

Joaboa Tech Photovoltaic Roofing Solutions

Engineering Technology Department



深圳市卓宝科技股份有限公司
SHENZHEN JOABOA TECHNOLOGY CO., LTD.

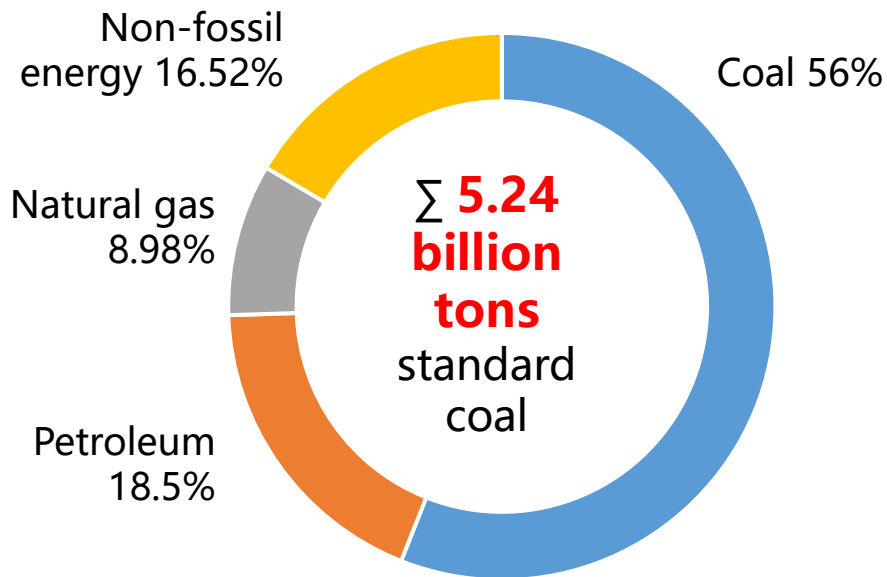
Photovoltaic Roofing System **Policy Support**

The Action Plan for Carbon Peak before 2030 issued by the State Council

mentions:

The share of non-fossil energy consumption will reach around **20%** in year 2025;

The share of non-fossil energy consumption will reach around **25%** in year 2030.



The energy consumption structure in 2021

Development Prospect of Photovoltaic Roofing System

June of year 2021, *the Notice on Submitting the County (City, District) Rooftop Distributed Photovoltaic Development Pilot Program* were issued by the National Energy Administration, there are 676 Counties (Cities, Districts) applied.

Party and government offices	50%
Public Buildings	40%
Industry and commercial plant	30%
Rural buildings	20%

There are 70, 66 and 59 pilots in Shangdong, Henan, Jiangsu, and the quantity is the top 3.



[Attachment: The list of whole county \(city, district\) roof distributed photovoltaic development pilots](#)

The advantages of industry and commercial plant photovoltaic power system



The roof area of industry and commercial plant is large, flat, and they are the ideal place for distributed photovoltaic power station.

The energy consumption is large, the investment risk is low, with high interest.

Four values of the photovoltaic roofing system



Lower the energy cost, and extend the energy restriction of enterprise



Save the peak electricity bills, and sell the extra energy online



Promoting energy conservation and emission reduction, and produce good social benefits



Thermal insulation and cold proof, and increase environmental comfort

The condition of roofing photovoltaic system

◆ Roof load

Metal roof $\geq 0.5\text{KN}/\text{m}^2$

◆ Roof condition

Equipment on roof, pollution resources (such as large area exhaust air and smoke equipment)

◆ Renew project

Invest the original condition of metal sheet and the aging and damage degree of waterproofing. The life of renewed waterproofing meets **the minimum life requirement** of photovoltaic

◆ Newly building

Ensure the life of waterproofing and insulation meets the minimum life requirement of photovoltaic system **(25 years)**

◆ Environment around roof

Building **shade**, tree shade, and effect of falling leaves

◆ Energy consumption of owner

Normally the self consumption is over **80%**. Less self consumption and more selling online is not good for electricity net, and minimizes the income from investment.

The defect of installing photovoltaic system on traditional roof- Metal sheet roof



Not easy detail
treatment,
Short life span, and
renew every 6-8
years

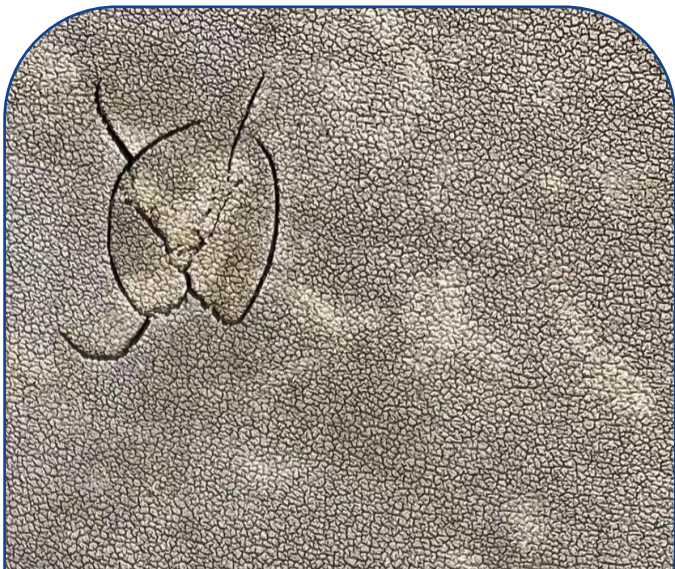


The photovoltaic
fastener causes the
clamping edge of
metal sheet to
loosen, and leading
potential leakage



The metal sheet is
easy to rust,
renewing needs
cost, and affects the
normal production.

The defect of installing photovoltaic system on traditional roof- Flexible roof



Plasticizer in PVC will
immigrate, and aging fast with
short life span.



Normal TPO is weak in thermal
aging and durability, as well as
the lower peeling strength of
overlap and wind uplift.

Photovoltaic roofing system from Joaboa tech

On the base of **specialized TPO (thermoplastic polyolefin) waterproofing membrane of Joaboa Tech Photovoltaic roofing system**, use different photovoltaic base and power generation module, according to different roofing, to create serials of photovoltaic roofing system solutions.



The specialized TPO waterproofing membrane of Joaboa Tech photovoltaic roofing system



Thermal aging is **135°C, 60ds**, with better thermal resistance and durability



Reflectance of sunlight is over **80%**, suitable for double photovoltaic power generation system.



