

PASSIVE BUILDING INTEGRATION SYSTEM

Lowcarn®

微能源系统
Micro energy system



通风管道系统
Ventilation system



被动窗系统
Passive window system



环境一体机
Environment integrated machine



智能化生活服务系统
Intelligent life service system



遮阳系统
Sun shading system



建筑密封系统
Building sealing system



石墨聚苯板保温系统
Thermal insulation system



被动式入户门系统
Passive door system



技术服务
Design and construction



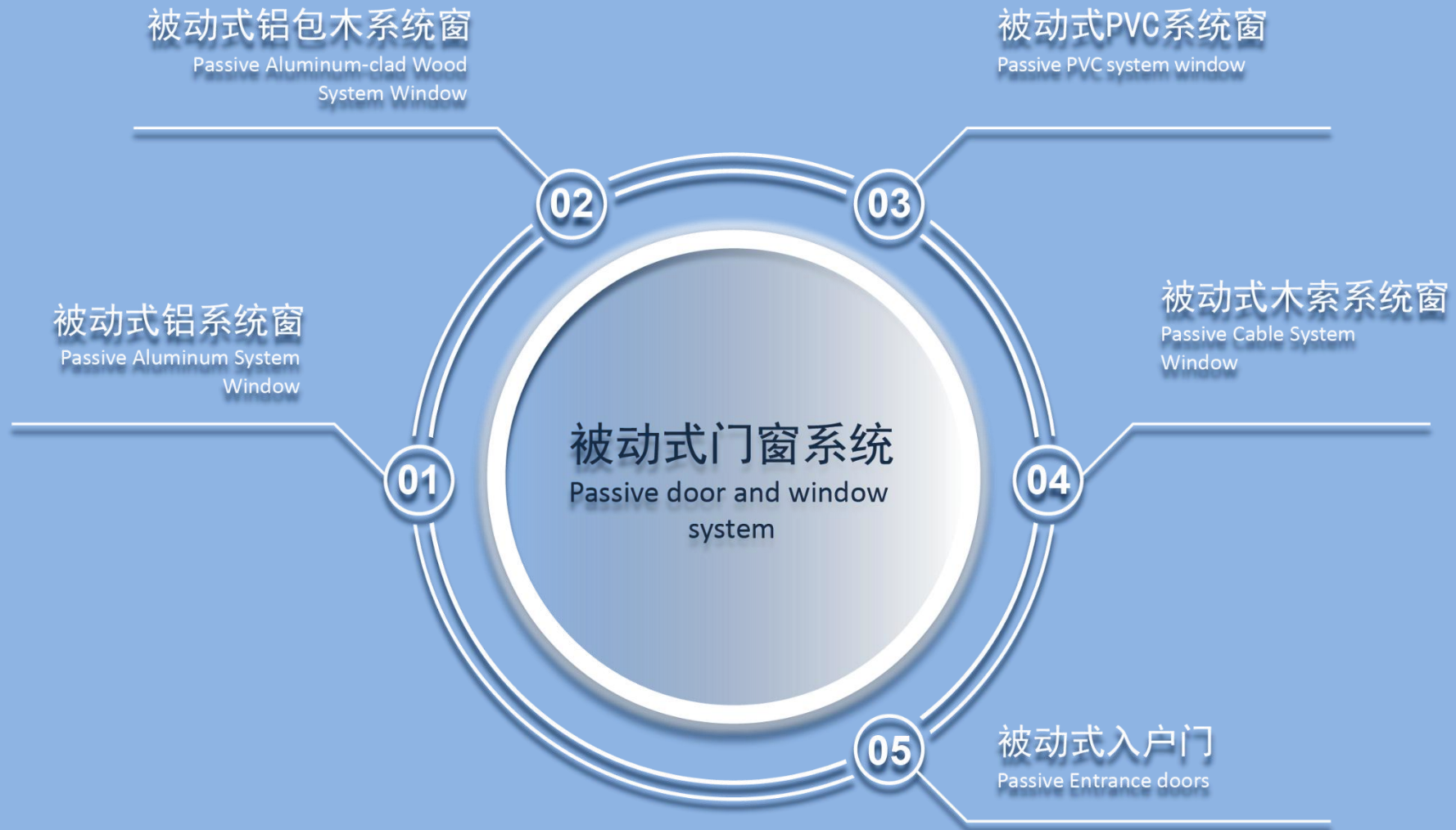
监督检测
Supervision and testing



运营维护
Operation and support

N大核心产品及系统
+
三位一体的保障体系

LOWCARN PASSIVE DOOR AND WINDOW SYSTEM



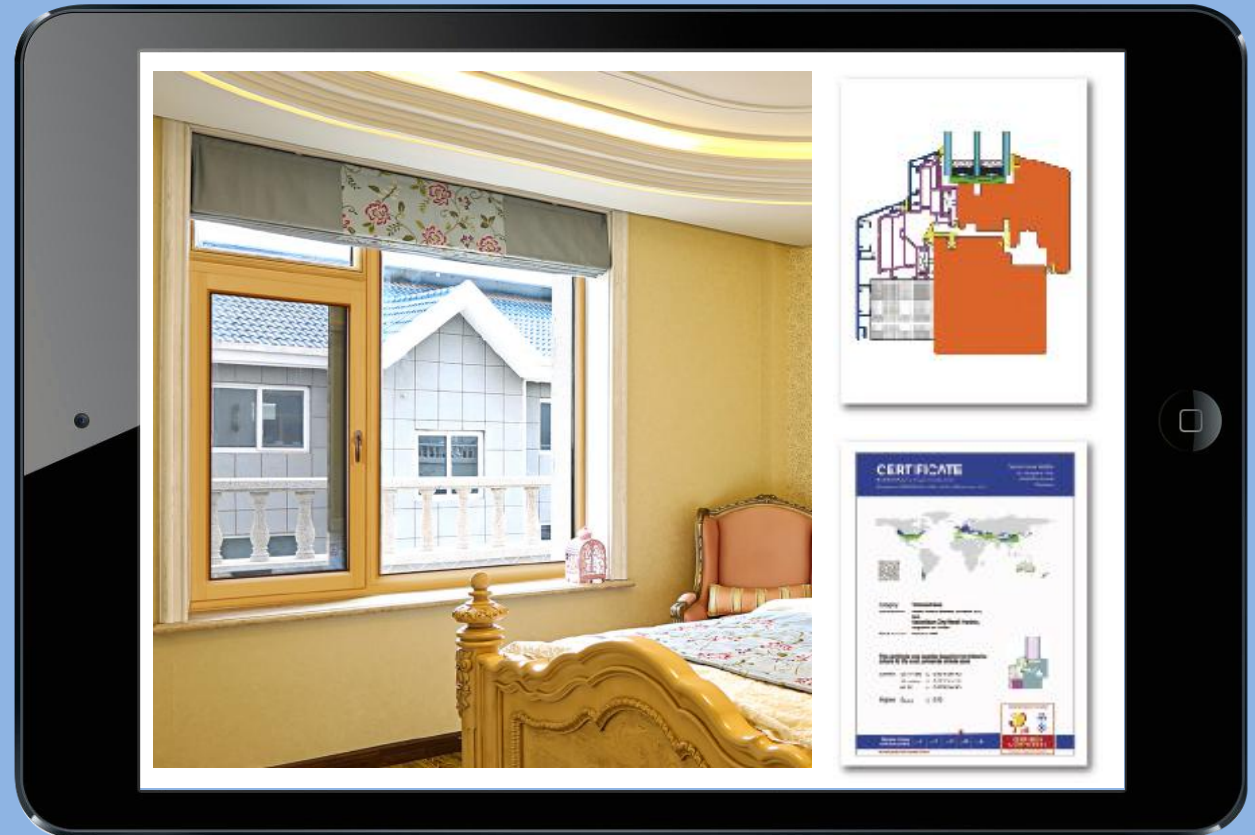
ALUMINIUM COVERED WOODEN WINDOWS

PASSIVE 130 Passive Aluminum clad Wood System Window:

Applicable zones: Except extremely cold areas

Thermal insulation performance: $U_w \leq 0.8 \text{ W}/(\text{m}^2 \cdot \text{K})$

- PASSIVE 130 Passive aluminum clad wood system window adopts PA66 thermal insulation profile and wood composite structure, which greatly improves its insulation performance.
- The hidden drainage system makes the drainage more unobstructed, and the watertightness is significantly improved.
- Special composite structure adopts modular processing mode to simplify operation.



