



ZEDroof™

PhotoVoltaic Panel System

光伏屋顶一体化系统

The ZEDroof System

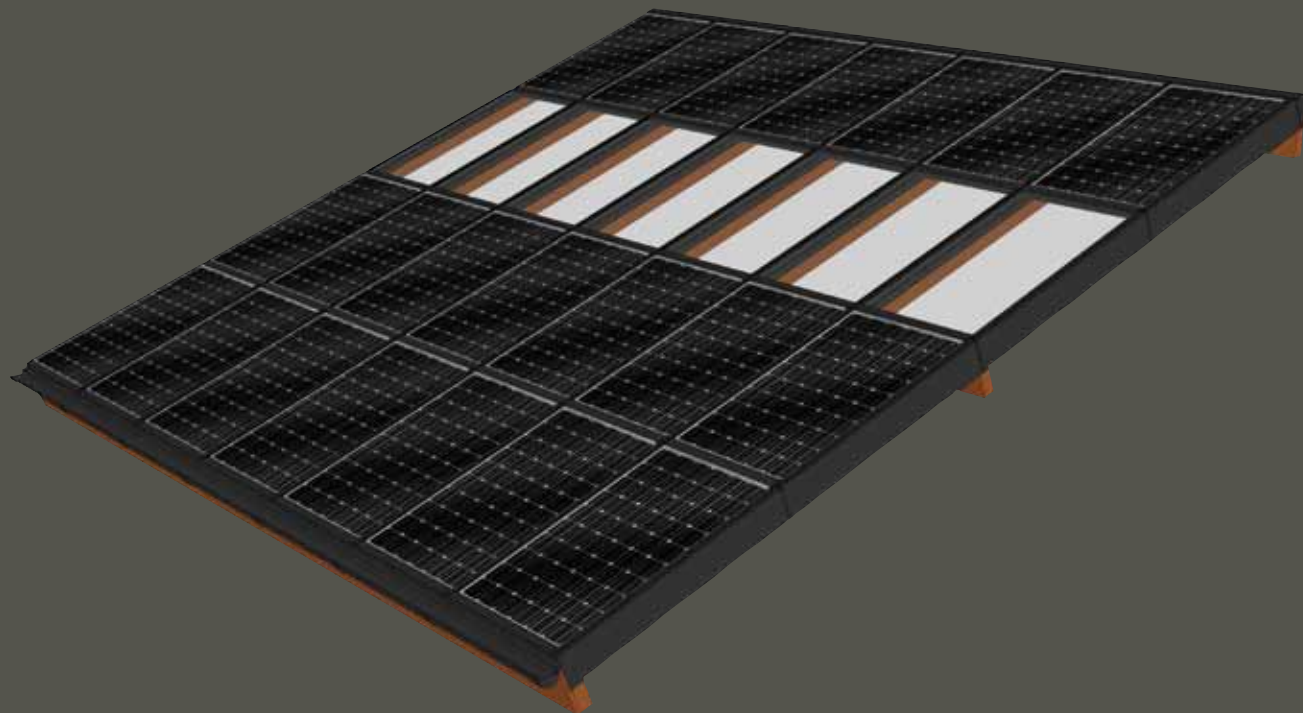
光伏屋顶一体化系统

ZEDroof is a new roof system which combines a waterproof surface with electricity-generating photovoltaics into a single roofing product. The panels are based on conventional EVA-backed PV panels with the panel edge extrusions designed to interlink to provide a waterproof seal. The panels have a clear finish which creates a dappled lighting effect. The system includes condensation trays and vents.

The ZEDroof can provide an additional quality sunlit space in both new buildings and in the replacement of roofs in existing dwellings.

