Owens Design
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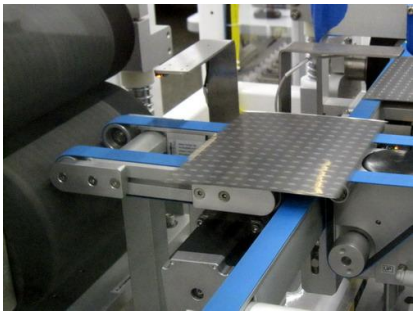
CUSTOMER CASE STUDY

Solar Photovoltaic Industry

Thin Film Cell Inspection and Sorting

The Situation

An innovative thin film solar manufacturer needed to scale up the back end of their cell processing line, which required implementing a fully automated system. Three major steps needed to be automated. First, the curvature that the cells retained from the original roll of stock material had to be removed and flatness verified. Secondly, the cells needed to be electrically tested. And, finally, based on the flatness and electrical performance measured, each cell was binned into separate coin stack style cassettes.



TF Cells Entering Flattener Rollers

The Challenge

Handling the cells without damaging the cell edges and corners was extremely critical due to the delicate substrate material. This made the flattening process very challenging. In addition, the manufacturing QA process required over 18 different measurements of the cell's physical and electrical properties which needed to be tracked with the cell and used for the final binning process.

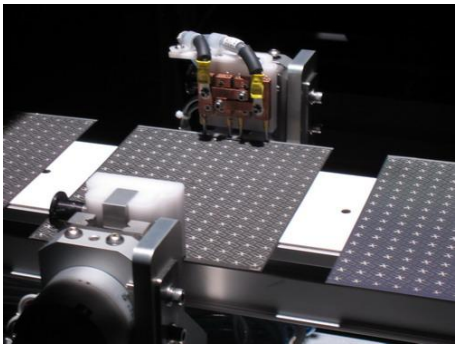
Modular Inspection and Sorting System for Thin Film Cells

The Solution

Owens worked closely with the manufacturer's process team to determine the best architecture to integrate the three major process steps.

Cells Sorted Into Output Bins

Based on this joint analysis, a modular processing line was developed that interfaced seamlessly to the factory material handling and data tracking systems. Owens automated the cell flattening process, integrated a standard I-V tester, and developed the sorting/ binning output module.



Continuous Flow I-V Test Station