

Solar Panel Inspection System

The Challenge

To develop an inspection station to capture and process image data for solar panels in production.

The Solution

PVI Systems designed a fully automated final assembly inspection station for solar panel production lines. The system features top and bottom imaging with a total of eight linescan cameras. System calibration is comprised of many functions, including spacial (X & Y), Intensity (Gain and Black Level), Focus, and Alignment (Angular and Translation). The inspection station has the ability to accept parts from a conveyor system, capture images of both front and back sides, and process images to determine a pass/fail status.

Image processing for these features were developed in LabVIEW with NI Vision from National Instruments (NI). Linescan cameras are used with line lights to image the entire front and back surfaces of parts.

Features

- Dalsa Spyder 4096 pixel linescan cameras
- Database collection via OPC
- Image acquisition via NI PCIe-1430
- Advanced Illumination 72 inch white LED line lights
- Acquires 229 megapixels per part
- Allen-Bradley ControlLogix PLC with 24 PNP inputs and 24 outputs
- Allen-Bradley Kinetics 300 Ethernet Servo Drive
- Capable of processing a panel every 15 seconds
- Eight simultaneously acquiring linescan cameras



Deployment



The system is currently deployed on the Pacific Coast of the United States. It has the ability to determine a pass or fail status for each part and transmit data regarding the pass/fail status to the following tasks in the assembly.

For more information, contact us at info@pvisys.com.