光伏屋顶一体化系统是一种新型的屋顶系统，结合密致防水表面以及太阳能光伏板发电组成的独立屋顶产品。太阳能面板基于传统EVA乙稀背板的太阳能光伏板改善面板边缘的防水封边。使太阳能光伏板安装的完成面非常整洁，且能遮阳透光，从室内看则能呈现光影斑驳的效果。系统的设计还包括对冷凝水槽及屋顶透气的考虑。

模数化的网格光伏屋顶适用于新、老建筑，提供高质量的天光照明和极佳的室内光影效果。





选用光伏屋顶的好处？

- a. 减少对火电的需求，清洁能源的首选。也不像核电那样有泄露的危险和长久的危害和影响
- b. 光伏板为屋顶，建筑的一个组件，较普通屋顶，成本不会增加太多。比屋顶再加上普通光伏组件的传统方式要便宜。
- c. 透明的光伏组件屋顶即可遮阳，不会使室内照射过度升温；同时最大限度的利用了日光照明，减少白天对人工照明的需求。

太阳能光伏板

此项目有324块250w光伏组件,总装机容量为81kw, 90块透明组件,直接并入国家电网。这将能满足游客中心的总的电量需求, 每年还会有8%的盈余。

太阳能光伏屋顶会随着中国市场的逐步扩大和使用率的普及成为建筑一体化的领衔研发产品。

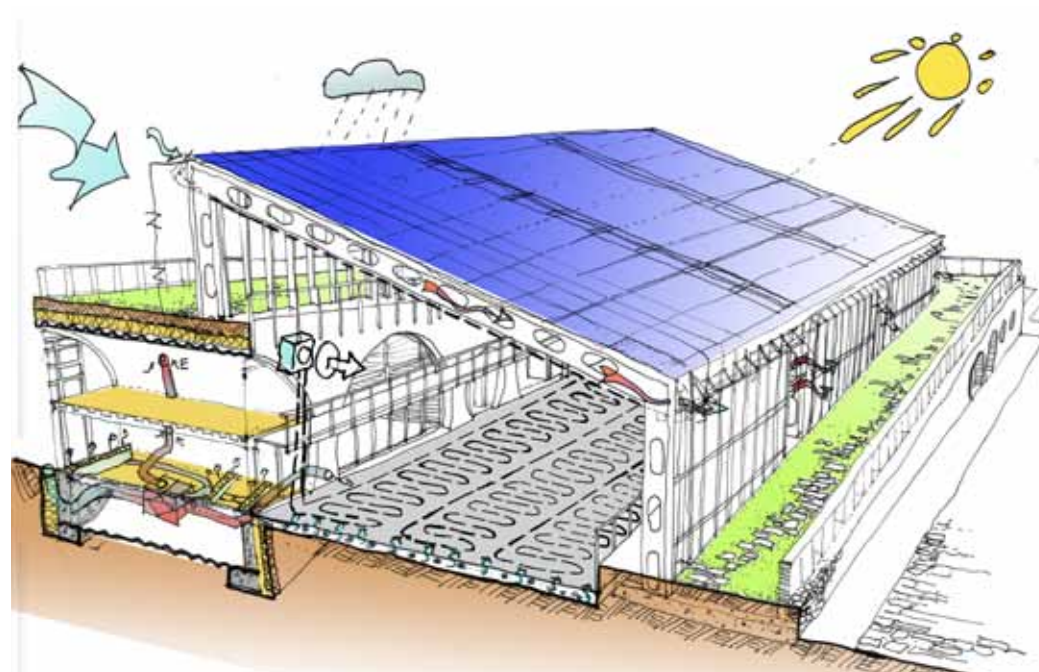
光伏南墙 - 单晶硅太阳能光伏板可垂直吊装在南立面增加光伏铺设面积, 产生更多电能; 也可遮阳透光、丰富立面。

HiminZED (英国伦敦ZEDfactory 公司和中国皇明太阳能的合资企业), 企业注册地在伦敦, 研发设计团队都在英国, 中国皇明负责批量生产, 降低造价, 提高市场竞争力。

太阳能光伏组件有以下几种选择:

