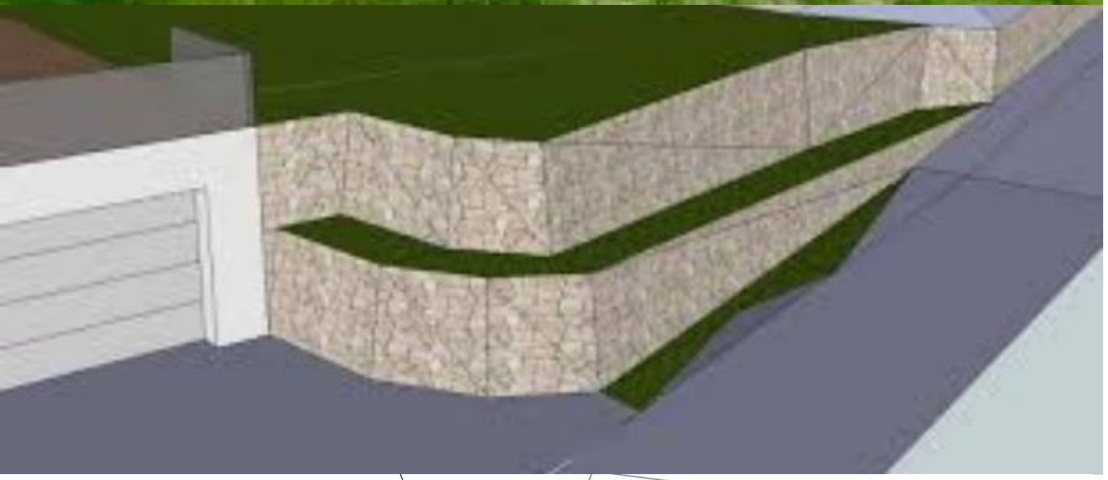

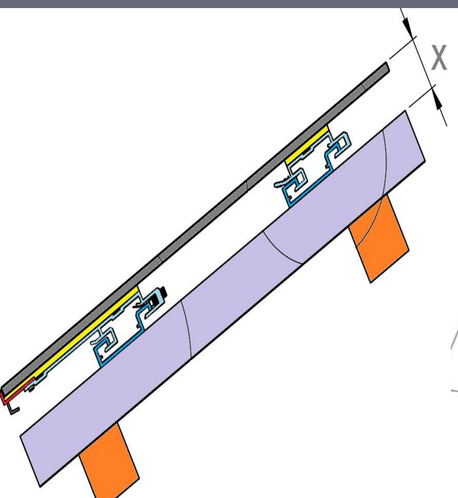

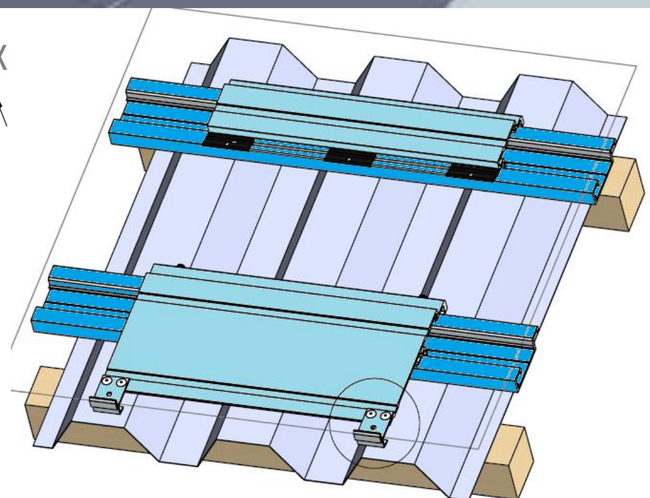

Complementary to Market Development

Other business areas

Green hedge

Space planning increasingly combines green hedges with dry stone walls in the landscape. Both topics can be available with **SpolarPV** BIPV.

The retaining wall

The retaining walls with **SpolarPV** BIPV natural stone prints are efficient and best suitable for the garden landscape.

Clate BIPV Roofing System

In partnership with professional partners, a cheap roof system based on trapezoidal panels was developed. With glass-glass laminated panels with slate printing, a safe and durable roof system is available.

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