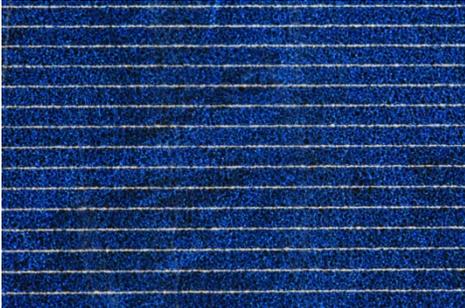


SUCCESS STORY 91

DRYING OF CONTACT PASTE IN SOLAR CELL MANUFACTURING



Q

How can a solar cell manufacturer guarantee that the contact paste is dried correctly to maximize cell efficiency?

A

Situation and background

In the production of crystalline photovoltaic (PV) solar cells, one of the final stages is the printing, drying and firing of the contacts onto the front and rear faces of the cell. If the contact paste is not correctly processed, the finished cell will have reduced conversion efficiency, resulting in a high product reject rate. In many production lines, the printing is done in three steps involving a drier. These dryers typically have very low height clearances of approximately 10 mm. To date, the use of trailing thermocouples has been the established method of profiling such processes. This method is not easy or safe and inherently causes production downtime and reduced productivity.

The winning solution

- A revolutionary new, low height version of the Q18 datalogger with its own thermal protection was used.
- The datalogger was passed through the low height process with confidence, without the need for a thermal barrier.
- Datapaq® was able to work both with the manufacturer of the dryer and a key end-user.
- Datapaq has extensive experience in designing electronics for use in harsh environments, so this enabled Datapaq engineers to quickly design, build and test a unit.
- The process can now be monitored during routine production, so that the temperature profile can be safely and accurately optimized, and then regularly checked.

Savings made

- Time savings: process profile time reduced from 15 to 2 minutes.
- Productivity improvements - there is now no need to stop cell production to profile the dryer.
- Labor cost savings: Trailing the thermocouples was a hazardous task involving two people, one of whom was the process supervisor. The task can be conducted by one line operator only.

KEY FACTS

Customer's End Product
Crystalline solar cells

Max Temperature Reached
200°C/392°F

Duration of Process
1 to 3 minutes

PRODUCT AND BENEFITS



Datapaq DQ1850 (9mm high)
Solar Insight™ software

- Product temperature can be measured easily and thus optimized.
- Routine process monitoring can be easily accomplished, increasing production line operation.
- Trouble-shooting the dryer profile is now quick, easy and safe.

