VINSPEC\textsuperscript{Solar} ARC systems are designed for inline optimisation of texturizing and anti reflection coating processes. Integrated into the automated handling, they reliably detect deviations of reflectivity, color homogeneity and thickness of anti reflection coating.

VITRONIC offers a choice of dedicated measurement systems:
- Line-scan camera systems for reflectivity inspection and measurement
- Color camera systems for measuring coating thickness and local color deviations
- Spectrometer systems with tec5 technology for coating thickness measurement

Our contribution to high product quality and consistent process control

The inspection systems reliably recognize and classify all relevant defects, minimizing loss - even with fast production cycle times. Calibration tools and permanent selfmonitoring guarantee reliable measurements. Yield control tools allow for rapid intervention and process adjustment. For tracing the solar wafers, VITRONIC systems combine identification data (batch number, wafer ID, etc.) and the inspection results. Relevant data can be transferred to MES via standardized protocol as well as stored in a local database.

Our hardware: integrates smoothly into your cell lines

- the reflectivity inspection system comprises of a black&white line-scan camera unit with 4,096 pixels (optionally up to 8,192 pixels) and dedicated LED illumination for defect resolution of 40µm (optionally down to 20µm) and on-the-fly inspection
- the color camera system comprises of a 4 Mpixel (2,048 x 2,048) color matrix camera unit and a diffused incident white LED illumination for defect resolution of 80µm and inspection during standstill
- the spectrometer system comprises of a sensor unit from tec5, a German spectrometer specialist, integrated into the VINSPEC\textsuperscript{Solar} hard- and software-platform. It utilizes 3 optical probes, positioned above the conveyor belt which sample the reflected light at different positions on the wafer passing by. The fast spectroscopy technology allows for short sampling intervals.

- additional full area LED backlight enables sensitive but reliable detection of all edge breakages (camera system only)
- high power, durable LED illumination (MTBF 50,000h) (camera system only)
- each system comprises of a sensor subsystem and a computing subsystem and can be integrated into a range of different product handling systems
- sensor housing customized on request
- standardized high performance industrial PC allows for cost efficient maintenance (one spare PC fits all)

We are close to you

Dozens of engineers and service technicians guarantee rapid, effective support. Our teams support you in Europe, the U.S./Canada and Asia
Our software: developed for your needs

- VITRONIC software tools, optimized for fast and reliable detection of relevant features, according to process and material specific demands - minimizing false detection rates
- easy to use graphical user interface allowing for various views (values, graphs, yield...)
- visualization of all quality relevant features for current and recently tested cells
- one common recipe for all camera stations in the line, which can be managed at any station
- multi-level personal user rights
- inspection software and graphical user interface may be tailored to specific customer requirements
- interfaces with many manufacturers’ production equipment
- equipped with remote maintenance interface
- standardized MES interface (XML, SECS/GEM)
- local SQL database

**VINSPEC**<sup>solar</sup> inspects solar cells

- with edge lengths of up to 6” (option 8”), of various formats, e.g. pseudo square and full square
- whether mono or multi crystalline cell structure

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*Reflex station: graphical user interface with yield control view*

*Spectrometer: graphical user interface*