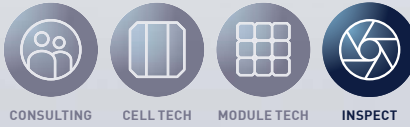
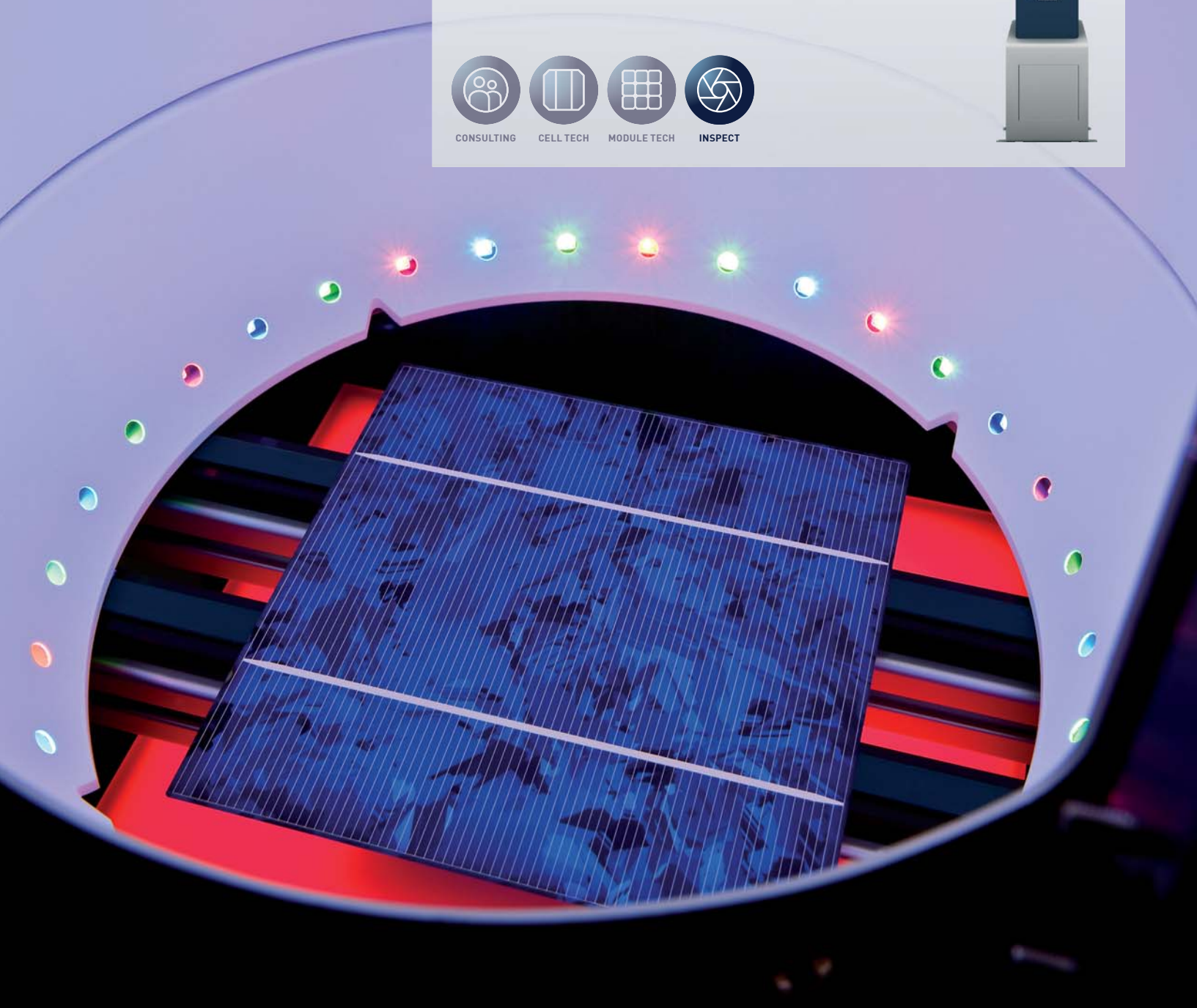


