

The Challenge

To design an inspection station to capture and process image data for solar panels in end-of-line production stage.

The Solution

PVI Systems engineered a fully automated final assembly inspection station for solar panel production lines. The system features top and bottom imaging with a total of eight (8) linescan cameras.

System calibration is comprised of many functions, including:

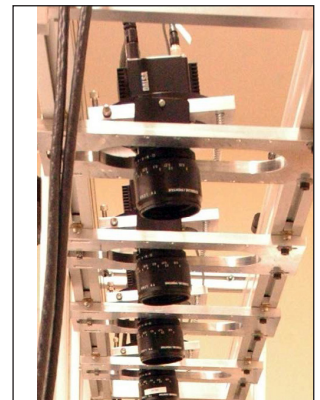
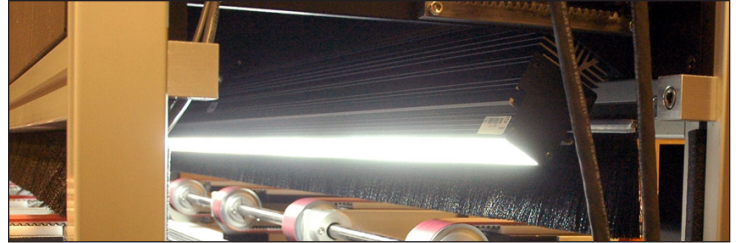
- Spacial (X & Y)
- Intensity (Gain and Black Level)
- Focus
- Alignment (Angular and Translation)

The inspection station accepts parts from a conveyor system, captures images of both front and back sides and then processes images to determine a pass/fail status.

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



The system successfully determines a pass or fail status for each part and transmits data regarding the pass/fail status to the subsequent tasks in the assembly process.



System Features

- Capable of processing a panel every 15 seconds
- Acquires 229 megapixels per part
- Eight simultaneously acquiring linescan cameras

Equipment:

- Dalsa Spyder 4096 pixel linescan cameras
- Advanced Illumination 72 inch white LED line lights
- Allen-Bradley ControlLogix PLC with 24 PNP inputs and 24 outputs
- Allen-Bradley Kinetics 300 Ethernet Servo Drive
- Database collection via OPC
- Image acquisition via NI PCIe-1430



Contact us for more information about custom-engineered Machine Vision, Data Acquisition, Process & Motion Control, or Automated Test & Measurement systems.