Overlap with hot air welding, the peeling strength of overlap reaches **8.0N/mm**, safe and reliable



The low temperature resistance reaches **-40 °C**, suitable for cold area

The specialized TPO waterproofing membrane of Joaboa Tech photovoltaic roofing system

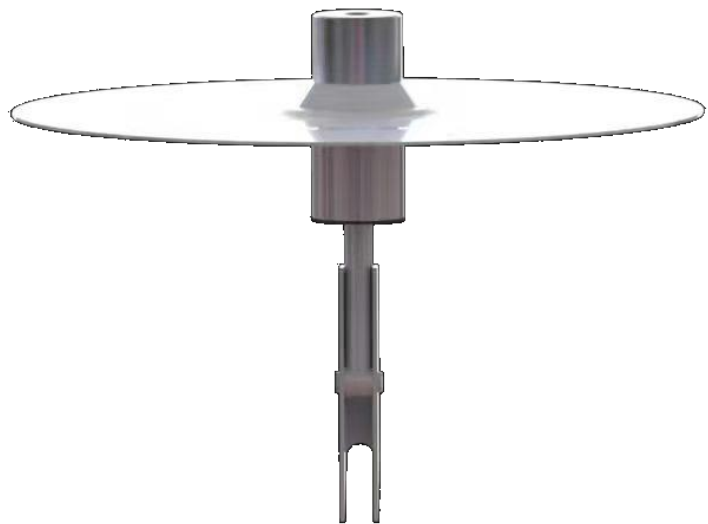


FM Approval

		外观	无起泡、裂纹、分层、 粘结和孔洞	无起泡、裂纹、分层、 粘结和孔洞	合格	
15	人工气候 加速老化 (8000h)	最大拉 力保持 率, %	纵向	≥90	96	合格
			横向		94	合格
		最大拉 力时伸 长率保 持率, %	纵向	≥90	102	合格
			横向		103	合格
		低温弯折性	-40℃无裂纹	无裂纹	合格	
以下空白						
备注 按委托单位要求人工气候加速老化处理时间8000h, GB 27789-2011标准规定时间1500h。						

**Artificial weather acerating aging
time is 8000 hrs.**

Penetration photovoltaic base



Penetration photovoltaic base



Penetration photovoltaic base

Avoid hot and cold bridges

Avoid the hot and cold bridges as penetrating the insulation, with adjustable height POM cold proof bridge insulation block

Reduce the load

Effectively reduce the roof load with light dead weight, and combined with lightweight support system

Good waterproof

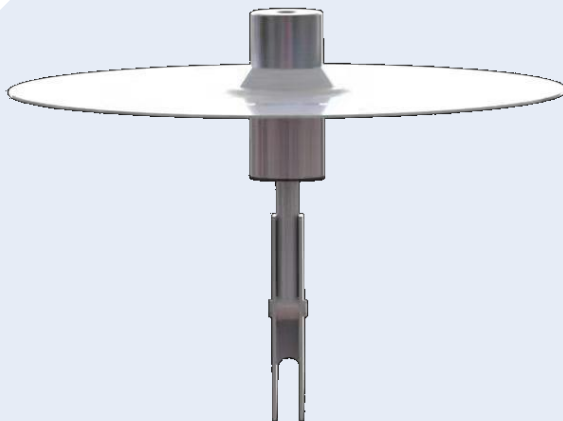
Reliable waterproof with TPO waterproofing membrane, and using hot air welding with roofing

Excellent wind uplift resistance

Excellent wind uplift resistance, as reversed anchor on base connecting rigidly with roofing, with 7.5 kN pulling resistance

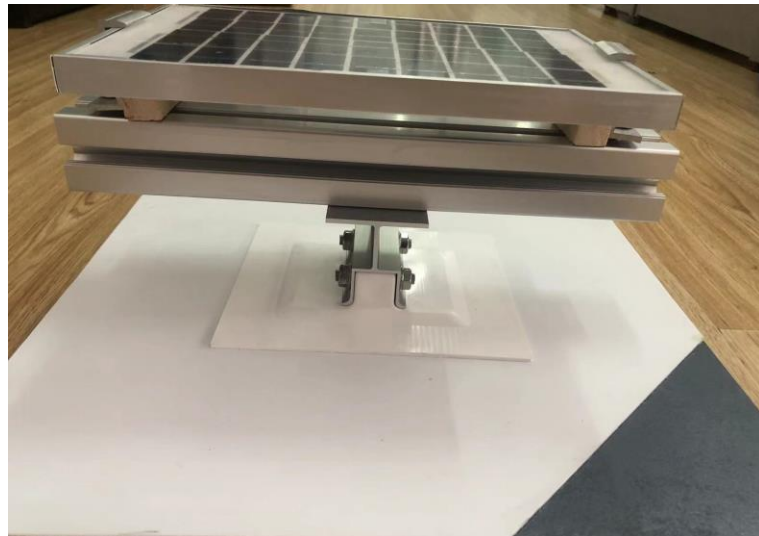
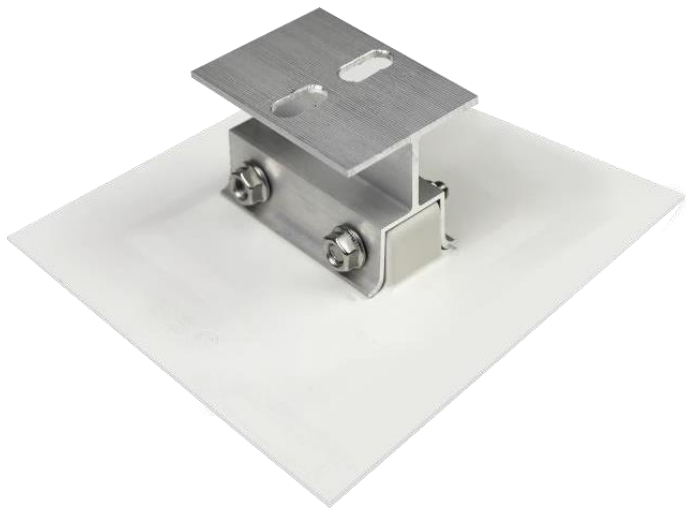
High compressive strength

Single base can bear the load of 54 cm snow cover, and the compressive strength is over 4 kN

