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Ramp-up in record time: Simplify your photovoltaic wafer inspection with the Central Recipe Tool

Central Recipe Tool with modification log, version control, recipe comparison and automatic recipe roll-out enables intelligent multi-line management

Manufacturers of photovoltaic cells are facing enormous challenges when it comes to profitability and quality. Smooth commissioning of the individual production lines is the prerequisite for the efficiency and therefore the fast ROI of photovoltaic factories. Both at the start of production and during ongoing operation, the right recipe setups and adaptations need to be installed on each line, which was primarily a manual process until now. This process is error-strewn, complex and time-consuming. With the Central Recipe Tool, ISRA VISION now provides a fast tool that easily transmits recipe adjustments at the click of a mouse. The convenient tool ensures identical settings on all lines and conducts version control, as well as approving and adapting recipes.

The profitable production of photovoltaic cells requires achieving a high throughput while simultaneously ensuring the quality. Quick ramp-ups are an important prerequisite for this. ISRA VISION demonstrates the considerable optimization potential of this process with the Central Recipe Tool (CRT). Recipe changes were previously made manually – several times a day, for each step in production and inspection. While this may be within the realms of what is tolerable with a limited number of production lines, manufacturers of photovoltaic cells today generally have over 10 to 20 parallel production lines. Larger factories can even have 30 or more parallel lines.

Every recipe change or setting requires the affected production line to be temporarily stopped. However, having to repeat the tests required for recipe optimization on every line has an even bigger impact, as every minute adaptation necessary in this context leads to further production downtime. In total, the downtime per system can add up to about 1 to 2 hours, which can quickly add up to multiple days of downtime per year,

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unless inspections are performed automatically. Furthermore, manual adjustment of settings can be an additional source of errors, for example when the recipes used for the different lines are not adapted consistently. This causes the lines of a factory or even of different factories to no longer be comparable.

Minimizing downtime

The Central Recipe Tool fully exploits the rationalization potential in the production of photovoltaic cells. The convenient tool allows for central recipe management which identically implements the quality guidelines in all production lines. This functionality is made possible by the consequent software architecture of the inspection systems, which enable the 1:1 transmission of the recipe settings from machine to machine. The manual distribution of the recipes via USB drive is therefore a thing of the past, as is the management of line-specific recipes. CRT significantly reduces downtime required for recipe optimization, as the line no longer has to be stopped in order to set the quality parameters of an inspection system and the recipe optimization only takes place once, not repeatedly for each line. Downtime of less than half a minute is merely needed in order to switch and activate the new recipe. In addition, the tool handles the entire version control, including the change log, recipe versioning and comparison, and roll-back where necessary.

Consistent database

Transferring the recipes to all stationary systems at the touch of a button enables the resource-efficient administration of inspection systems as well as the effective monitoring of production, as falsified production data due to inconsistent settings are consistently prevented. With CRT, quality guidelines can also be maintained across different production sites. Individual lines or entire sites are based on consistent settings, making objective comparison possible for the first time.

Part of the Connected Photovoltaics 4.0 solutions

The CRT module contributes greatly to the consistently high product quality and reproducibility of processes. It is part of the Connected Photovoltaics 4.0 solutions. Together with the central YieldViewer, this simplifies identifying production processes that fail to meet expectations. The Connected Photovoltaics 4.0 solutions thus result in increased productivity and complete production transparency in the spirit of Industry 4.0. They

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enable the interconnected evaluation of the data from all process lines and the parallel central controlling and monitoring of all measurement processes.

Images:



803_1
Easiest recipe roll-out by a mouse click down to all systems

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803_2
Full production transparency with consistent inspection data

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