ALUMINIUM COVERED WOODEN WINDOWS

- It is sealed with EPDM (EPDM) rubber strip of automobile grade.
- The imported flexible super warm edge strip is adopted for the glass spacer strip, which can effectively eliminate the stack difference, overflow and other problems of the glass, with good sound insulation effect; the inert gas is filled, which can significantly reduce the leakage rate and ensure excellent performance. The super spacer strip can be used in extremely cold and hot areas with the tolerance temperature of - 51 °C - 127 °C.
- The hardware adopts European standard 13 series hidden anti-theft hardware, which has better bearing, more beautiful and safer.



PRODUCT CHARACTERISTICS

Passive 130

Feature 1: Flexible super warm edge is adopted for glass

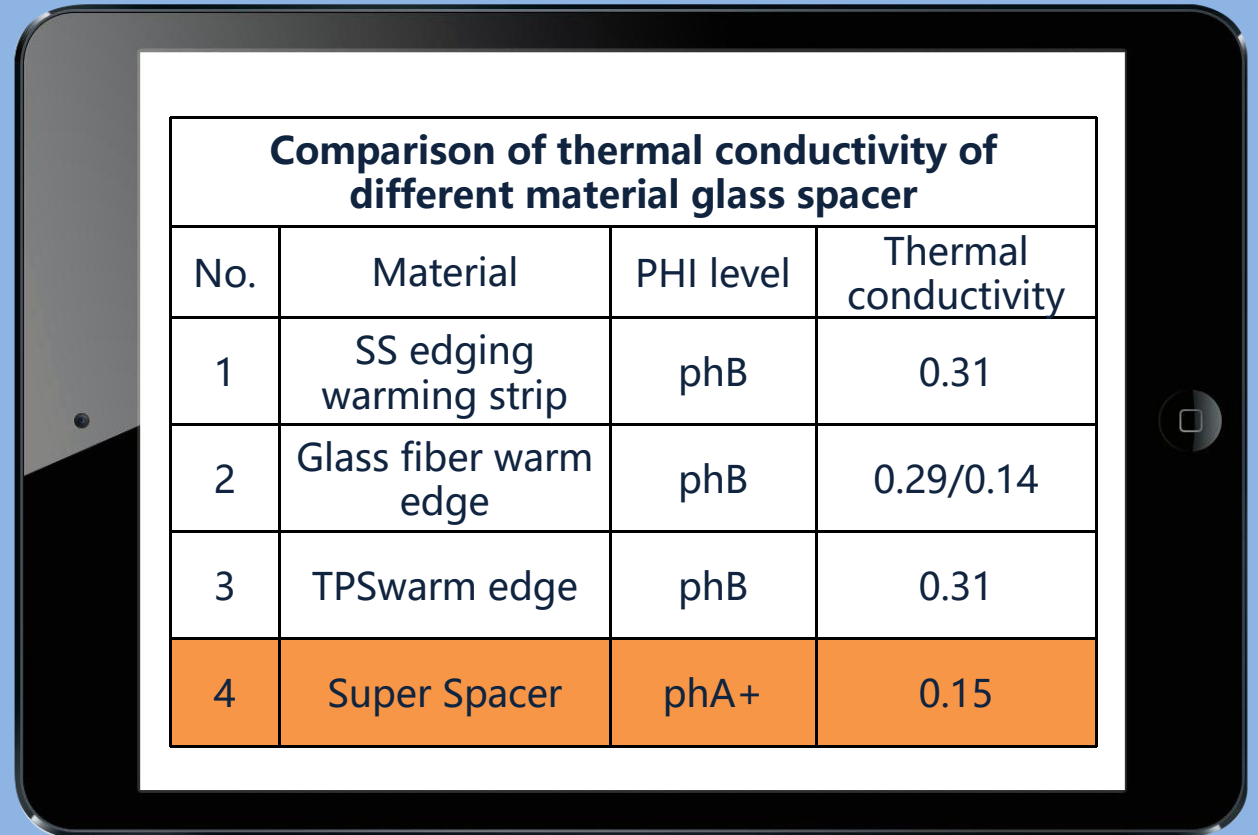
The super spacer strip is completely free of metal and belongs to the real warm edge. The thermal conductivity (Premium: $\lambda = 0.15\text{w} / \text{m.k}$, standard: $\lambda = 0.162\text{w} / \text{m.k}$) is a PHA + product certified by PHI. The U value of the whole window can be reduced by 10-15% (about 0.2).



PRODUCT CHARACTERISTICS

Passive 130

- The super spacer strip is completely free of metal and belongs to the real warm edge. The thermal conductivity (Premium: $\lambda = 0.15 \text{ w / m.k}$, standard: $\lambda = 0.162 \text{ w / m.k}$) is a PHA + product certified by phi. The U value of the whole window can be reduced by 10-15% (about 0.2).

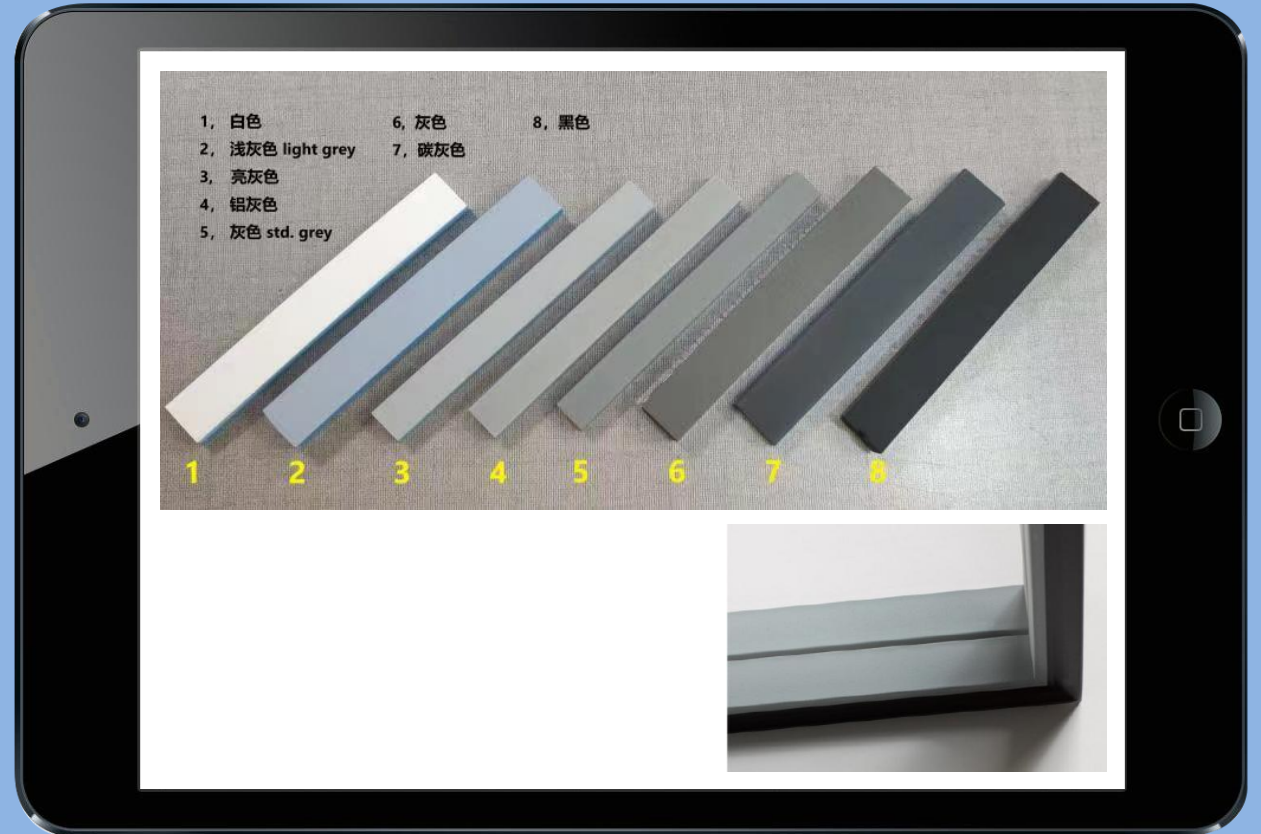


No.	Material	PHI level	Thermal conductivity
1	SS edging warming strip	phB	0.31
2	Glass fiber warm edge	phB	0.29/0.14
3	TPSwarm edge	phB	0.31
4	Super Spacer	phA+	0.15

PRODUCT CHARACTERISTICS

Passive 130

- The annual leakage rate of argon is far less than 1%, and the hollow loss efficiency of super spacer is one tenth of that of traditional rigid spacer.
- It is easy to use super spacer to solve the manufacturing difficulties such as the sagging of spacer, the difficulty in positioning the upper frame and the overflow of butyl rubber.
- The insulating glass made of super spacer has been widely used in extremely cold areas such as Alaska in the north and Dubai in the Middle East in the south. The tolerance temperature range of super spacer is - 51 °C - 127 °C.