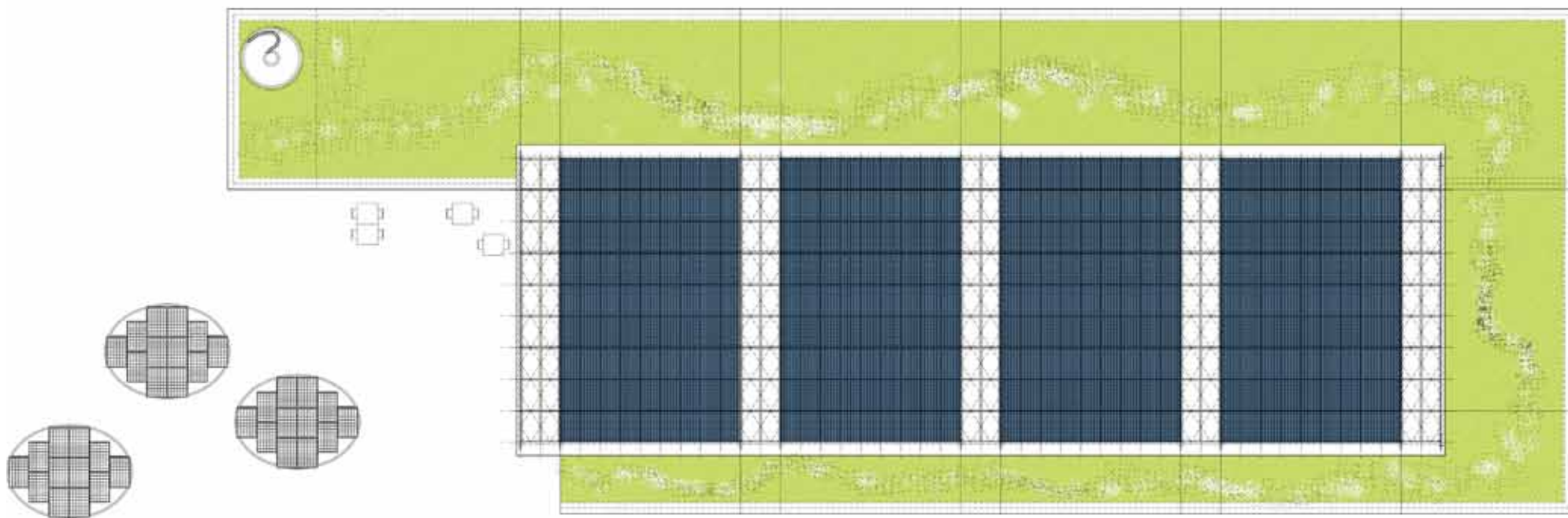
大功率模块 (190W) 用125平方毫米的单晶硅太阳能晶片可达到14.9%的模块转换效率。

装有旁路二极管的太阳能光伏板模块最大限度的降低由于遮挡导致的能量流失.带有肌理的电池表面降低了阳光的反射以及背面电场结构以增强电池的转换效率:17.1%



此项目需324块250w光伏组件,总装机容量为81kw, 90块透明组件





屋顶平面图

室内效果图



国际认证

Certifications

产品



Certificate

Registration No.: PV 50200011 **Page 3** **Report No.:** 15040430.006

<p>License Holder: Himin Clean Energy Holdings Co., Ltd Lijiang Road, Economic Development Zone 253090 Dezhou City Shandong Province P.R. China</p>	<p>Product: PV Modules Type: Same as Page 1 In addition: With 5" mono c-Si cells: HGT-xxxSi/CA (xxx=165-200, in steps of 5, 72 cells) HGT-xxxSi/CB (xxx=165-200, in steps of 5, 72 cells) HGT-xxxSi/CC (xxx=165-200, in steps of 5, 72 cells) With 6" mono c-Si cells: HGT-xxxSi/EA (xxx=255-310, in steps of 5, 72 cells) HGT-xxxSi/EB (xxx=255-310, in steps of 5, 72 cells) HGT-xxxSi/EC (xxx=255-310, in steps of 5, 72 cells) HGT-xxxSi/DA (xxx=215-255, in steps of 5, 60 cells) HGT-xxxSi/DB (xxx=215-255, in steps of 5, 60 cells) HGT-xxxSi/DC (xxx=215-255, in steps of 5, 60 cells) Continued on page 4</p>
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Manufacturing Plant:
Himin Clean Energy Holdings Co., Ltd
Lijiang Road, Economic Development Zone
253090 Dezhou City
Shandong Province
P.R. China

