

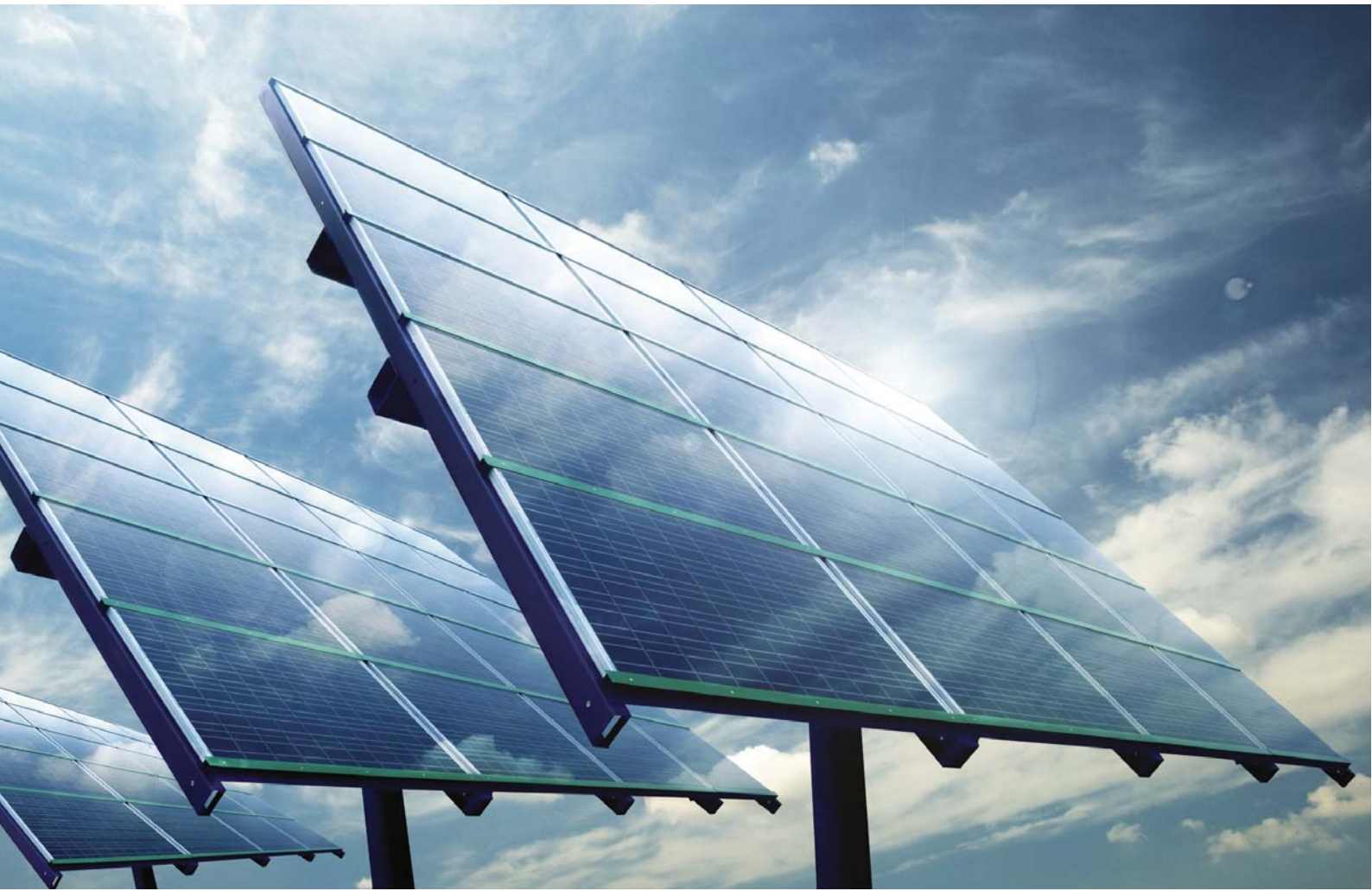


USEON
Extrusion

更高生产率 更低收缩率
Higher Productivity
Lower Shrinkage



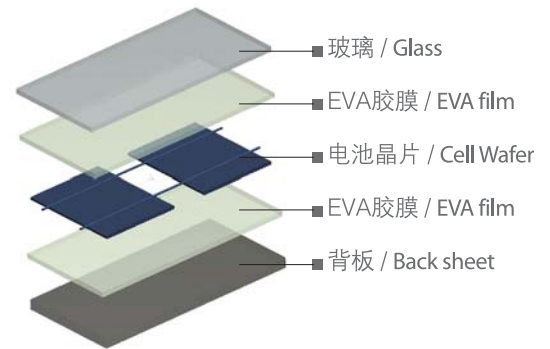
EVA Solar Cell Encapsulation Film Production Line
—— 太阳能电池封装用EVA胶膜生产线



太阳能电池与EVA封装膜

绿色能源的开发与利用是当下最热门的话题。太阳能便是绿色能源家族中最出色的一位。近十年的时间里全球的太阳能发电产品的产量每年都以超过45%的速度在全球增长。中国在太阳能领域的投入和发展更是超过了世界的平均水平。

太阳能电池组件是由钢化玻璃--EVA胶膜--半导体晶片--EVA胶膜--电池背板层合封装而成。其结构如图"太阳能电池封装示意图"所示。层叠后经过加热加压，在此过程中EVA胶膜会发生交联固化将多层结构固定在一起以达到保护晶片的同时又能保持高的透光率。



Solar Cell and EVA Encapsulation Film

Green energy is the most talked-about topic at present. Undoubtedly, solar energy becomes an outstanding one of them. Global solar energy products has developed by over than 45% annually in the past decade. The development and investment of solar energy of China exceeded the world average.

Solar module is laminated by steel glass--EVA film--semiconductor wafer--EVA film--backsheet as it shown in figure "Schematic of Solar Cell Encapsulation". Cross-linking and curing will take place while the composite structure will be heating and pressing. The cured protection layers can prevent solar modules from harsh environment damage while keeping high light transmittance.