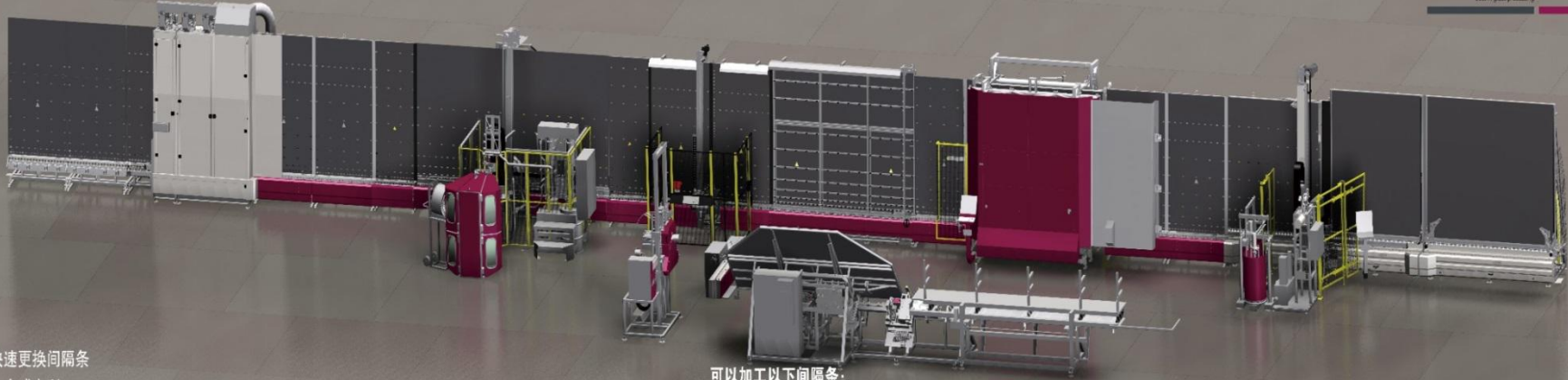
PRODUCT CHARACTERISTICS

Passive 130

- The flexible spacer system realizes the full-automatic hollow production in the true sense without manual participation, and ensures the consistency and stability of product quality. It can produce four glass and three cavity hollow glass and effectively eliminate the stack error.


LiSEC——全自动柔性间隔条中空玻璃生产线

HEBEI JINGBO GLASS PRODUCT CO., LTD
presented by **LiSEC**
best in glass processing




优点

- 超级间隔条自动上框
- 间隔条接头处自动封角
- T型条自动涂布丁基胶
- 两套间隔条上框系统，快速更换间隔条
- 自动充氩气，底部充气，全球专利
- 加工四玻三腔中空玻璃
- 二道密封胶超洁密封胶
- 玻纤条自动加热折弯，精度高
- 中空玻璃最大厚度达80mm



超级间隔条



可以加工以下间隔条：

- 铝条
- 不锈钢条
- 复合条 TGI, Thermix
- 玻纤条 swisspacer, thermobar
- 超级间隔条

LiSEC提供工业4.0玻璃深加工解决方案

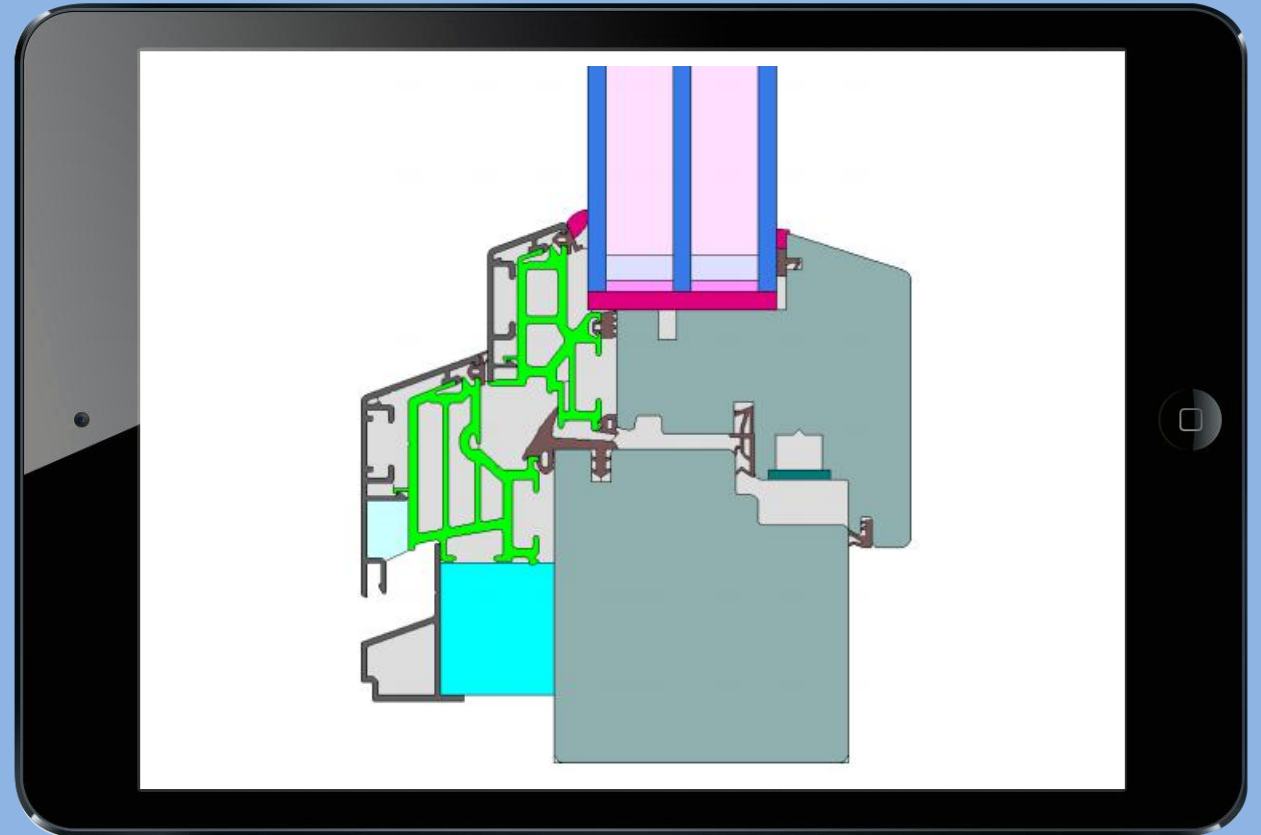
PRODUCT CHARACTERISTICS

Passive 130

Feature 2: The insulation strip adopts PA66 material.

WHY PA66?

- PA66 nylon raw material is reinforced nylon 66, melting point is about 280 °C, cooling rapidly when it is cold, it has excellent mechanical properties. At the same time, its thermal expansion and cold shrinkage are similar to that of aluminum, resulting in less deformation stress and more stable performance.