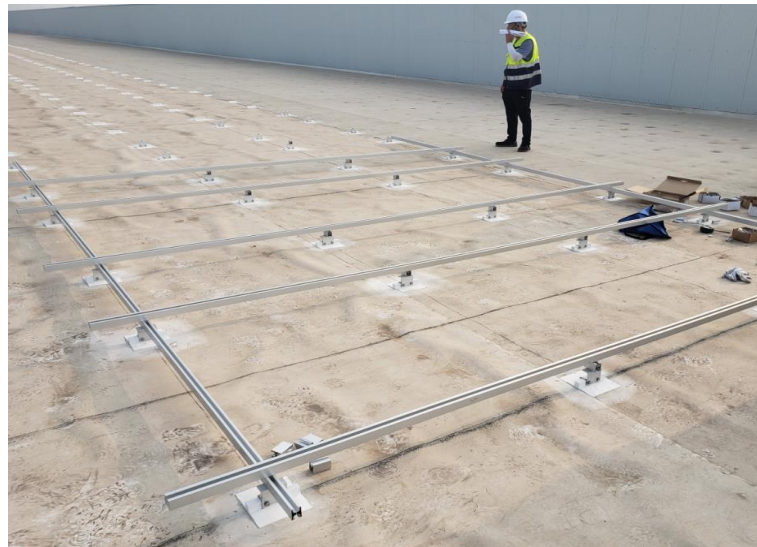
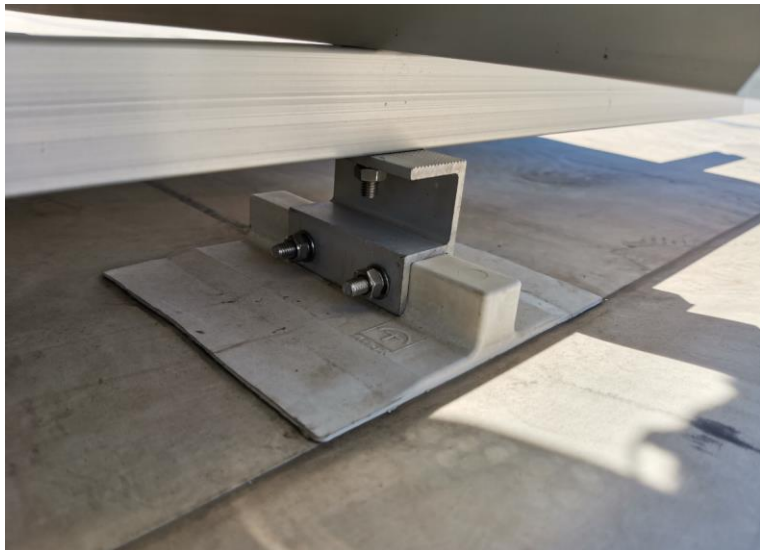




Weldable flexible base



Weldable flexible base



Weldable flexible base

Nondestructive installation

No need to open holes on roof, not damage waterproofing and insulation, and reduce leakage risk

Easy to apply

Weld with the TPO waterproofing membrane on roof

Strong drawing force resistance

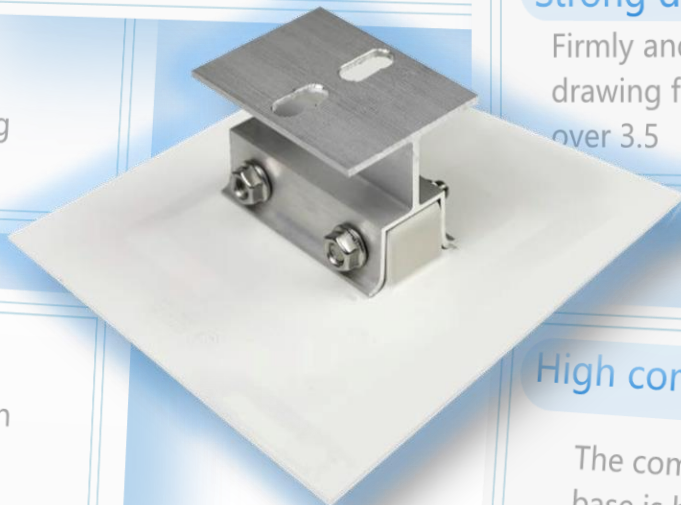
Firmly and reliable welding, and the drawing force resistance of single is over 3.5

No effect for production

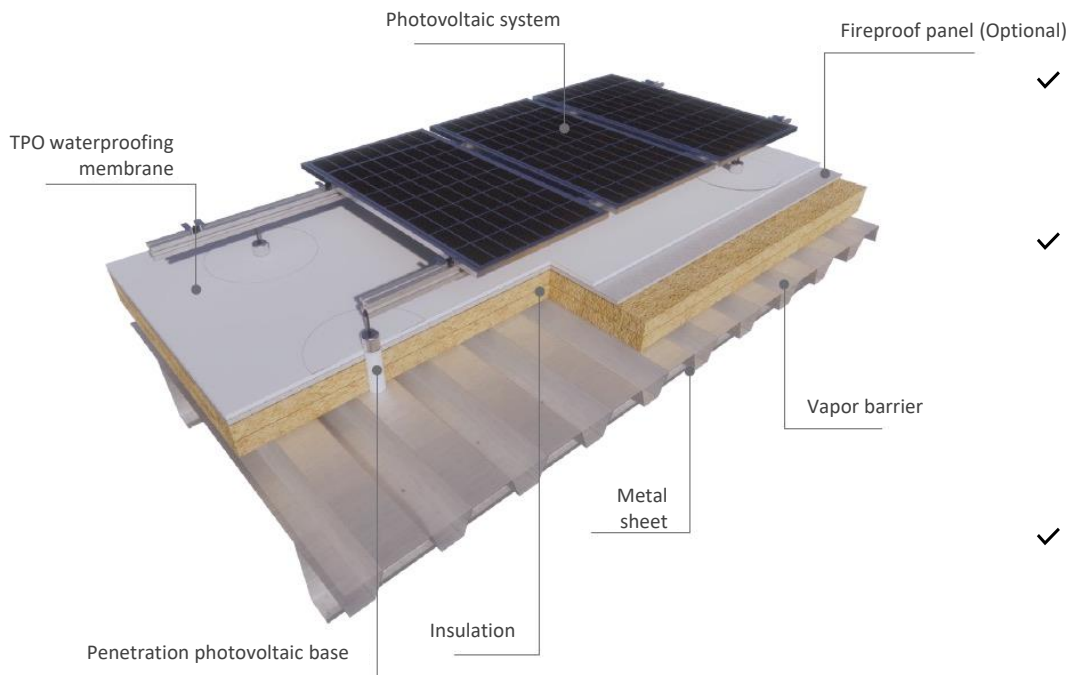
No debris falling in the construction process, which does not affect the indoor production

High compressive strength

The compressive strength of single base is higher than 3 kN



Photovoltaic roofing system solution 1 from Joaboa tech



- ✓ Suitable for newly built metal sheet roof;
- ✓ Rigidly connected with roof, and the drawing force resistance and compressive of base strength are high;
- ✓ Not squeeze the insulation, not pull the waterproofing, and have strong wind uplift resistance.