EVA太阳能封装胶膜生产线

EVA Solar Cell Encapsulation Film Production Line



全失重式连续精确计量喂料系统

该系统不仅能够确保连续精确的喂料，而且对配方的变化需求做出实时调整以满足市场的变化和技术的更新。智能精确的喂料控制是高品质制品的良好开端。

Full-automatic continuously gravimetric feeding system

Not only is this system able to keep accurate feeding continuously, but it is flexible while the recipe would be changed as per the market demand or technical upgrade. Intelligent and precise feeding system is a good beginning of a high quality product.

双螺杆直接成型挤出系统

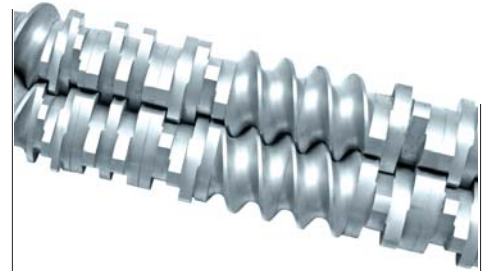
针对EVA聚合物材料的加工特性，我们对于生产线的挤出机设计作了特殊改进，确保可以实现对挤出过程的停留时间分布函数(RTD)的理想控制从而避免预交联现象的发生，这一改进源于我们多年来对双螺杆技术特点的深刻理解和丰富的实践经验。它不仅仅创造了很多技术优势，而且还降低了生产成本。

Twin screw extrusion system

Twin screw extruder direct extrusion technology is one the most important characteristics of this line. The successful employment of twin screw extruder makes EVA resin and a number of additives in-line compounding a reality. This meaningful improvement is a result of our profound understanding of twin screw extruder and wealthy practices. This innovation is more than technical advantages, but reducing operating costs substantially.