PRODUCT CHARACTERISTICS

Passive 130

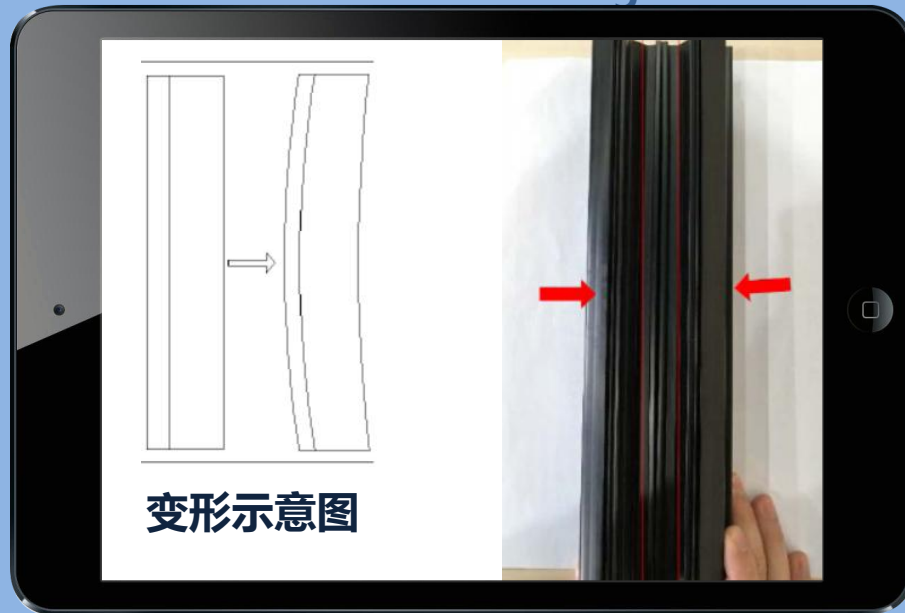
- The picture shows PVC insulation strip, which has poor structural stability and serious structural deformation, directly affecting the performance of doors and windows.



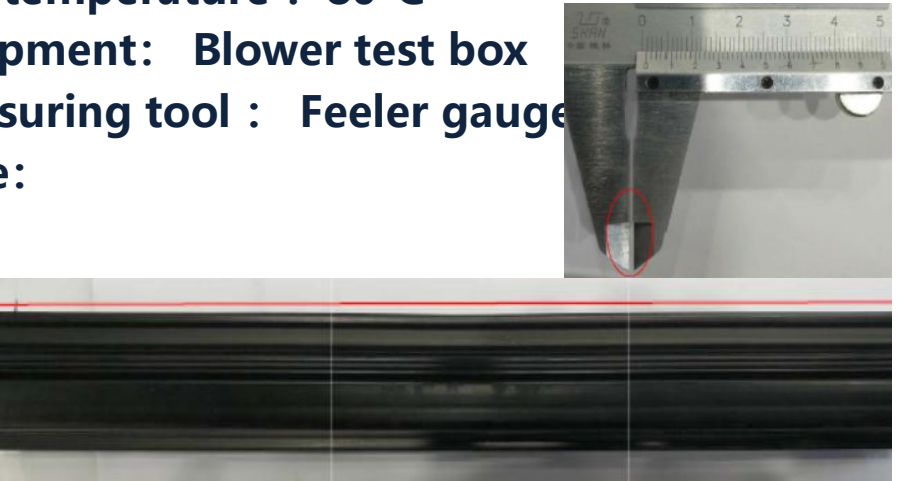
PRODUCT CHARACTERISTICS

Passive 130

- The thermal deformation of PVC is up to 0.9mm, which has a great influence on the performance of the whole window, and the aluminum outside the window is at risk of falling off.



- **Single maximum deformation (linear displacement): 0.9mm**
- **Test temperature : 80°C**
- **Equipment: Blower test box**
- **Measuring tool : Feeler gauge**
- **Time:**

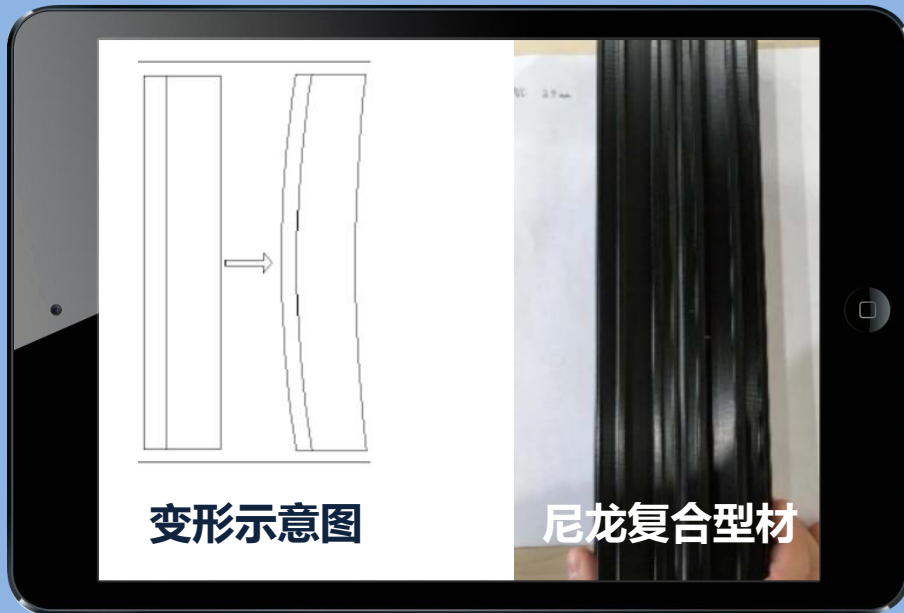


The image contains two photographs. The top photograph shows a close-up of a feeler gauge being used to measure the gap between a metal component and a surface; the gauge's tip is circled in red. The bottom photograph shows a long, black, curved PVC profile, likely a window frame, with a red horizontal line drawn across its length to indicate a measurement or deformation level.


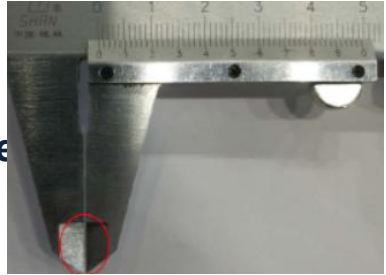
PRODUCT CHARACTERISTICS

Passive 130

- The maximum thermal deformation of PA66 is only 0.3mm, which can effectively guarantee the performance of the whole window.



- Maximum single deformation (linear displacement): **0.3mm**
- Test temperature: 80 ° C
- Equipment: blower test box
- Measuring tool: feeler gauge
- Time: 4H

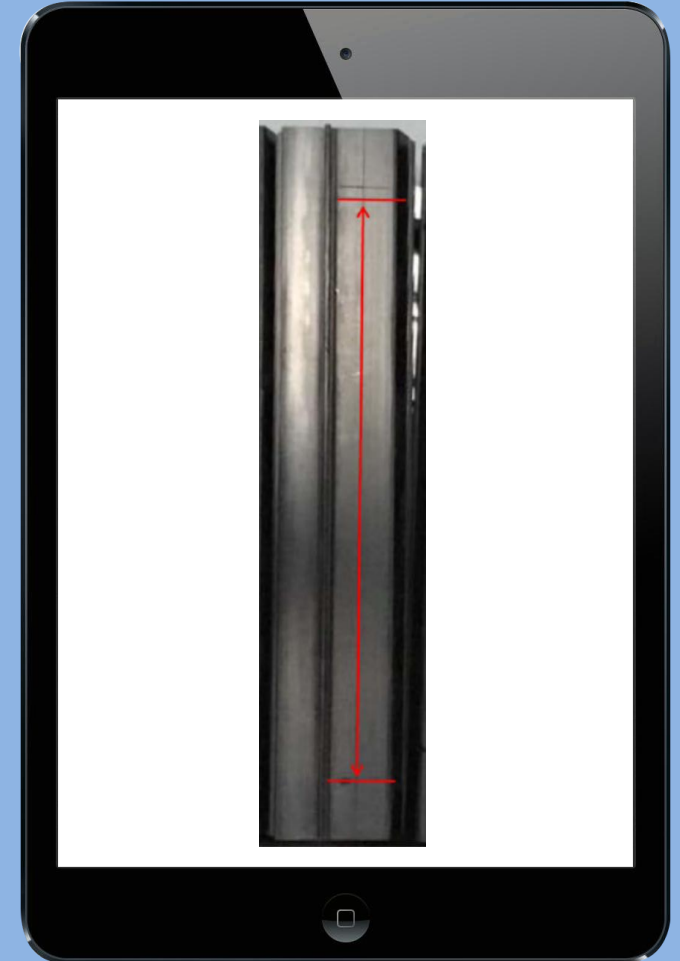


The image displays a list of test parameters for the material. It includes a photograph of a feeler gauge being used to measure the linear displacement of a profile, with a red circle highlighting the point of contact. Below this is another photograph showing a cross-section of the profile with a red line indicating the measurement point.