Mechanical fastened TPO combined with penetration photovoltaic system

Application procedure



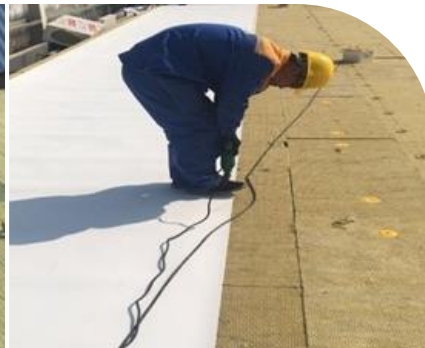
1、Substrate acceptance



2、Install vapor barrier



3、Install and fasten insulation



4、Install and fasten membrane



5、Weld membrane



6、Open hole for base

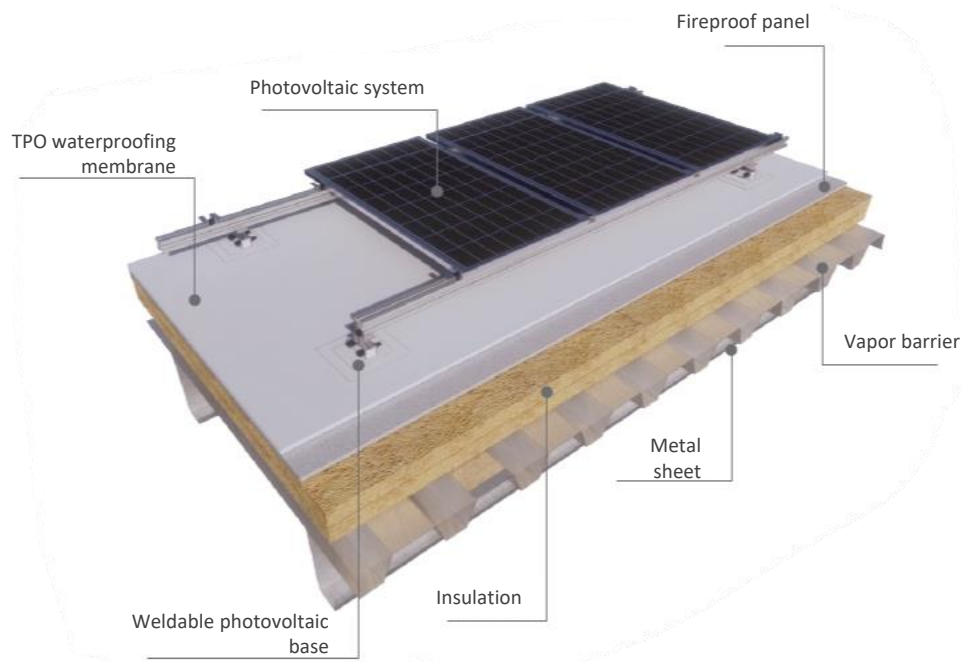


7、Install base



8、Install photovoltaic

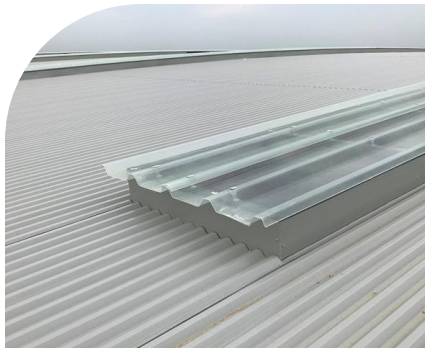
Photovoltaic roofing system solution 2 from Joaboa tech



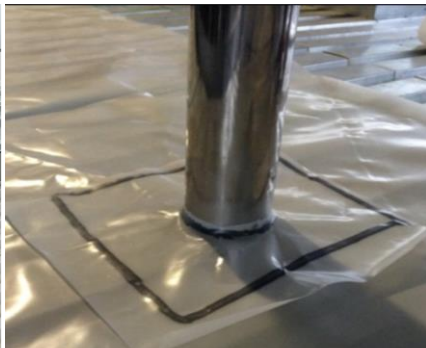
- ✓ Suitable for newly built metal sheet roof;
- ✓ No need to open hole on roof for welding base, and reduce leakage risk;
- ✓ Easy to apply and fast.