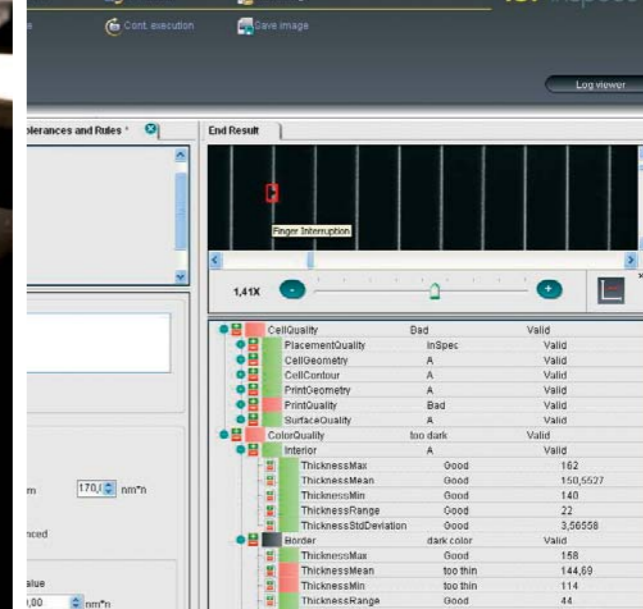
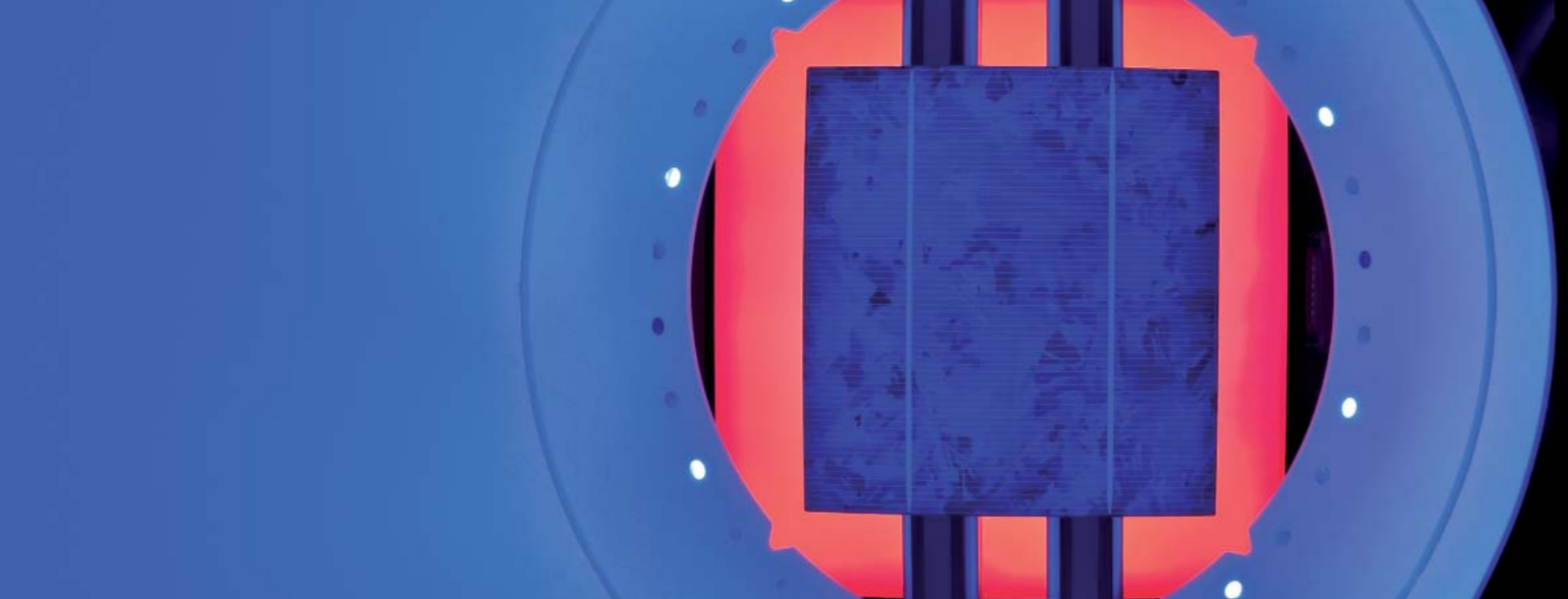
GP CELL-Q FS/RS .CAM

OPTICAL INLINE INSPECTION SYSTEM FOR FRONT- AND BACK SIDE CELL CLASSIFICATION INCLUDING COLOUR INSPECTION



CONSULTING CELL TECH MODULE TECH INSPECT





GP CELL-Q FS/RS .CAM

SORTING AND CLASSIFICATION WITH CAMERAS FOLLOWING OPTICAL CRITERIA: FIND CONSTANT QUALITY IN EACH SORTING BIN, DAY-BY-DAY, EACH WEEK, EVERY YEAR.