PRODUCT CHARACTERISTICS

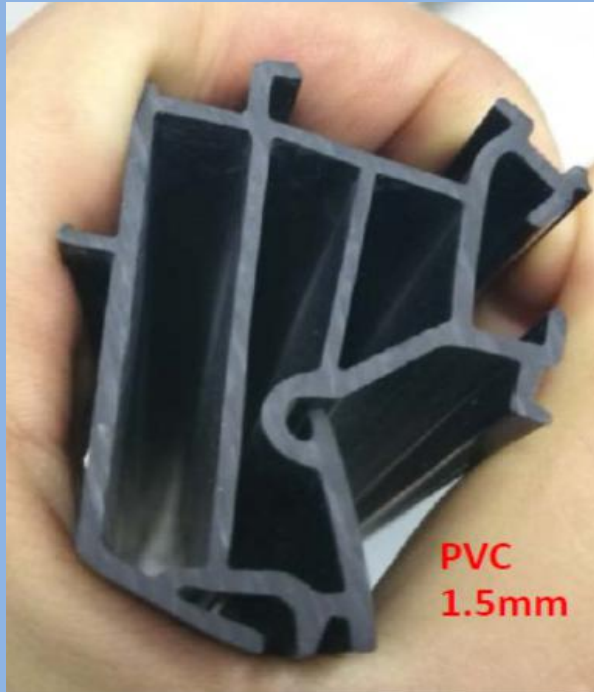
Passive 130

Before heating	After heating	Size change rate
PVC		
199.0	194.0	2.5%
201.0	197.5	1.7%
202.0	198.0	1.8%
AVERAGE		2.0%
PA66		
200.0	199.5	0.25%
201.0	200.5	0.25%
200.0	199.0	1.0%
AVERAGE		0.5%



PRODUCT CHARACTERISTICS

Passive 130



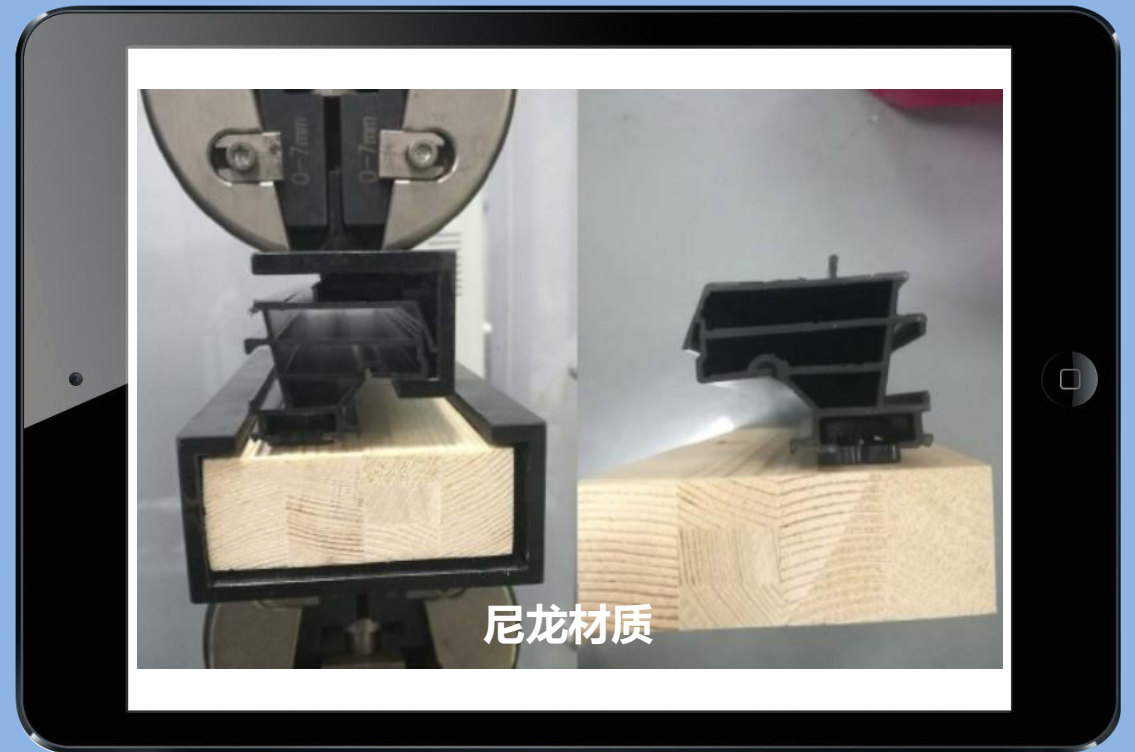
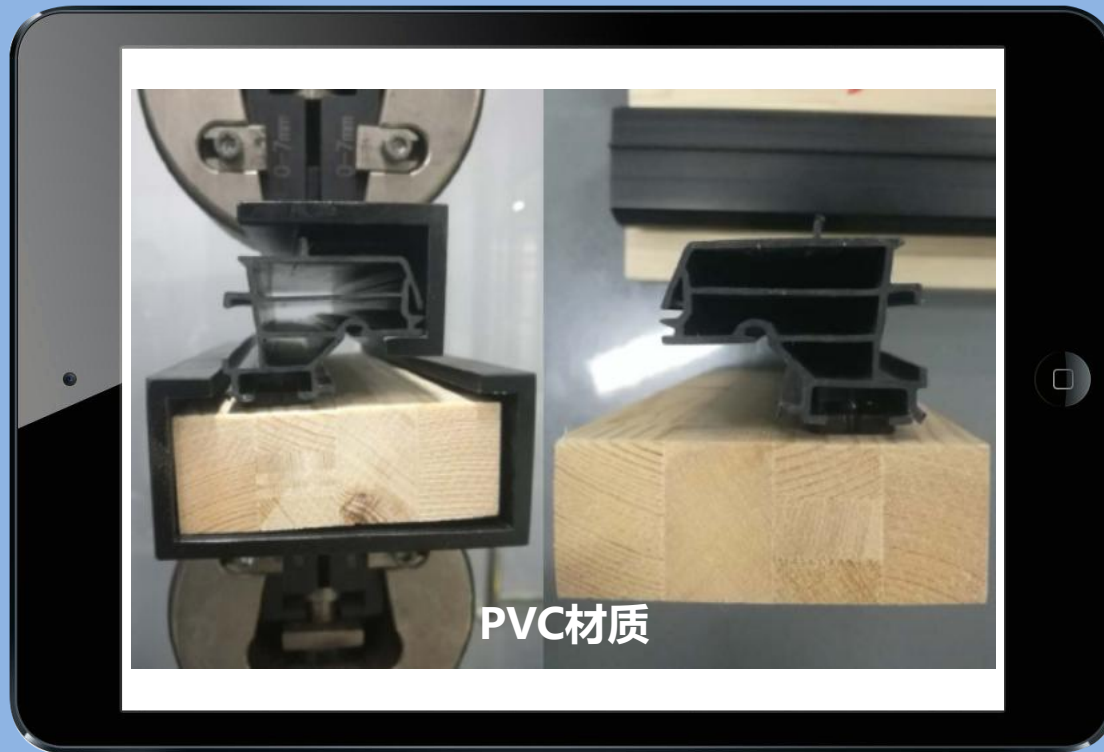
- PVC composite softened at 70 ° C and intensified at 75 ° C. It is not easy to recover after deformation.
- Main wall thickness: 1.5mm/2.5mm.