Mechanical fasten TPO combined with welding base photovoltaic system

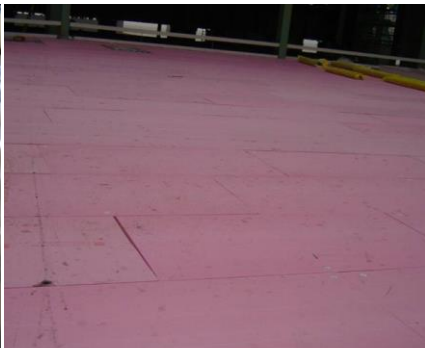
Application procedure



1、Substrate acceptance



2、Install vapor barrier



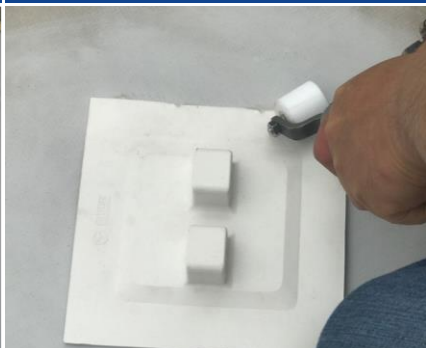
3、Install insulation



4、Install and fasten fireproof panel



5、Install and weld waterproofing



6、Weld photovoltaic base

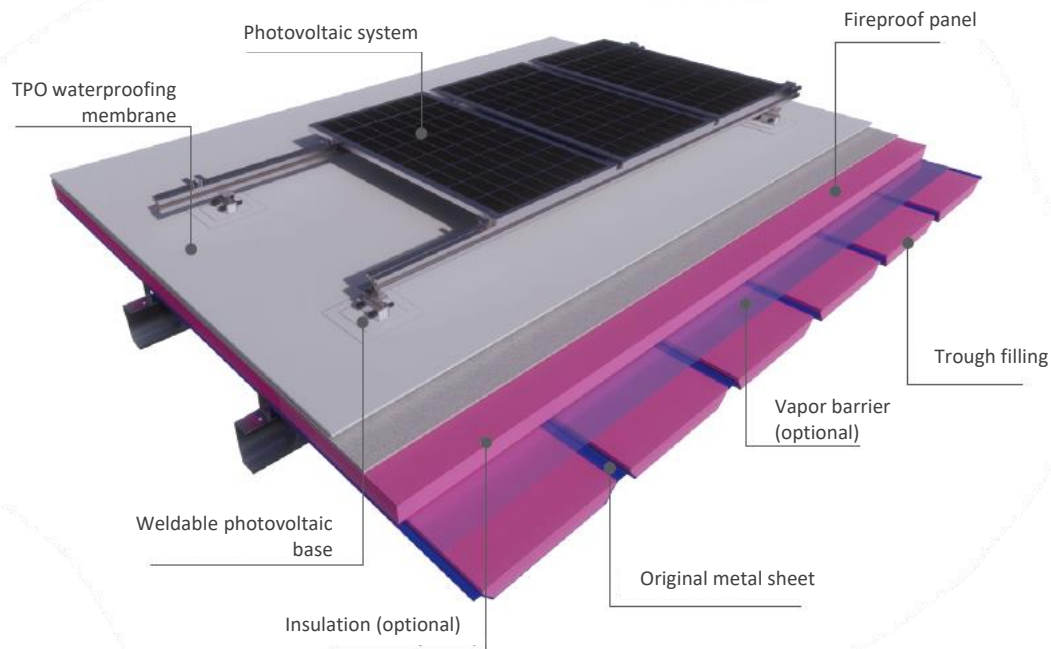


7、Install photovoltaic keel



8、Install component

Photovoltaic roofing system solution 3 from Joaboa tech



- ✓ Suitable for **renew of old metal roof**;
- ✓ No destruct original roof structure, **safe and reliable**;
- ✓ Easy to apply and fast, with no effect of normal indoor operation.

Mechanical fasten TPO combined with welding photovoltaic system (renew)

01

Clean and repair
the metal sheet



02

Trough filling



03

Install and
fasten fireproof
panel



04 Install membrane



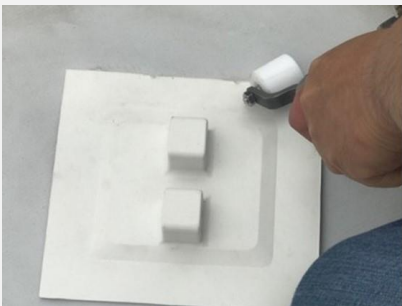
05 Non perforated welding



06 Weld the membrane



07 Weld photovoltaic base



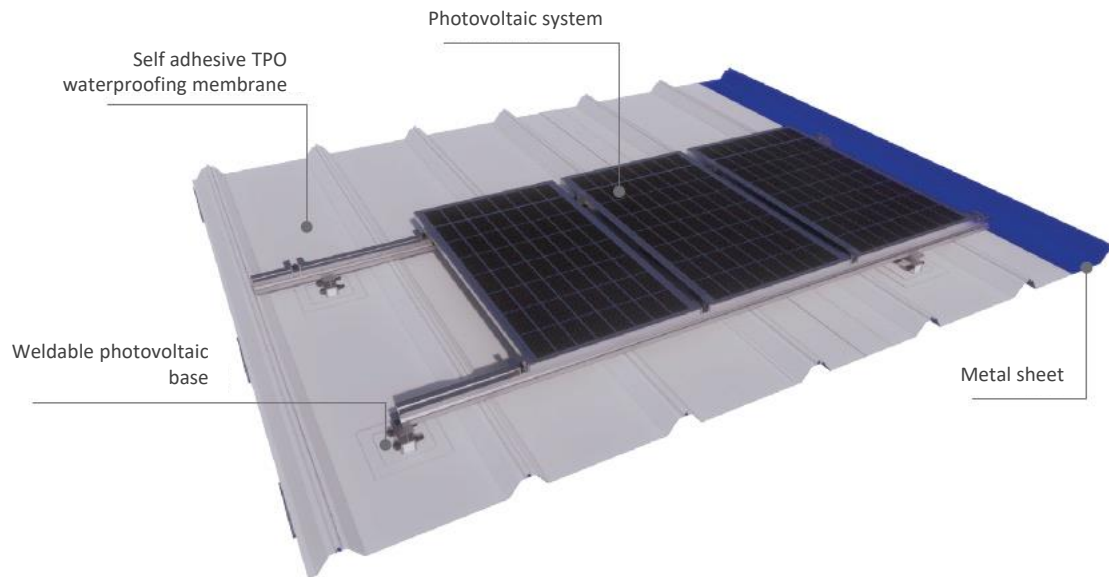
08 Install frame keel



09 Install photovoltaic component



Photovoltaic roofing system solution 4 from Joaboa tech

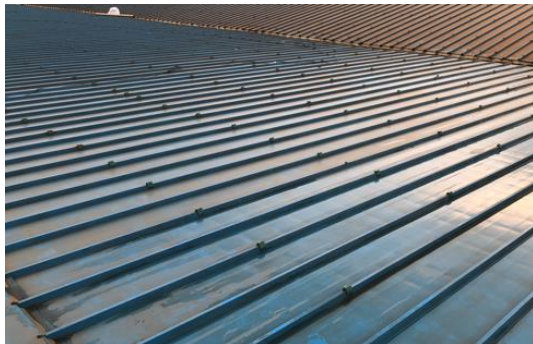


Self adhesive TPO combined welding photovoltaic system

Suitable for newly or renew of metal sheet roof;

Self adhesive TPO fully adhesion with roof substrate, with excellent wind uplift resistance;

Easy to apply and fast, with no effect of normal indoor operation.