双螺杆出色的混合效果在EVA胶膜的生产中扮演着十分重要的角色。因为EVA胶膜的生产使用了种类繁多而剂量很少的助剂，这对共混的效果提出了很高的要求。我们根据EVA的物理和化学特性以及EVA加工的工艺特点设计了专用的螺纹元件和螺杆组合。既保证了各组份的充分混合均化，又避免了预交联。这也是高效率生产的基础。

The excellent mixing effect of twin screw extruder is playing a leading role in EVA film production, because it involves a great number of additives, and it requires good compounding. Unique screw elements and screw profile are designed according to the physical and chemical nature of EVA resin. It keeps each ingredient mixing homogeneously while avoiding pre-crosslinking. It is a basis of high productivity as well.





冷却辊特殊的冷却流道设计提高了整体辊面的温度一致性，硅胶包覆的辊面可以有效去除EVA胶膜的内部应力，从而显著的降低了成品收缩率。

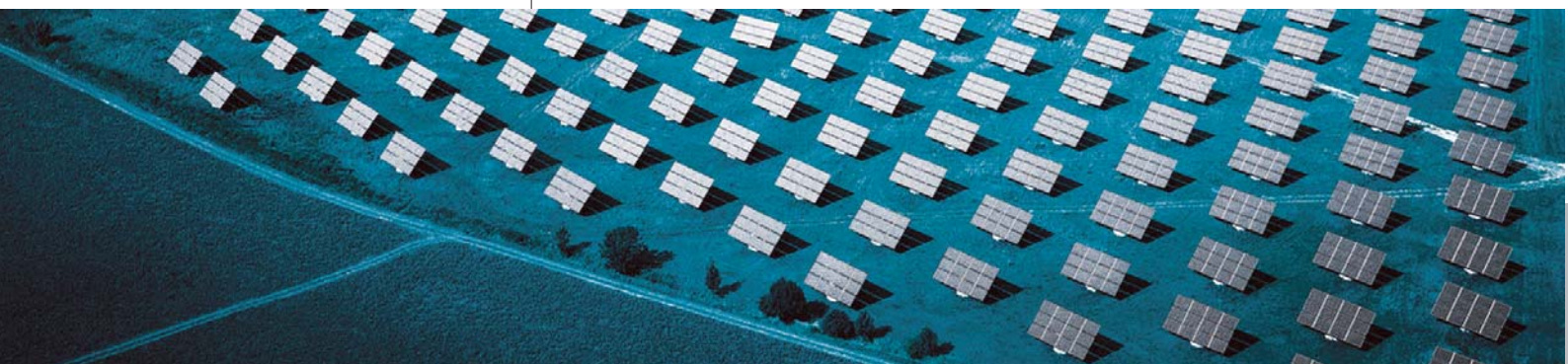
德国原装进口的熔体泵确保了熔体能够以恒压恒量进入模具。熔体泵和主机的闭环系统对整个生产线的稳定运行起到了智能调节的作用。

Special cooling channel of calenders keeps the temperature of calendar surface uniform. Peculiar silicon coated calendar can remove the stress of EVA film effectively so that lower the shrinkage rate significantly.

German-made gear pump ensures melt entering into T-die with constant quantity and stable pressure. The close-loop can keep the system stable running intelligently.



Higher Productivity, Lower Shrinkage



成型系统

专用的EVA胶膜模具是专门根据太阳能电池胶膜级的EVA树脂低温时的流变特性而设计完成的，可以确保熔体在低温时均匀稳定的挤出。

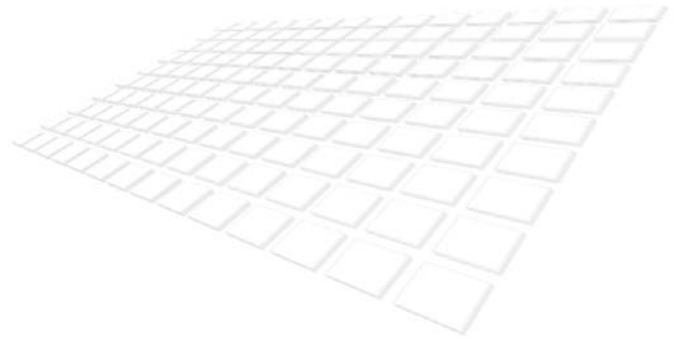
自动在线监测系统实时报告产品品质。全自动恒张力收卷系统也是根据EVA太阳能胶膜的力学特性设计制作而成的。更低的边角料剪裁，更高的成品率控制源自于我们生产实践中对各个工作单元的不断优化。这样有效的降低了生产成本。

Calibration System

Peculiar EVA-use T-die designed as per extrusion rheology of solar cell grade EVA resin makes sure the stable extrusion at low temperature.