Basis:

<p><input checked="" type="checkbox"/> IEC 61215:2005 EN 61215:2005 "Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval"</p> <p><input checked="" type="checkbox"/> Factory Inspection To document the consistent quality of the product factory inspections are performed periodically.</p>	 <small>www.tuv.com ID 000026087</small>	
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Remarks:
- Valid in conjunction with TÜV Rheinland certificate PV 50200013 Page 1-3.
- The mechanical load test of EN IEC 61215:2005 was performed with a load of 5400 Pa.

Conditions:
The product test is voluntarily according to technical regulations. Any change of the design, materials, components or processing may require the repetition of some of the qualification tests in order to retain type approval.
The certificate is valid until 24 March 2016.



Certification body


 Dipl.-Ing. (TU) Gerd Reimann

27 August 2013

TÜV Rheinland LGA Products GmbH, Tillystrasse 2, 50431 Nürnberg, Germany / Contact: + 49 221 806 2477 email: enerfest@de.tuv.com




Certificate

Registration No.: PV 50200011 **Page 4** **Report No.:** 15040430.006

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Weathertightness testing of the Zedroof PV Roof System to MCS012

Prepared for:
 Rehan Khodabocus
 The ZEDfactory Ltd

17th June 2013

Test report number 287-881

Weathertightness testing of the Zedroof System to MCS012



Prepared by

Name Dr P Blackmore
 Position Associate Director, Building Technology Group

Signature 

Approved on behalf of BRE

Name Dr Julie Bregulla
 Position Director, Building Technology Group
 Date 17th June 2013

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通过风顶升测试

Wing uplift testing

模拟台风来时，对屋面的举力。可以看到作用力已使面板弧度突出，当作用力停止，光伏屋面恢复原状，无变形。



各种屋面角度的防雨防潮测试
Waterproof testing



通过了45kg 冲击重力荷载测试

45kg impact load testing

光伏组件不但没有任何破碎
掉落的晶体，而且边框无变
形状况



ZEDroof: The Components

太阳能光伏一体化屋顶：组件

Strip Caps seal between panels horizontally

纵向面板间的封边防水盖帽

H Channels support panels and provides condensation drainage

H型材支撑太阳能光伏面板以及提供屋脊排水槽

Eaves flashing

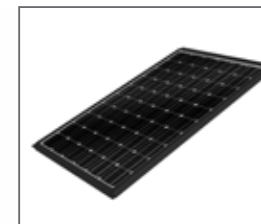
屋檐挡雨板

Roof structure by others
由其他公司提供的屋顶结构

Verge flashing

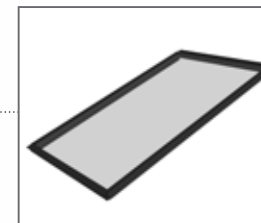
封边挡雨板

PV Panel 太阳能光伏面板



Photovoltaic panel for generating electricity. 10% light transmittance
透明太阳能光伏板即可发电，有保证10%的透光率