- Nylon composite profile does not soften at 80 ° C;
- Main wall thickness: 1.5mm/2.5mm.

PRODUCT CHARACTERISTICS

Passive 130

Tensile strength



PRODUCT CHARACTERISTICS

Passive 130

PVC



PRODUCT CHARACTERISTICS

Passive 130

PA66



PRODUCT CHARACTERISTICS

Passive 130

Comparative data of tensile strength between PVC composite profile and nylon composite profile

Test data	PVC composite profile	Nylon composite profile
1	0.161	0.172
2	0.139	0.250
3	0.129	0.182
4	0.028	0.161
5	0.123	0.165
平均值	0.130	0.173
Note: remove a minimum value and a maximum value. Unit: KN		

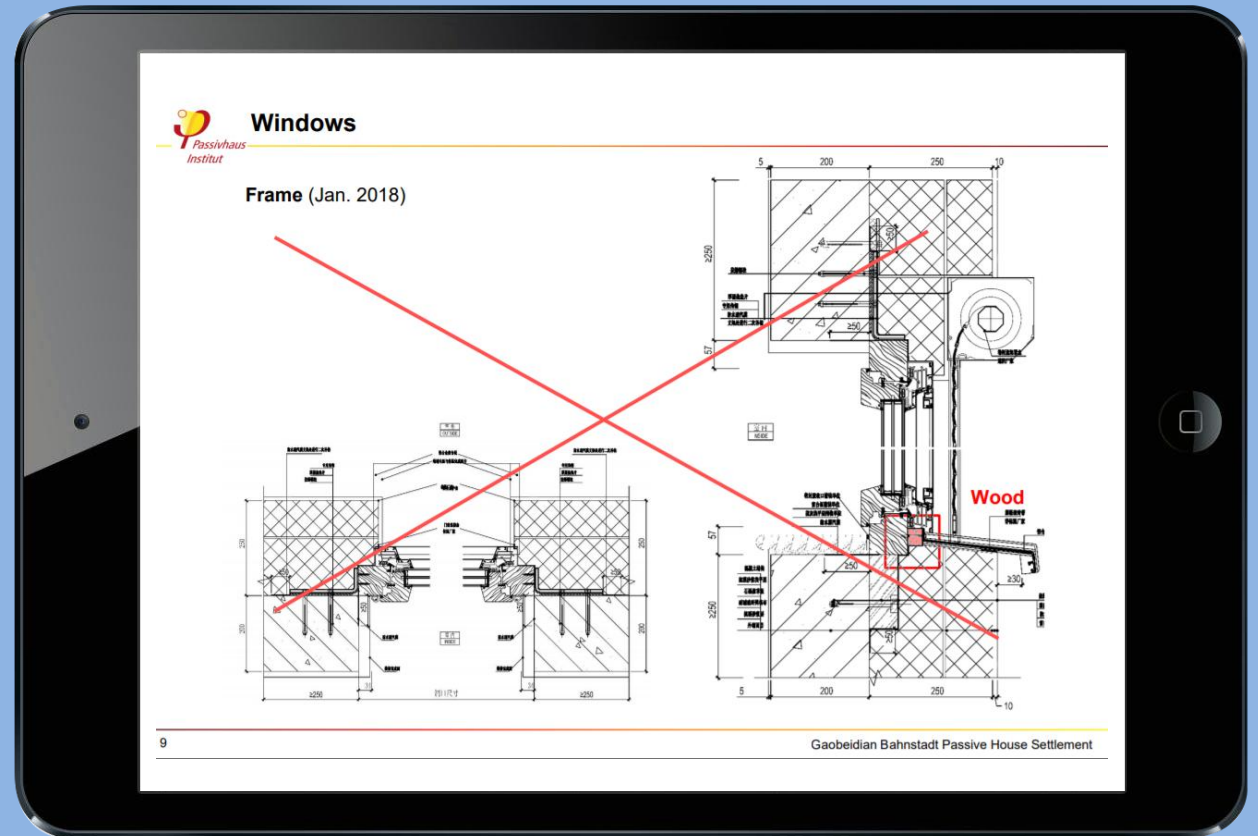
PRODUCT CHARACTERISTICS

Passive 130

Feature 3: high strength graphite material is used for window sill pad

Why is the window sill pad made of high-strength graphite?

The lower opening of the passive window is the weakest part of the thermal bridge because it is unable to press the frame due to the installation of the windowsill. During the preliminary design of the new train town project, PHI clearly proposed that the window sill pad cannot be made of wood.



PRODUCT CHARACTERISTICS

Passive 130

- After a lot of searching, and through a lot of experiments, the final choice of imported high-strength graphite materials.

The heat insulation is four times that of wood

No.	Compressive strength IPa
1	2.85
2	2.14
3	2.78
4	2.19
5	2.30
Average	2.45

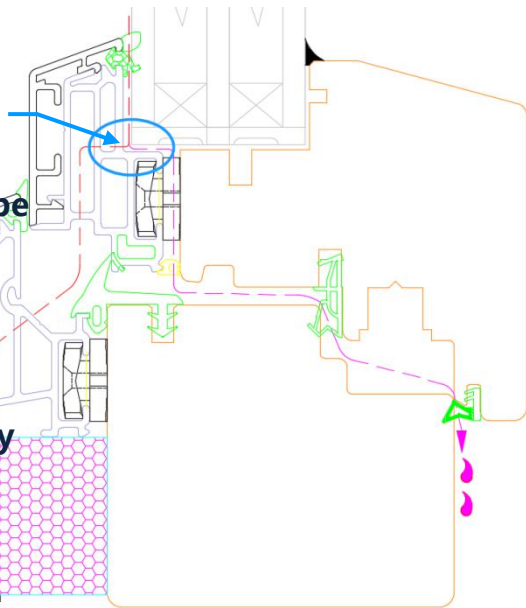


PRODUCT CHARACTERISTICS

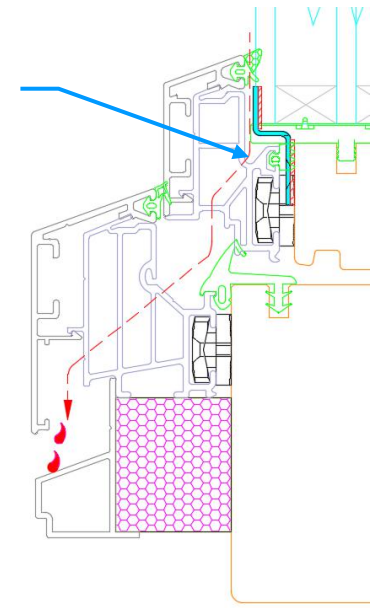
Passive 130

Better structural design

No ponding chamber here, only horizontal drain holes can be milled. water can not be discharged to the outdoor in time, ponding will cause wood to rot, or directly enter the indoor (purple water flow).



Set water collecting chamber to ensure drainage effect.