Clean and repair metal sheet

1



Install self adhesive TPO

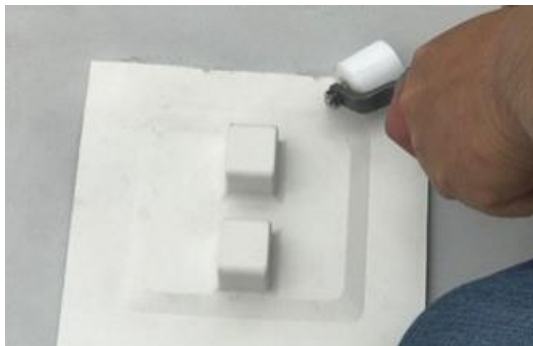
2



Weld the membrane

3

Application procedure



Weld photovoltaic base

4



Install frame keel

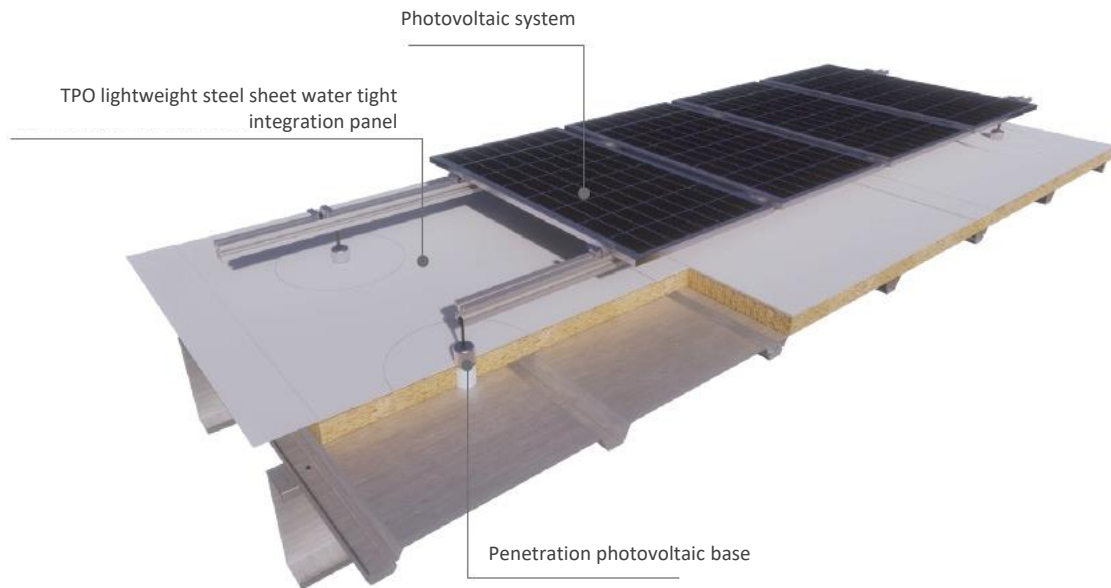
5



Install photovoltaic component

6

Photovoltaic roofing system solution 5 from Joaboa tech



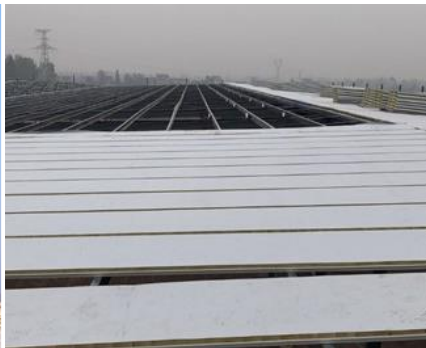
Lightweight steel sheet water tight integration panel combined penetration base photovoltaic system

- ✓ Suitable for newly or renew of old metal sheet roof;
- ✓ Composite load bearing, insulation and waterproofing in one product, and the three functions reinforce each other;
- ✓ Rigidly connect penetration base with roof purlin, with good stability.

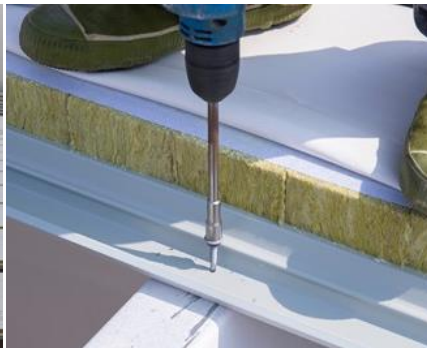
Application procedure



1、Lift panel



2、Pre pave panel



3、fasten panel side



4、Fasten panel end



5、Weld membrane



6、Open hole for base

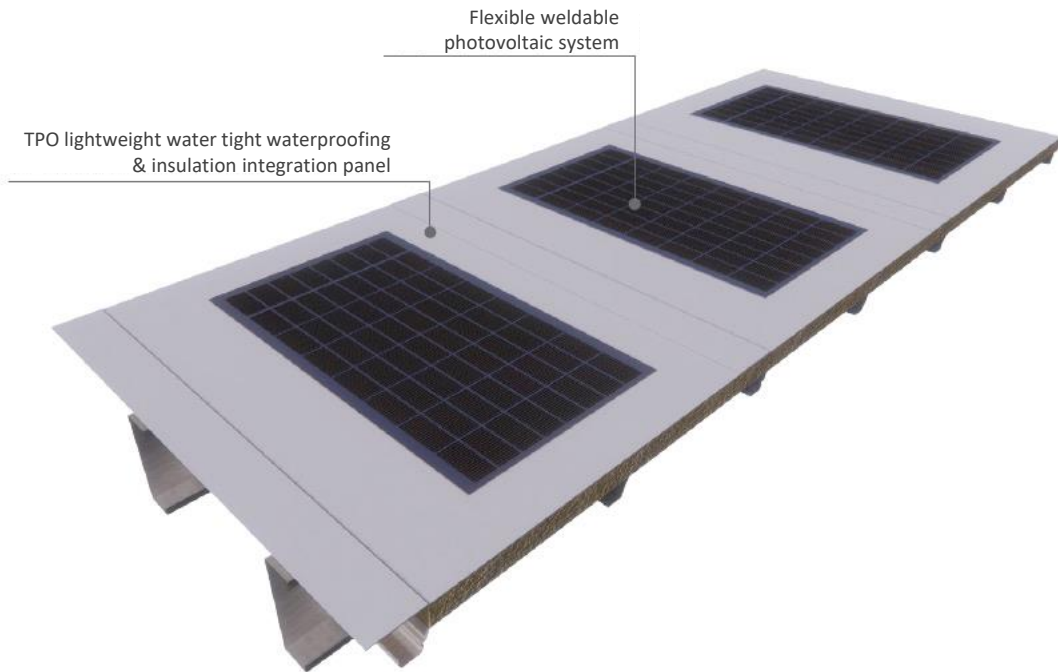


7、Install and weld base



8、Install component

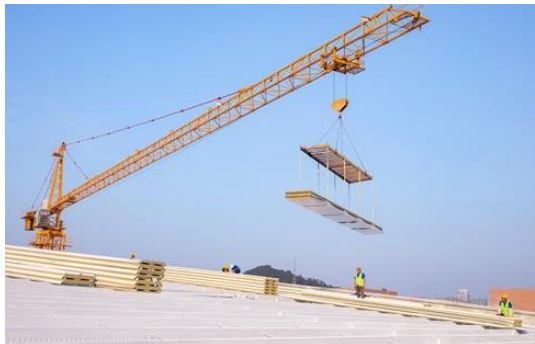
Photovoltaic roofing system solution 6 from Joaboa tech