Clear Panel 透明组件



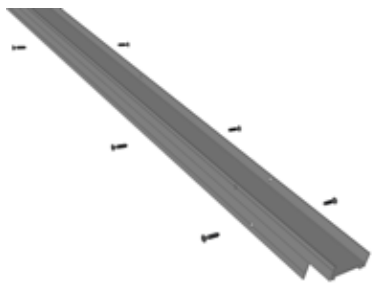
Provides a clear view out
可观屋外景致

Ridge flashing

屋脊挡雨板

ZEDroof: The Components

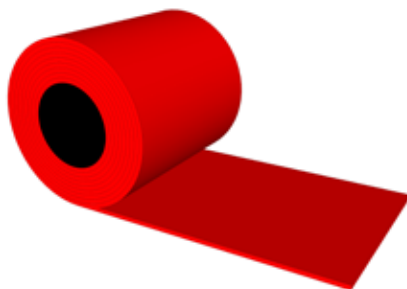
太阳能光伏一体化屋顶：组件



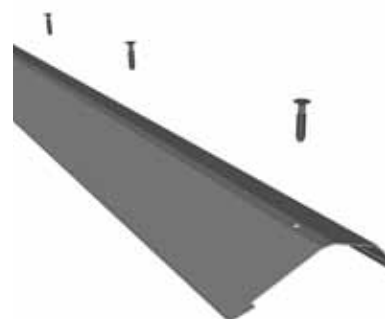
H Channel - Aluminium extrusion provides secondary drainage to gutter. Sits on rafters providing fixing for panels
H型材 - 铝制型材双重防水，排出屋顶结露的冷凝水。安装于椽上用于固定面板。



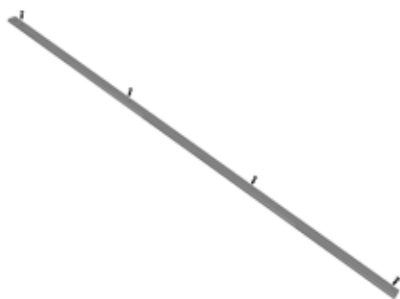
End cap - sits at the end of each strip cap
末端防水盖帽 - 每条防水盖帽的末端



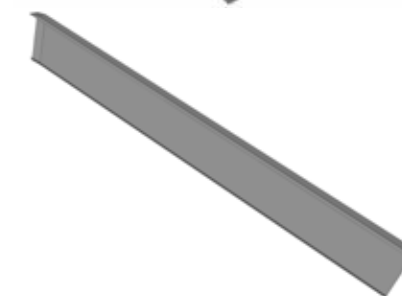
EPDM strip laid within H Channel
EPDM三元乙丙橡胶铺设于H型材



Ridge flashing
屋脊挡雨板



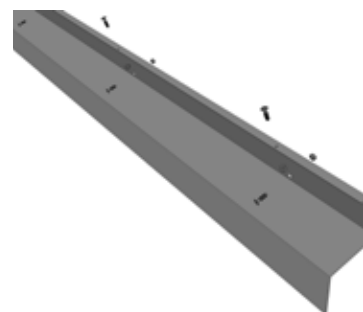
Strip Cap - Provides seal between panels
防雨盖帽 - 密封面板缝隙



Verge flashing
左右边缘（山墙上的）挡雨板



EPDM strip for Strip Cap
EPDM三元乙丙橡胶条用于防雨盖帽



Eaves flashing
屋檐挡雨板

ZEDroof Applications

太阳能光伏一体化屋顶的应用

A New Roofing Material

新的屋顶材料



With weatherproof seals between the panels, the ZEDroof system can be used in place of any other roofing system, providing an elegant finish.

有了面板间的防雨封边，太阳能光伏一体化屋顶系统可以用于任何一种屋顶系统，美观实用。

ZEDroof Applications

太阳能光伏一体化屋顶的应用

Conservatory / Solar Loft

温室花园/ 太阳能暖阁



An uninsulated 'solar loft' can be created beneath the semi transparent ZEDroof providing a 'winter garden', perfect for days when the sun is bright but the air temperature is low.

The solar cells provide an atmospheric dappled light beneath. This space would be ideal for growing plants for example, and as an extra family amenity providing covered outdoor space with an elevated view, but would not be included in the insulated and airtight 'heated zones'. These spaces do need to be designed with good levels of cross ventilation to avoid overheating.

