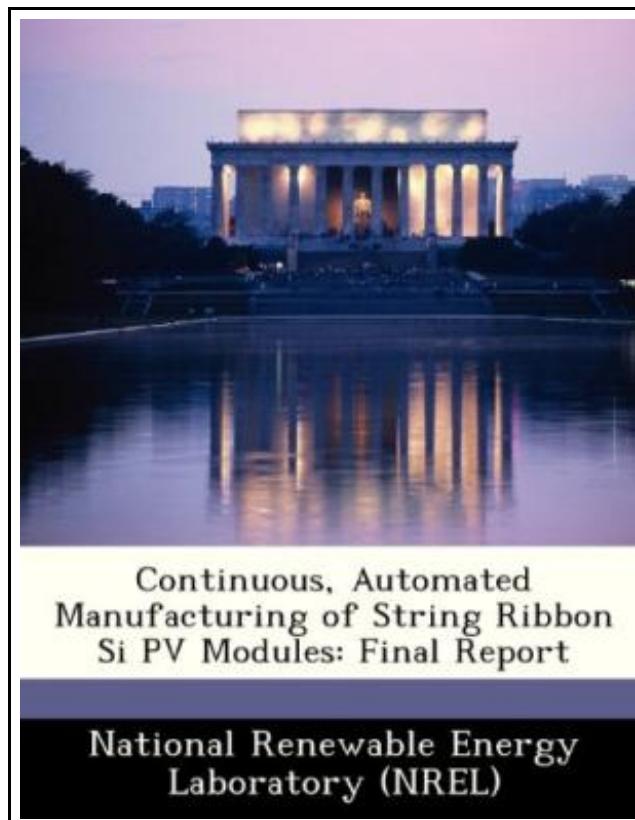


Continuous, Automated Manufacturing of String Ribbon Si Pv Modules: Final Report



Continuous, Automated
Manufacturing of String Ribbon
Si PV Modules: Final Report

National Renewable Energy
Laboratory (NREL)

Filesize: 7.74 MB

Reviews

This book is so gripping and fascinating. Of course, it is actually perform, still an interesting and amazing literature. You will not feel monotony at anytime of your respective time (that's what catalogs are for about in the event you request me).

(Prof. Ophelia Wiegand I)

CONTINUOUS, AUTOMATED MANUFACTURING OF STRING RIBBON SI PV MODULES: FINAL REPORT

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Bibliogov, United States, 2012. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****. This report summarizes the work done under a three-year PVMaT Phase 5A2 program. The overall goal was to attain a continuous, highly automated, fully integrated PV production line. In crystal growth, advances were made that resulted in lower substrate costs, higher yields, and lower capital and labor costs. A new string material was developed and implemented. Following this development, better control of the edge meniscus was achieved. A completely new furnace design was accomplished, and this became the standard platform in our new factory. Automation included ribbon thickness control and laser cutting of String Ribbon strips. Characterization of Evergreen's String Ribbon silicon was done with extensive help from the NREL laboratories, and this work provided a foundation for higher efficiency cells in the future. Advances in cell manufacturing included the development of high-speed printing and drying methods for Evergreen's unique cell making method and the design and building of a completely automated cell line from the beginning of front-contact application to the final tabbing of the cells. A so-called no-etch process whereby substrates from crystal growth go directly into p-n junction formation and emerge from this sequence without needing to go in and out of plastic carriers for any wet-chemical processing was developed. Process development as well as automation were brought to bear on improvements in soldering technology and cell interconnection in general. Using state-of-the-art manufacturing science, the Fraunhofer USA Center for Manufacturing Innovation at Boston University facilitated layout and process flow for the operation of our new factory. Evergreen Solar's new factory began operations in the second quarter of 2001. A good measure of the significant impact of this PVMaT subcontract is that virtually...



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