SITUATION

At the end of the solar cell process, the cells have to be sorted and classified according to optical and electrical characteristics as an outgoing quality control. Every single cell needs to be checked for edge contour integrity, correct print position, presence of print defects like paste stains or finger interruptions, correct colour, homogeneity of colour, and colour defects. Only optically faultless wafers should be sold as A class, all others need to be sorted out reliably.

DESCRIPTION

The GP CELL-Q .Cam is an inline optical inspection system designed for checking the optical quality of a solar cell. The FS model for front side classification combines the functionality of GP COL-Q .Cam and GP PRINT-Q .Cam in one housing, thus enabling colour and print classification in a single system.

The GP CELL-Q .Cam system architecture is the result of our long-term experience with solar cell processing and metrology, and valuable input from our customers. Software and hardware are designed to meet the requirements for gigawatt factories and large turn key suppliers. With central recipe management and "copy exact", achieving identical sorting performance in all systems becomes easier than it was ever before.

SYSTEM FEATURES

The proprietary illumination unit ensures highest homogeneity and isotropy of the light, leading to maximum reliability and highest accuracy while eliminating the effect of grain boundaries in multicrystalline silicon. Two versions for rear and front side classification are available. A special RGB light in the FS model serves for measuring colour and print properties of the cell front side using the same camera.

FUNCTIONALITY	
Samples to be measured	<ul style="list-style-type: none"> > Mono- and multicrystalline solar cells > Square or pseudo square > Textured or non-textured
Wafer size	100 ... 156 mm
Measured features	Print positions, surface defects, coating thickness, coating thickness variance, separate treatment of coating at wafer edges, edge lengths, rectangularity, diagonals, chamfer lengths and angle, chipping, V-breaks, intrusion length and depth, surface defects
Limiting factors	Position tolerance 3 mm
Minimum cycle time	1 s

The acquired image is analyzed by fast and stable algorithms, and results of all inspection tasks are written to a database, where they are then used for classification.

Predefined recipes help you to achieve classification in record time. Take the Recipe Manager to create your own inspection according to your desired classification criteria!

THE GP CELL-Q HARDWARE ON A GLANCE

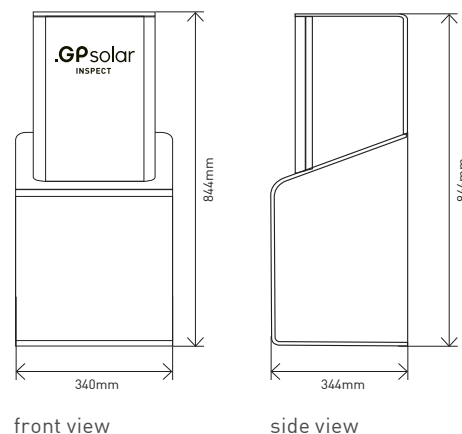
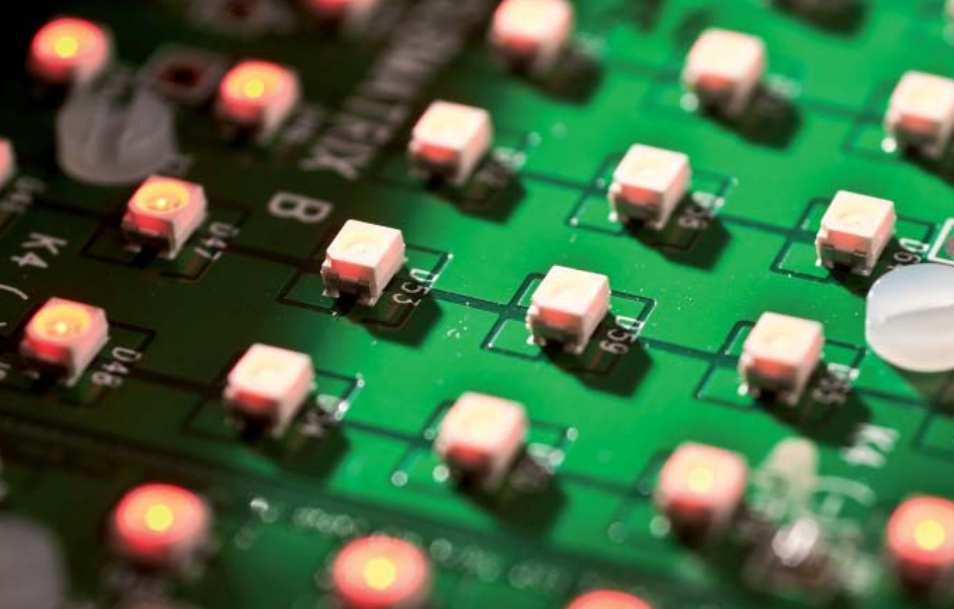
- > .Cam Matrix camera housing with optimized design for best maintenance access
- > Customized back light solutions for full edge inspection in most transport systems
- > Advanced camera holder
- > 19" Industrial controller PC with optimized air flow for high performance and reliability
- > Integrated UPS and RAID on demand
- > Separate 19" power rack for 12V/24V supply