一个不保温的“太阳能暖阁”可以由半透光的光伏一体化屋顶创造出“冬季花园”，特别是阳光明媚但气温相对较低的环境下尤为重要。太阳能晶体使室内光影斑驳。空间适宜种植植物。能为居住家庭提供挡雨的室外空间，又无需对其进行保温。但这类空间需要注重通风设计，以避免过度光照的热。

Atriums

中庭



The ZEDroof system is ideally suited to glazed atriums for commercial, healthcare or education uses. As well as efficiently generating renewable energy, it is a visible technology.

光伏一体化屋顶还能用于商业、医疗、教育建筑中的玻璃中庭。同时用能进行可再生能源发电。

ZEDroof Applications

太阳能光伏一体化屋顶的应用

Solar Canopies

太阳能顶棚



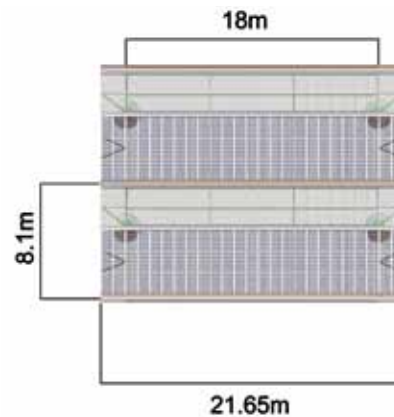
ZEDroof canopy. Designed in collaboration with Ellis and Moore engineers.
与 Ellis and Moore 工程联合设计的太阳能顶棚

Covered Space

遮挡空间

The PV canopies can provide shelter to a variety of activities that would normally be very weather-dependant, like the UK. This is also applicable to other locations where the sun is too strong during the hottest seasons and parts of the day.

这种太阳能光伏遮阳挡雨顶棚无论是用于英国这种多雨的国家还是阳光充足需要遮阳设施的地方，都十分有效实用。



Car Ports

停车遮阳蓬



Carports provide shadow for cars in order to avoid overheating and generate necessary electricity to power the new generation of electric cars.

They can be easily installed in outdoor parking or properties with more than one car.

停车遮阳棚既能为汽车提供遮阳又能同时发电，提供给电动车使用，可谓一举两得。它们可被简单安装于室外停车位或者是住宅外。

Solar PV FAQs 常见问题解答

1. How much roof space will I need for an array?

一排太阳能光伏板需要多少屋顶空间？

This depends on the type of system and how much potential electricity you wish to generate. A 3.6kWp system will require approx 24 m² roof space.
这需要根据系统的类型和所需的发电量决定。一个3.6kWp的系统需要24 m²屋顶空间。

2. I've heard solar PV will never payback its embedded energy?

我听说太阳能光伏板需要很长时间才能回收成本？

Including transport in China, the PV panels will payback the embodied energy within 3 years.
包含运输费用，太阳能光伏板一般三年内就能回本。

3. How much electricity can I generate per year?

一年的发电量有多少？

This depends on the size of the system, but a 3.6kW system can potentially generate over 2800 kWh per annum.
这需要根据系统的大小，但是一个3.6kW的系统可以每年产电2800 kWh。

4. How long will a system last before I need to replace it?

系统的寿命大概有多长，多久需要替换？

Typical lifetimes are 25 years +
典型的寿命能达到25年以上

5. Are they fragile?

它们易碎吗？

Solar PV panels are fairly robust, they survive a 1m steel ball drop test and designed for all-weather conditions
太阳能光伏板非常坚硬，它们通过了1m砸下的钢球的测试适合实用于各种气候条件。

6. What guarantees do I get?

我可以得到什么样的保证？

5 years product warranty and 25 years covering 80% power production
5年产品保修期 以及25年所需能源80%都能由光伏发电提供。

7. Are there maintenance costs?

维护的费用需要多少？

Solar PV has no moving parts so require very little maintenance. They are silent, unobtrusive, clean renewable energy generators
太阳能光伏板没有可活动的部件所以不需要太多的维护。它们是有质量保证令人信赖的可再生能源产品。

实施案例一

Parker's House, Milton Keynes

UK







方案实例二

Chalkwell House Southend

UK





Thank you! 谢谢!