This is one of the givens which guarantee the lower shrinkage and high light transmittance.

Full automatic in-line thickness tester log and report the thickness in time. The full automatic constant tension winding system is designed refer to the mechanical nature of EVA film. Less margin waste, **Higher rate of finished products** stem from continuous optimizing of each unit during long-term practice of production. These optimizations help reducing operating cost substantially.



智能的控制系统

从继电器到工业计算机，我们提供更多选择，各模块之间的逻辑设置，让精确控制变得简单。细致周到的机械和电气的安全保护设计让生产更为安全。各单元的精确同步与协调控制为稳定的产品质量提供了保障。单元之间的集成与独立控制让操控更为从容便捷。

Intelligent Control System

From relay to industry computer, we have more options available. The logic setting between each functional modules makes precise control simple. Safer production is a result of considered mechanical and electrical protection. The precise sync and synergetic control of each unit guaranteed the high quality final product at ease.

领先的EVA胶膜品质

对生产线每一个细节的追求使得最终的制品品质达到了世界级的水准。我们可以确保最终成品的纵向收缩率低于3%，生产线速度达到5米/分钟。

Excellent Quality of EVA Film

The pursuit of each detail leads to a world class EVA solar cell encapsulation film. We can guarantee the **shrinkage less than 3%**, and the **line speed reach at 5m/min**.

USEON EVA



交钥匙工程

对于有些客户来说，只有好的机器是不够的。高品质的EVA胶膜涉及到特殊的加工工艺和稳定的生产线。我们不仅为您交付设备，更为您传递价值。从项目立项时的技术咨询,到整线设备；从产品工艺到员工的操作培训,我们提供整体工程的解决方案和交钥匙工程,让您在项目执行时全无后顾之忧。

Turn-key Project

For some customers, a high-quality machine is not enough. The high quality of EVA film is a combination of production processing and stable line. We not only deliver machines, but transfer value. From technical consulting of project proposal to production quality control, from processing to staff training, we provide you total engineering solution and a turn-key project so that you will be more confident when execute your project.



生产线技术数据

生产线参数		
生产线规格	150MW太阳能电池封装用EVA胶膜挤出生产线	300MW太阳能电池封装用EVA胶膜挤出生产线
适用原料	EVA(VA含量25-33%)	EVA(VA含量25-33%)
生产能力	150kg/hr	350kg/hr
薄膜面积	216万平方米/年	432万平方米/年
封装能力	150MW/年	300MW/年
线速度	5m/min	5m/min
EVA制品参数		
厚度范围	0.3-0.9mm	0.3-0.9mm
宽度范围	990-1000mm	1990-2000mm
卷径	300-400mm	300-400mm
主机参数		
挤出机型号	SAT75双螺杆挤出机	SAT95双螺杆挤出机

Technical datasheet of production line

Technical Data of Line		
Line type	150MW EVA Solar Cell Encapsulatoin Line	300MW EVA Solar Cell Encapsulatoin Line
Raw material	VA Content: 25-33%	VA Content: 25-33%
Output	150kg/hr	300kg/hr
Film in area	2,160,000 m ² /year	4,320,000 m ² /year
"Encapsulating Capacity"	150MW/year	300MW/year
Line Speed	5m/min	5m/min
Product Range		
Thickness	0.3-0.9mm	0.3-0.9mm
Width	990-1000mm	1990-2000mm
Roller Dia	300-400mm	300-400mm
Main Extrusion System		
Model	SAT75 Twin Screw Extruder	SAT95 Twin Screw Extruder



www.useongroup.com



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