

Certificate of Registration

ENERGY MANAGEMENT SYSTEM - GB/T 23331-2012 / ISO 50001:2011

This is to certify that: **Changzhou Trina Solar Energy Co., Ltd.**
Trina Solar (Changzhou) Science And
Technology Co., Ltd.
No. 2 Trina Road
Trina PV Park
New District
Changzhou
Jiangsu
213031
China

常州天合光能有限公司
天合光能(常州)科技有限公司
中国
江苏省
常州市
天合光伏产业园
天合路2号
邮编: 213031

Holds Certificate No: **ENMS 645833**

and operates an Energy Management System which complies with the requirements of GB/T 23331-2012 / ISO 50001:2011 for the following scope:

Please see scope page.

For and on behalf of BSI:



Managing Director, BSI (China), Michael Lam

Original Registration Date: 20/08/2015

Latest Revision Date: 01/08/2016

Effective Date: 18/11/2015

Expiry Date: 19/08/2018



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This certificate was issued electronically and remains the property of BSI and is bound by the conditions of contract.

An electronic certificate can be authenticated [online](http://www.bsi-global.com/ClientDirectory).

Printed copies can be validated at www.bsi-global.com/ClientDirectory or telephone +86 10 8507 3000.

Further clarifications regarding the scope of this certificate and the applicability of GB/T 23331-2012 / ISO 50001:2011 requirements may be obtained by consulting the organization.

This certificate is valid only if provided original copies are in complete set.

Certificate No: **ENMS 645833**

Registered Scope:

The energy management activities for the design and manufacture of polycrystalline ingots, silicon chips, cells and modules.

多晶铸锭、硅片、电池片、组件的设计和生产过程所涉及的能源管理活动。

多晶铸锭产品的单位产量综合能耗为： 1.05tce/吨

产品的生产工艺为：硅料加工-铸锭

硅料加工过程：1. 回收片料：分选、测试-预清洗-碱洗-酸洗-水洗-恒温烘干-包装-入库

2. 外购硅料及回收边角料、坩埚料等处理：分选、测试-预清洗-打磨（布袋除尘）-酸洗（洗涤塔）-水洗-恒温烘干-包装-入库。

铸锭过程： 碳化硅粉-坩埚喷涂（抽真空-布袋除尘，部分已改为硅溶胶工艺）-坩埚装料-装炉-铸晶锭（抽真空，充氩气）-拆炉-检测包装-入库

硅片产品的单位产量综合能耗为： 49.18tce/百万片

产品的生产工艺为：晶锭-粘方锭-线开方-脱胶-水洗-倒角截断-超声波清洗-粘方棒-切片-预清洗-清洗-分选包装

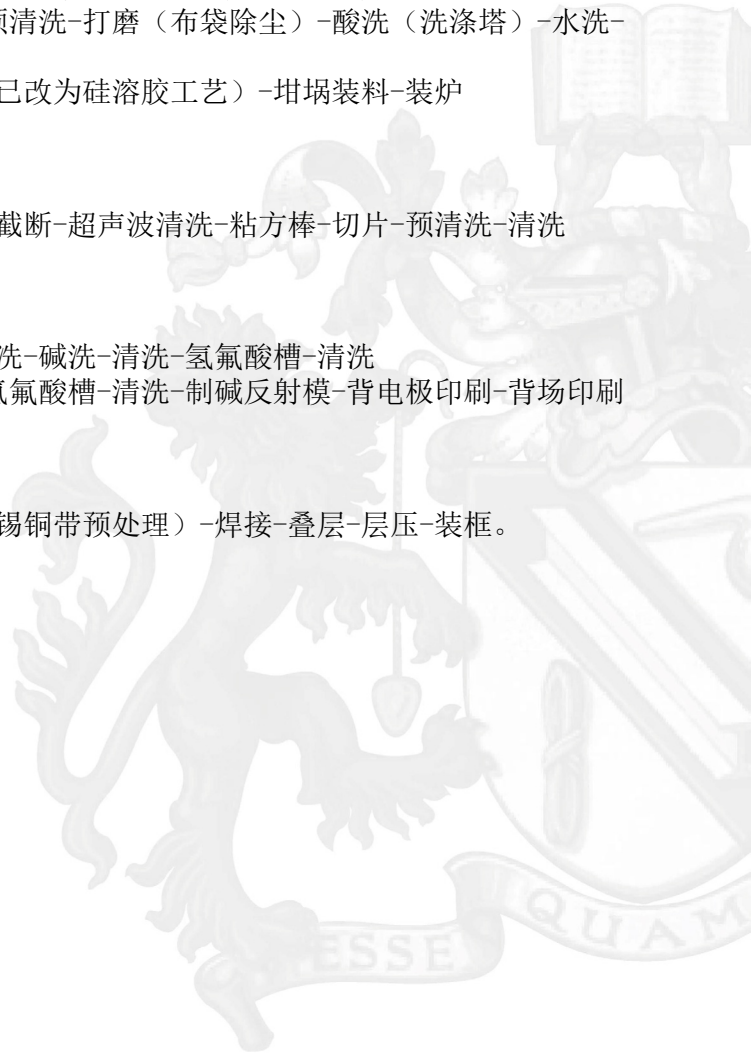
电池片产品的单位产量综合能耗为： 15.45tce/MW

产品的生产工艺为：多晶硅片-检测、装载-鼓泡、制绒-漂洗-碱洗-清洗-氢氟酸槽-清洗-磷扩散（充氧气、氮气）-刻蚀-鼓泡、漂洗-碱洗-清洗-氢氟酸槽-清洗-制碱反射模-背电极印刷-背场印刷-正电极印刷-烘干-烧结-测试、包装-成品

组件产品的单位产量综合能耗为： 3.95tce/MW

产品的生产工艺为：电池片-分选（并行：玻璃片清洗、涂锡铜带预处理）-焊接-叠层-层压-装框。

数据统计周期为2015年1~12月



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Information and Contact: BSI Management Systems Certificates (Beijing) Co., Ltd.

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A Member of the BSI Group of Companies.