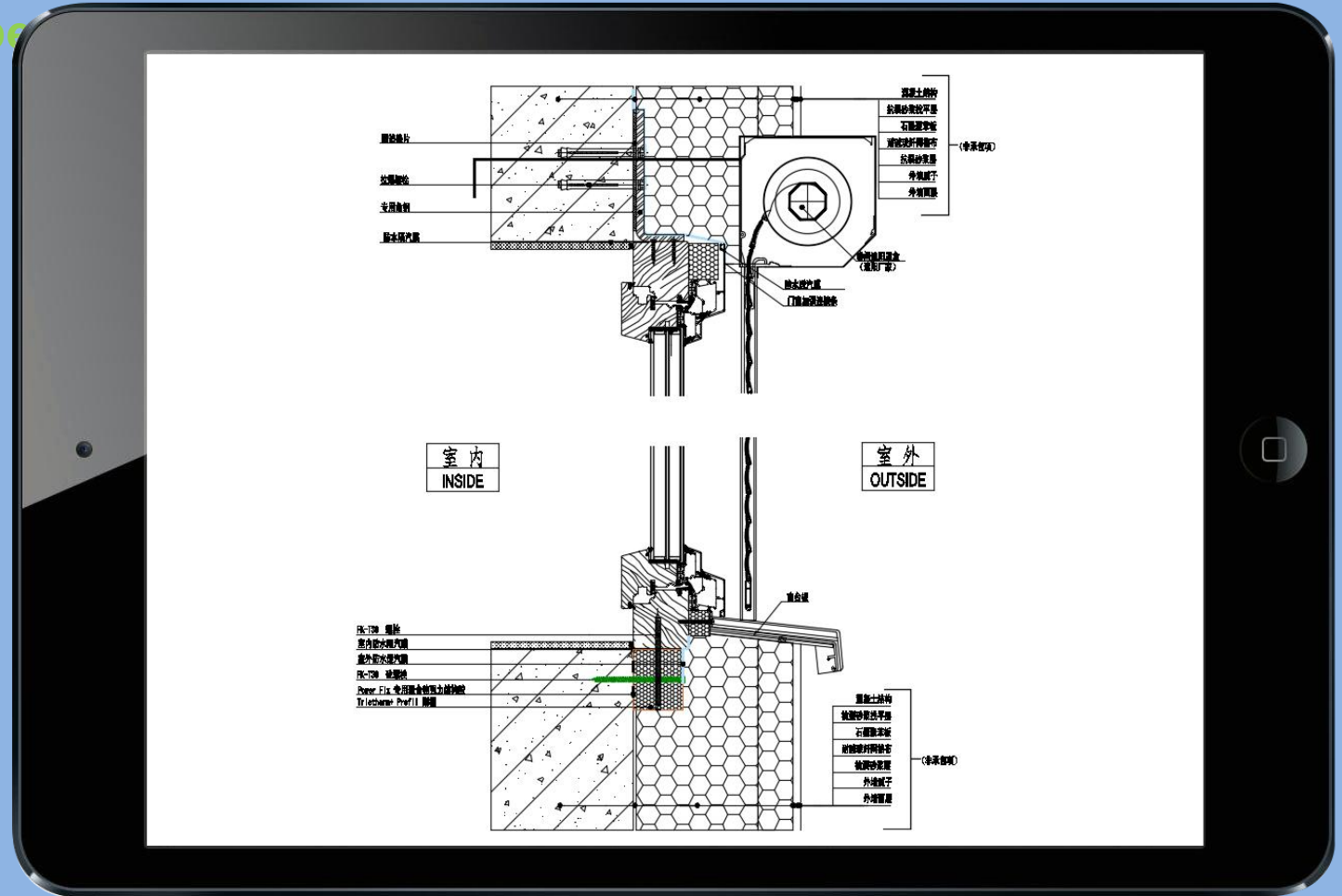


Two installation solutions: angle steel and meesenburg subframe

被动式门窗安装方案

INSTALLATION SCHEME OF PASSIVE DOORS AND WINDOWS

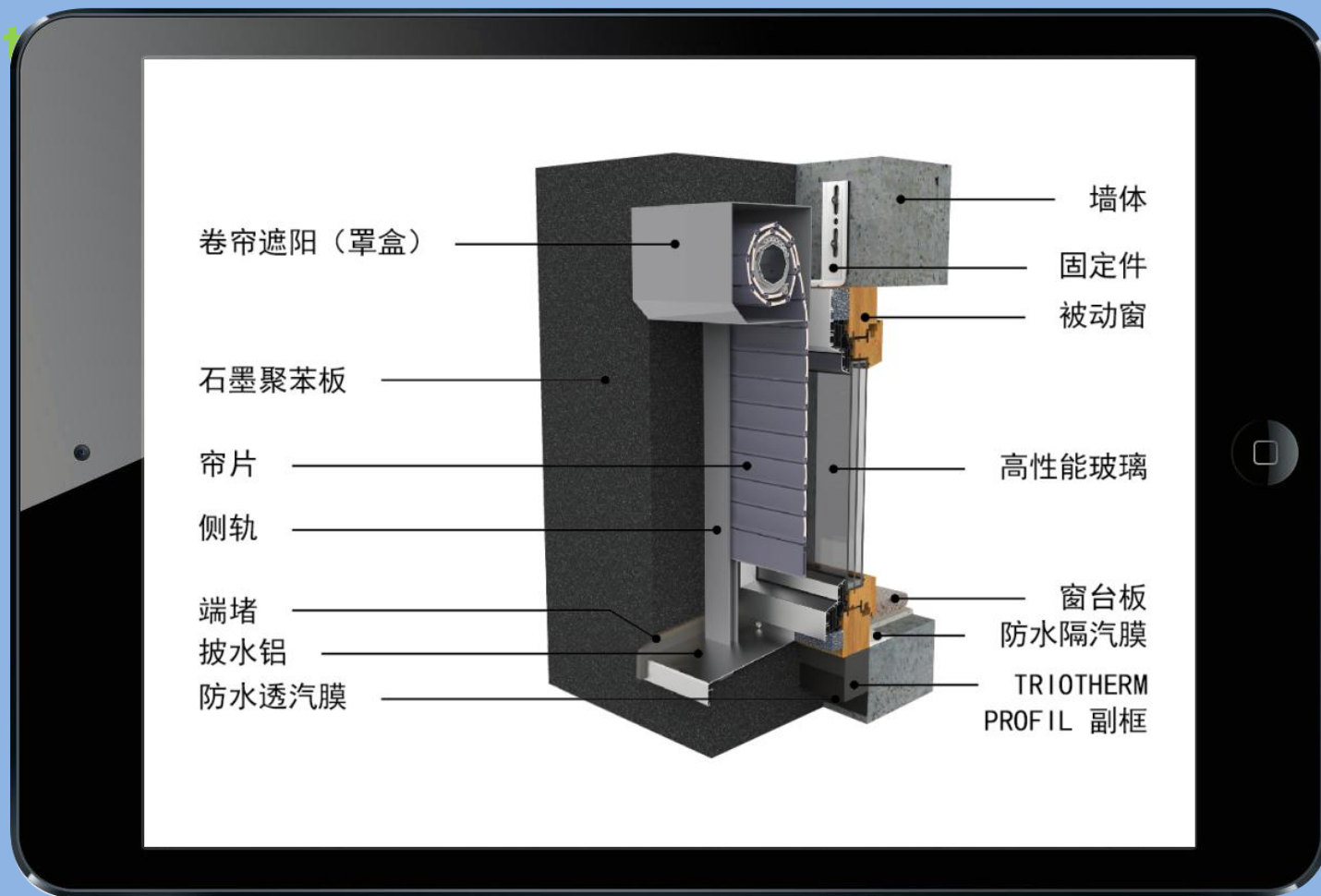
INSTALLATION PLAN



INSTALLATION PLAN

Installation Solutions

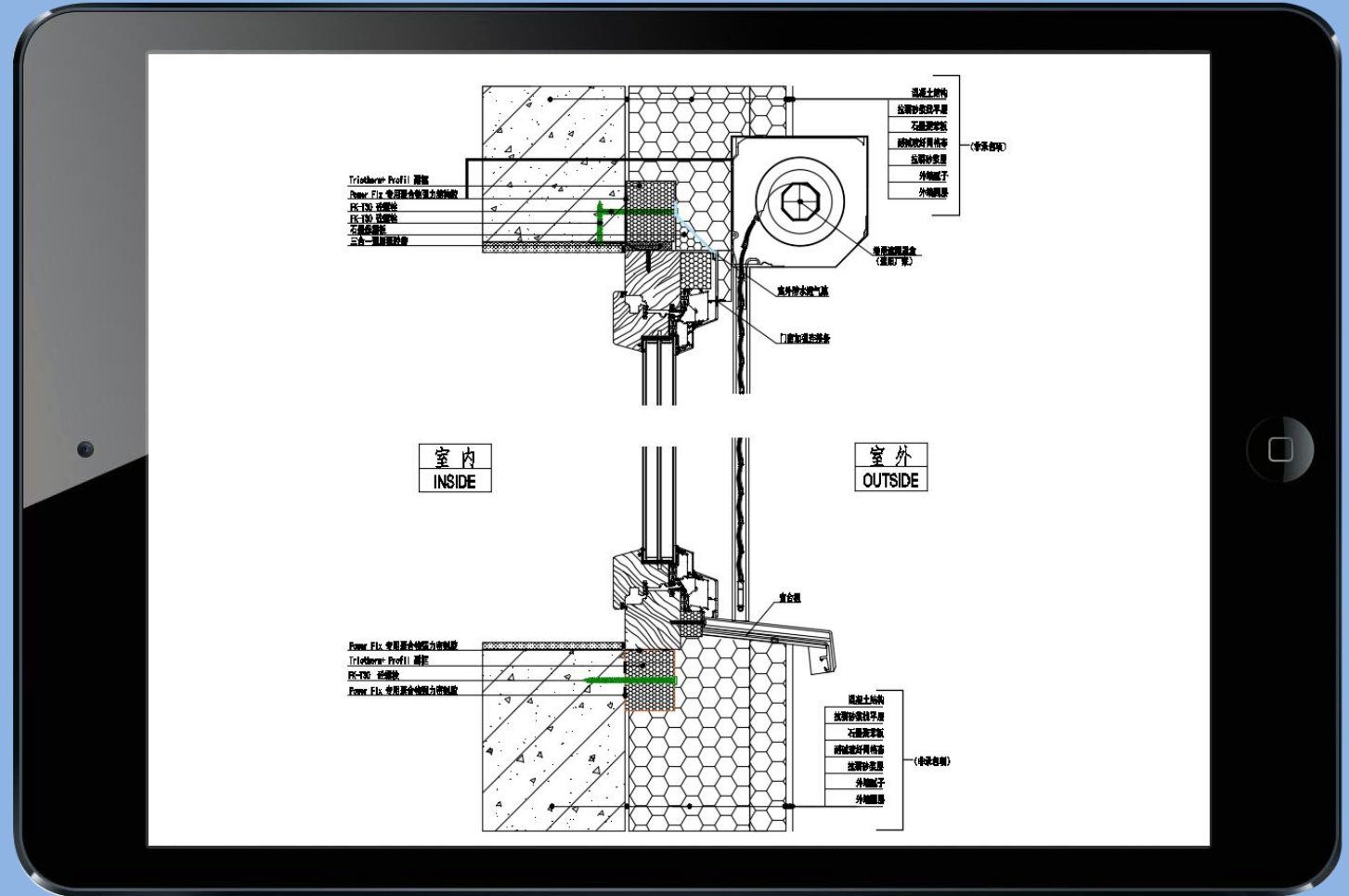
Angle steel external hanging



INSTALLATION PLAN

Installation Solutions

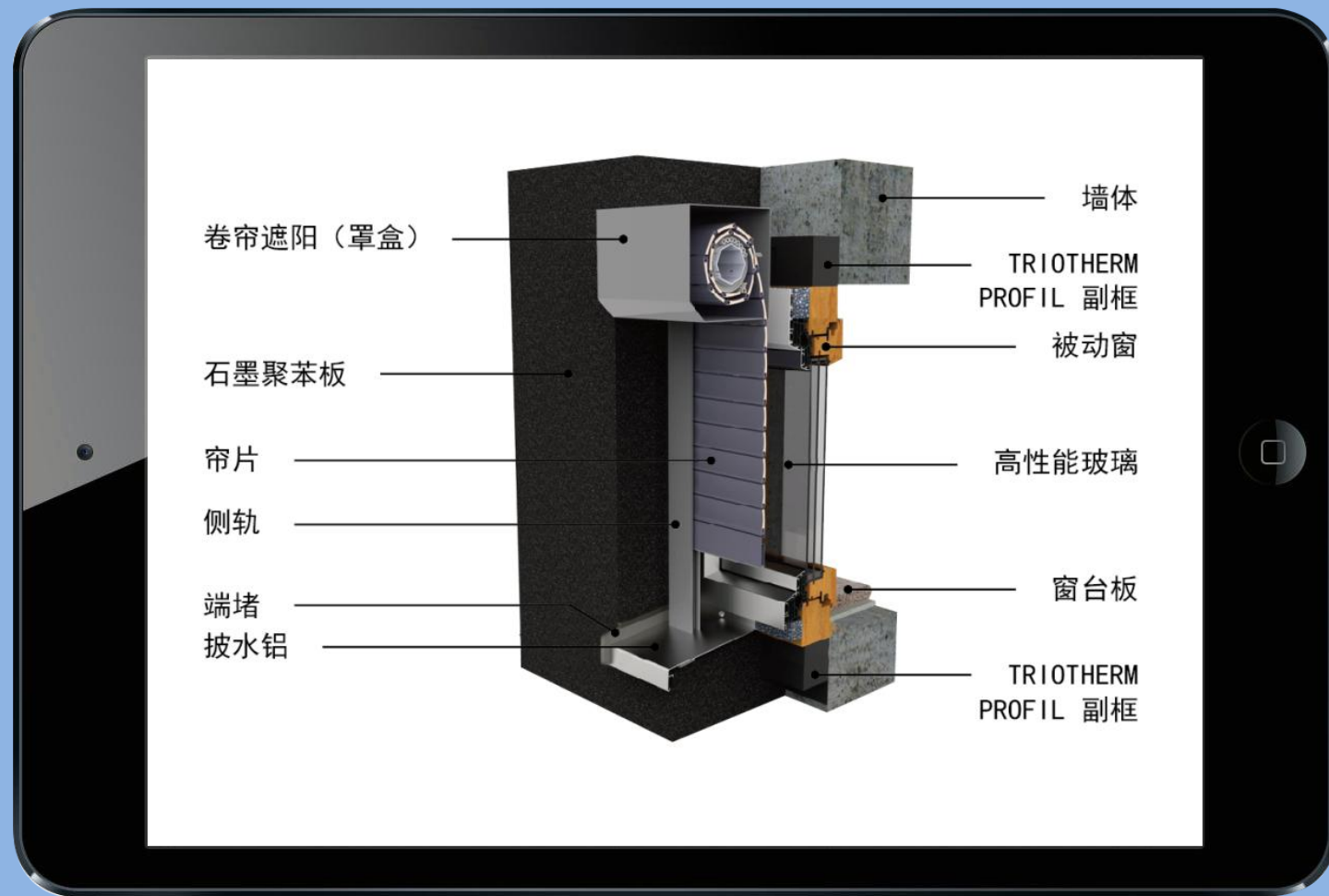
blaugelb_Triotherm External mounting



INSTALLATION PLAN

Installation Solutions

blaugelb_Triothersm External mounting



INSTALLATION PLAN

Installation Solutions

1. Installation introduction of angle external hanging::

- Heat transfer coefficient of standard window type: $UW = 0.8W / m^2 \cdot K$; heat transfer coefficient after installation: $UW_{\text{installed}} = 0.85W / m^2 \cdot K$ (actually 0.99).
- Indoor and outdoor use: Waterproof vapor permeable membrane and waterproof vapor barrier membrane, to ensure the overall air tightness of the building, realize the controllability of indoor and outdoor air exchange, and avoid the impact of water vapor on the building.
- The full-length blaugelb_triothermenergy-saving sub frame is used for the lower opening of the window to support the whole window, ensure the uniform stress, and reduce the additional energy loss caused by the installation of the windowsill.
- Other three sides use steel fixings with heat insulation gasket to ensure the firmness of installation.

2. Advantages of blaugelb_Triotherm external hanging installation:

- The heat transfer coefficient of standard window type: $UW = 0.8W / m^2 \cdot K$; the heat transfer coefficient after installation: $UW_{\text{installed}} = 0.81w / m^2 \cdot K$.
- Three in one pre expansion tape is used between the main and auxiliary frames to ensure the water vapor tightness at the gap.
- The later maintenance can be replaced; the doors and windows are fixed with the auxiliary frame to realize the disassembly of the doors and windows without damaging the external wall.
- Simple operation and high construction efficiency.
- The rear installation of the main frame and the protection effect of the finished product are good; it does not affect the subsequent installation of the insulation, and shortens the overall construction period.

与自然共生 与未来拥抱

SYMBIOSIS WITH NATURE AND EMBRACE OF THE FUTURE

THANKS



奥润顺达集团

河北绿色建筑科技有限公司

400-1108-678