SYSTEM SPECIFICATION	
Machine interface (automation)	<ul style="list-style-type: none"> > Parallel I/O > Parallel I/O (combined with RS232 for WaferID info) > Profibus
Data interface (to factory network or automation)	XML via TCP/IP
Controller PC	<ul style="list-style-type: none"> > 19" industrial PC models with 4 HU > Optional integrated UPS and RAID
Power Module	Optional 19" module for 24V power supply (illumination and camera)
System dimensions (W x H x D)	340 mm x 844 mm x 344 mm

SOFTWARE ON A GLANCE

- > Modular software packages, structured in functional tasks - choose between full service or full control
- > Central recipe management and „copy exact“
- > Classification based on fast database access - virtually no limits in classification
- > Classification on a database - test changes offline before going online in production
- > Intuitive graphical user interface
- > Automated calibration routines and self verification
- > Wide range of protocols for automation handshake and MES connectivity

GP CELL-Q FS .CAM / FRONT SIDE CLASSIFICATION	
Camera model	<ul style="list-style-type: none"> > 4M / Matrix > Optional 11M / Matrix > Optional 22M / Matrix
Defect resolution	80 µm / 60 µm / 40 µm
Stand Still time	180 ms / 180 ms / 180 ms
GP CELL-Q RS .CAM / REAR SIDE CLASSIFICATION	
Camera model	<ul style="list-style-type: none"> > 1M / Matrix > Optional 4M / Matrix
Defect resolution	160 µm / 80 µm
Stand Still time	50 ms / 100 ms



ARTICLE NUMBER	DESCRIPTION
04.11.0010	GP CELL-Q FS .Cam inspection module for front side classification 4M matrix camera for STOP measurement, 19" controller PC, GP Com Card PIO, GP basic line software package (automation control, statistics functions and classification following predefined recipes)
04.11.0011	GP CELL-Q RS .Cam inspection module for back side classification 1M matrix camera for STOP measurement, 19" controller PC, GP Com Card PIO, GP basic line software package (automation control, statistics functions and classification following predefined recipes)
CAMERA OPTIONS	
04.11.0200	4M matrix camera upgrade for back side classification
04.11.0201	11M matrix camera upgrade for front side classification
04.11.0205	22M matrix camera upgrade for front side classification
CONTROLLER PC AND HARDWARE OPTIONS	
04.11.0309	GP Com Card Profibus
04.11.0304	19" TFT for GP Vision System
04.11.0305	GP 19" Power Rack 12V/24V
04.11.0306	UPS system (integrated in controller PC)
04.11.0307	RAID-system, hot-plug harddrive (integrated in controller PC)
SOFTWARE OPTIONS	
04.11.0402	GP Soft View Tool .net. Visualize results and status of any system anywhere
04.11.0403	GP Calibration Set Vision with calibration mask. Configure, check, verify and calibrate your GP CELL-Q
04.11.0408	GP Central Recipe Tool .net. Distribute recipes from one system to the other ("copy exact")

Note: some of the mentioned features are optional. All technical details are subject to change without prior notice.
Only technical specifications in quotations and duty books are binding.

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