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Release: No. 663, July 28, 2017

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**Innovative module inspection ensures maximum efficiency, offers centralized recipe management and automated classification**

## **The next level of solar module quality assurance: High speed inspection, global quality standards and 100% defect traceability**

To secure a high level of finished module quality, solar manufacturers and customers can now turn to the next generation of module inspection. Using electroluminescence or optical solutions, the latest inspection technology secures the targeted quality standard in a minimum time. The systems store detailed results of customer claim issues and of root causes of defects to prevent them in ongoing production. For manufacturers, a variety of new features enables optimum throughput with minimum resources.

Electroluminescence has long been the most successful inspection solution in module manufacturing. For the latest cell and module technologies, optical inspection or a combination with electroluminescence are equally successful. For any case holds true: Automated quality assurance reveals more defects and is much more reliable than manual inspection by the naked eye, which is impractical for high throughputs – especially when the highest quality standards are needed. Automated defect detection and classification offers outstanding reliability and achieves cycle times of less than 20 seconds per module for optimum throughput. In the latest inspection systems, high resolution camera components detect even the smallest defects. The technology is easy to integrate into new and existing

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production lines, and is also suitable for framed and unframed modules after lamination. Elaborated detection algorithms support any type of cell and interconnection with the latest cell designs, including multi-wire, IBC and more. The inspection enables the highest production speeds of up to 180 modules per hour. Implemented as “zero tolerance quality control”, it achieves underkill rates of zero percent and overkill below three percent. The high precision sorting leads to a longer life time of the final module and reduces warranty costs.

#### **Global quality standards and root cause analysis for defects**

With a centralized recipe management tool, the automated module inspection allows for a uniformed quality standard and becomes most effective in every production site across the globe. The systems can be connected to a central recipe service so that all linked systems inspect and classify according to the same quality rules. With an automated quality recipe containing all important parameters of the targeted quality class, no issue is left to subjective judgement. Highly developed calibration routines ensure that individual system deviations are compensated, so the targeted quality can be achieved on an absolute level. Knowing the different types of defects on a module later becomes one of the key parameters defining a module's quality. This simultaneously makes the connection to another important feature of module inspection: the acquired data can also be used for tracking the root cause of a defect. The highly detailed information collected for each inspected module allows for precise analysis of defect recurrence and frequency, thus enabling easy optimization of the process to increase the yield. This again supports manufacturers in achieving the optimum quality and documents the quality of production results.

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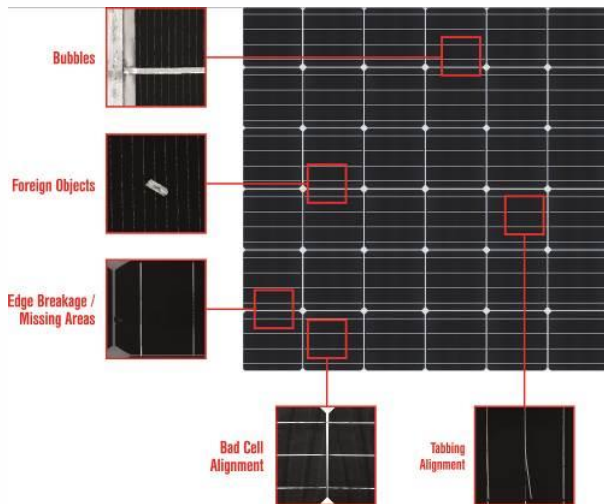
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With Automated Optical Inspection (AOI) for modules, manufacturers receive valuable support in correctly classifying modules and in defining a global quality standard, while end-users profit from reliable quality shipments. Enhanced with these features, the technology offers highly reliable and cost-effective inspection solutions and is best prepared for the latest cell & module designs and technologies.

**Images**



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**Optical inspection means fastest automated quality assurance without fatigue, supporting a consistent level of quality also when facing shortest cycle times.**

**(Image: Inspection with ISRA VISION's MOD-Q VISION)**

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