Lightweight water tight combined flexible photovoltaic system

- ✓ Suitable for newly or renew of old metal sheet roof;
- ✓ Composite load bearing, insulation and waterproofing in one product, and the three functions reinforce each other;
- ✓ No frame keel to reduce the roof load;
- ✓ Weld the flexible photovoltaic component with roof TPO membrane, and easy to apply

Application procedure



Lift the panel

1



Pre pave the panel

2



Fasten panel side

3



Fasten panel end

4



Weld the membrane

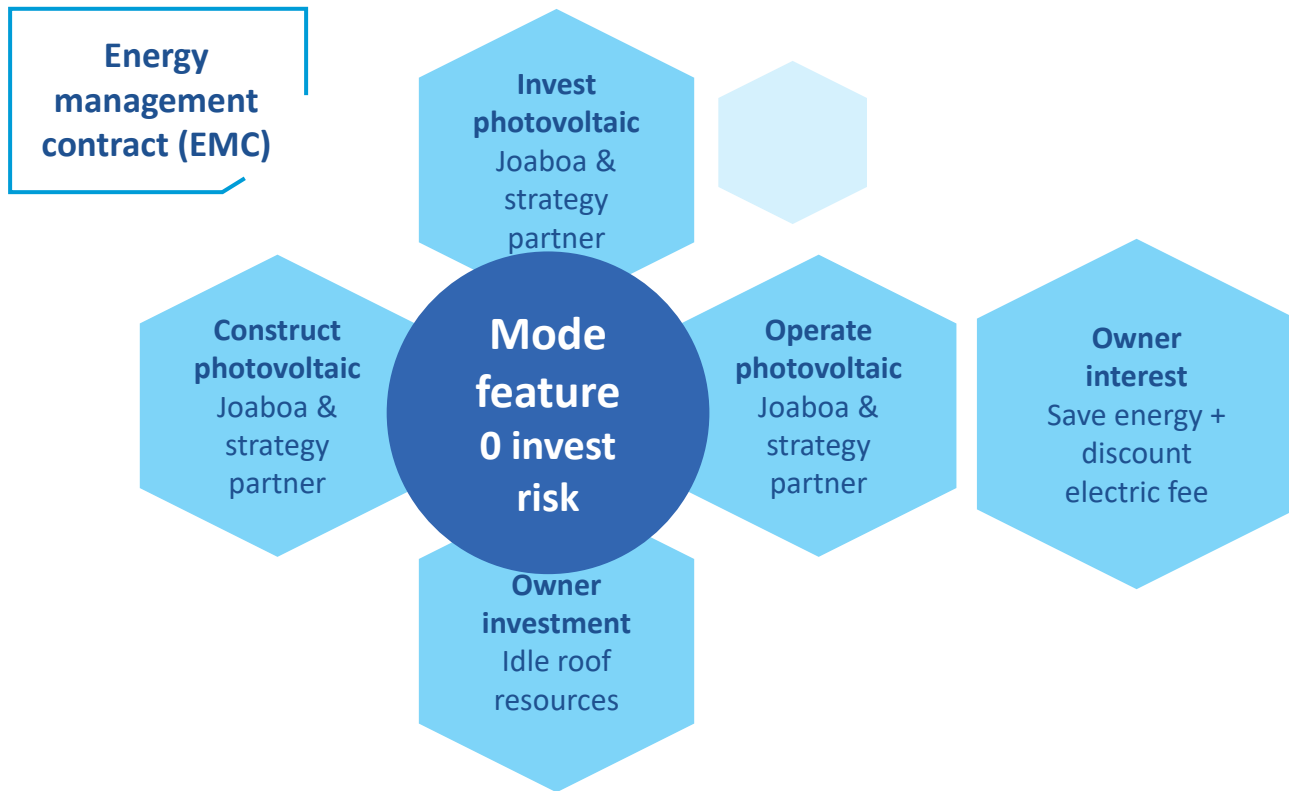
5



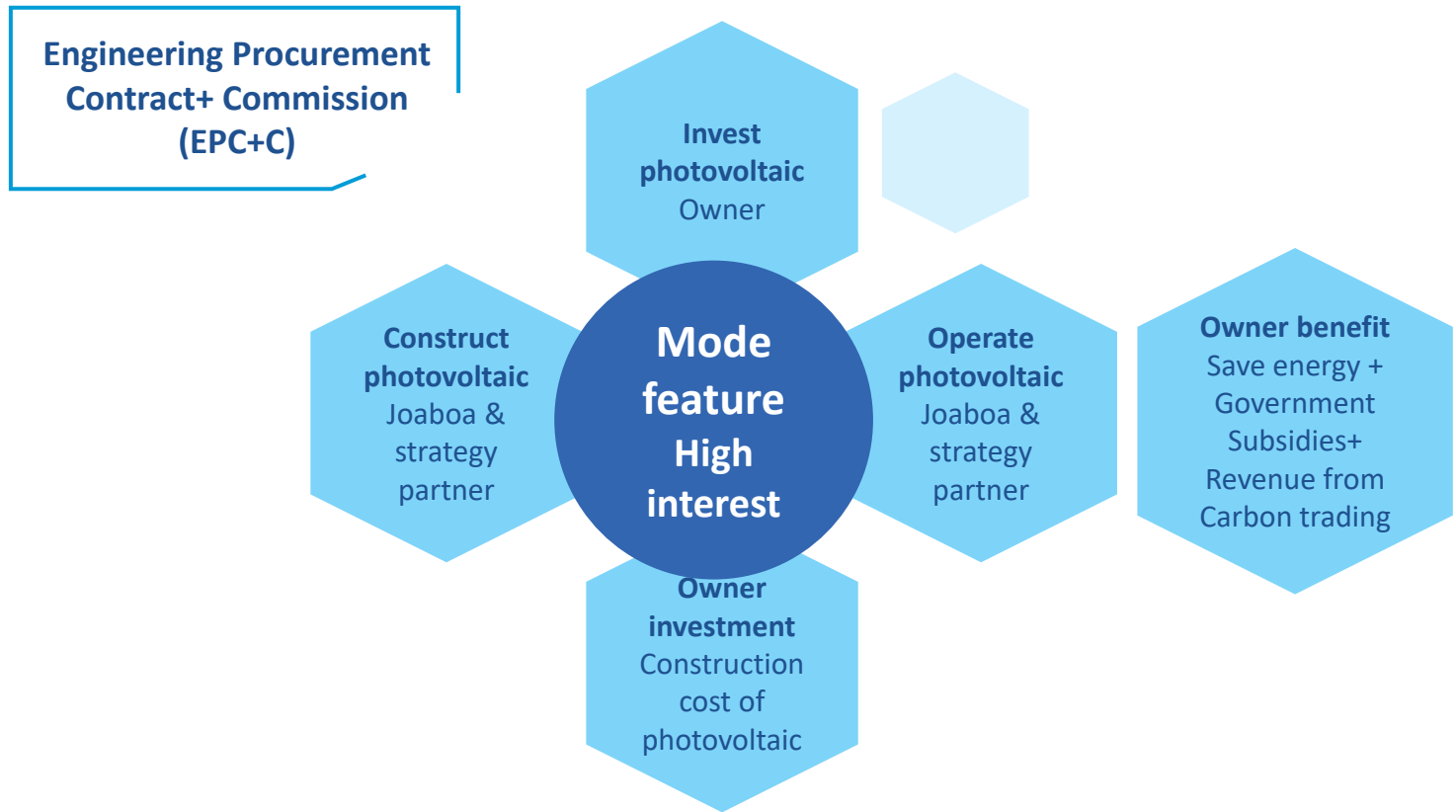
Install photovoltaic component

6

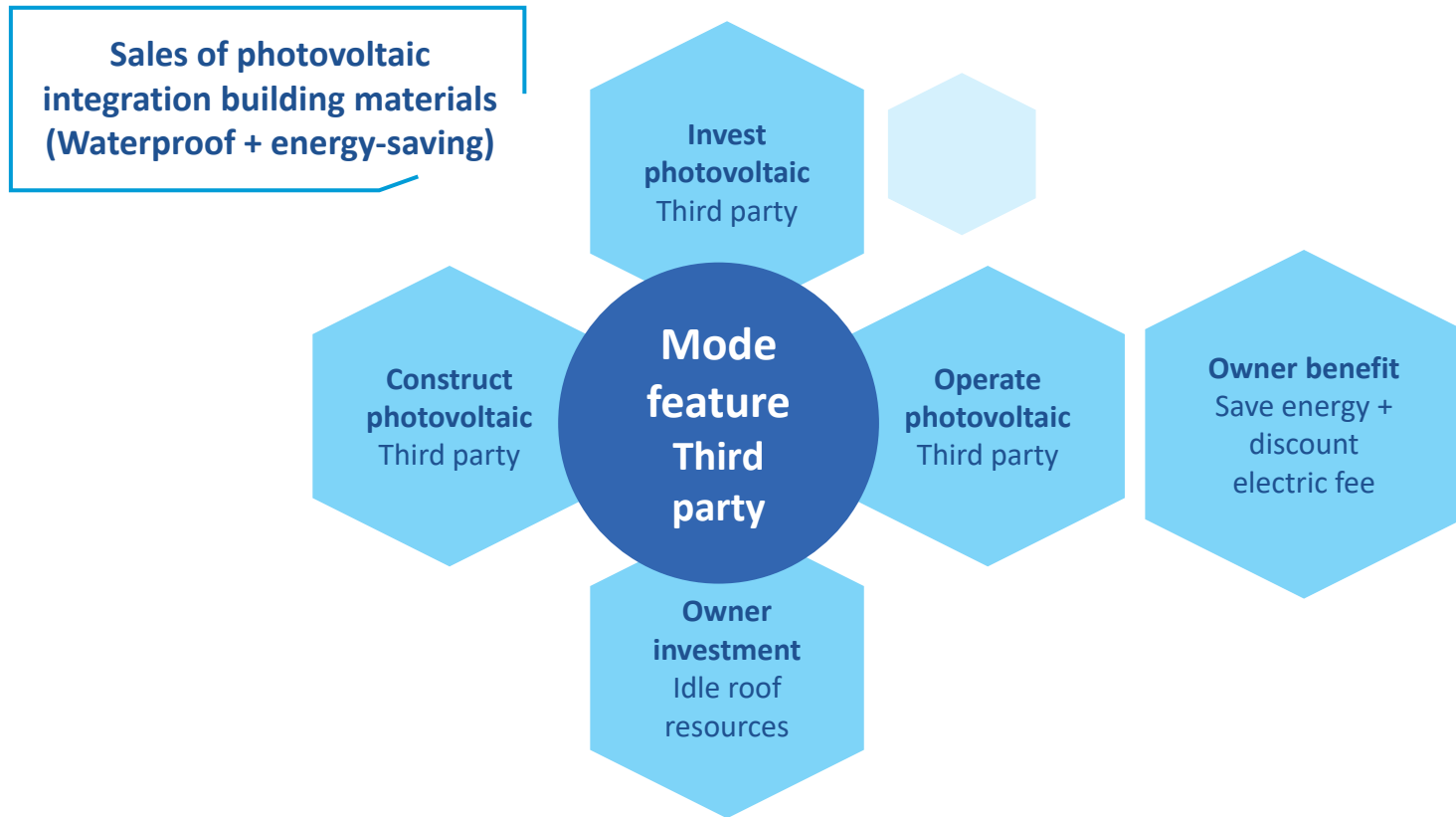
Business cooperation mode



Business cooperation mode



Business cooperation mode





THANK YOU

Joaboa Tech, Pioneer of High
Quality Waterproof System!

1000+ Agents & Distributors
Spread around Chinese Mainland,
Now We Are Strongly Developing
Overseas Agents

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