# LIS-M1

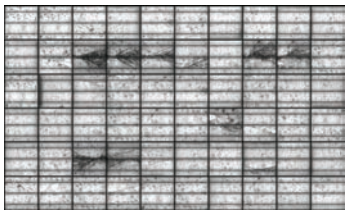
## *The new benchmark for luminescence inspection of PV modules*

Premium PL imaging tool on full-area PV modules

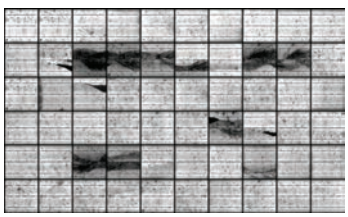
- Proprietary line scan PL⁺ imaging
- Unique and proprietary series resistance enhanced image analysis
- Exposes module defects not visible in EL images
- Unmatched image quality


*Overview:*

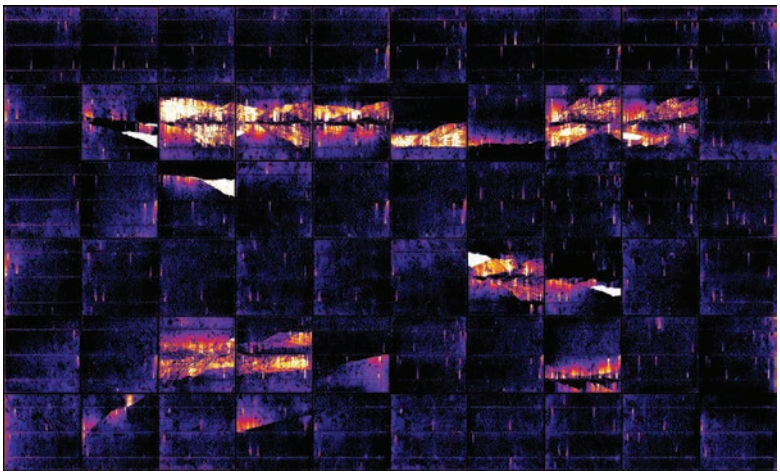
| | |
|---|---|
| **Sample type** | ✓ Mono and multi Si modules |
| **Specifications of sample** | ✓ Up to 2.2m x 1.2m module size<br>✓ Supports half-cell and shingle modules<br>✓ Adaptation to other cell types or materials on request |
| **Technology** | ✓ Line scan EL and PL imaging |
| **Key applications** | ✓ Module quality control<br>✓ Module process optimisation |
| **Functions** | ✓ PL and EL images<br>✓ Resistance-enhanced image |
| **Value propositions** | ✓ Proprietary luminescence imaging technique<br>✓ Quantitative degradation analysis<br>✓ Suitable for R&D labs and on the factory floor |



PL+ image

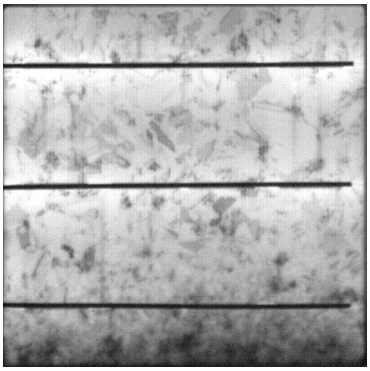


EL image

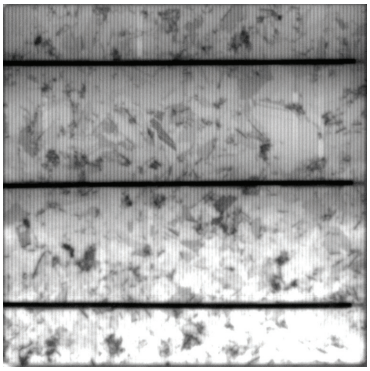


Resistance-enhanced image

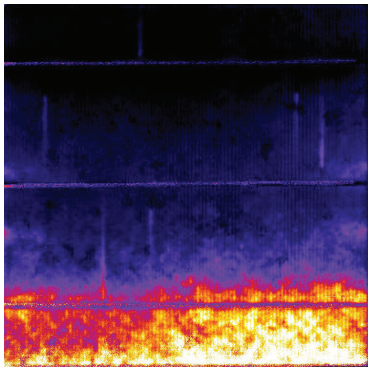
**Unambiguous detection of series resistance defects that cannot be classified from EL images:**



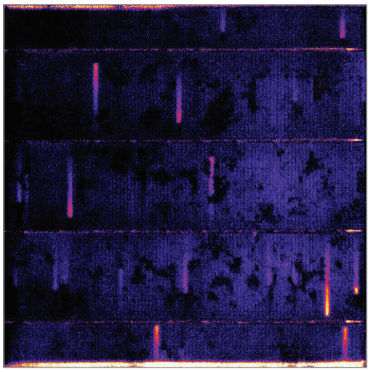
EL image



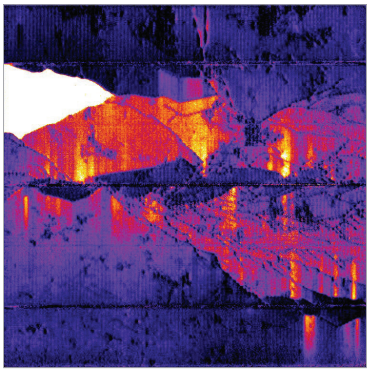
PL+ image



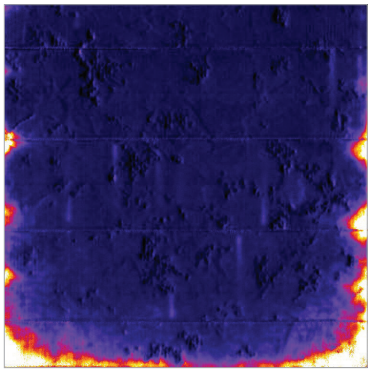
Resistance-enhanced image



Cell with broken fingers and edge isolation problems

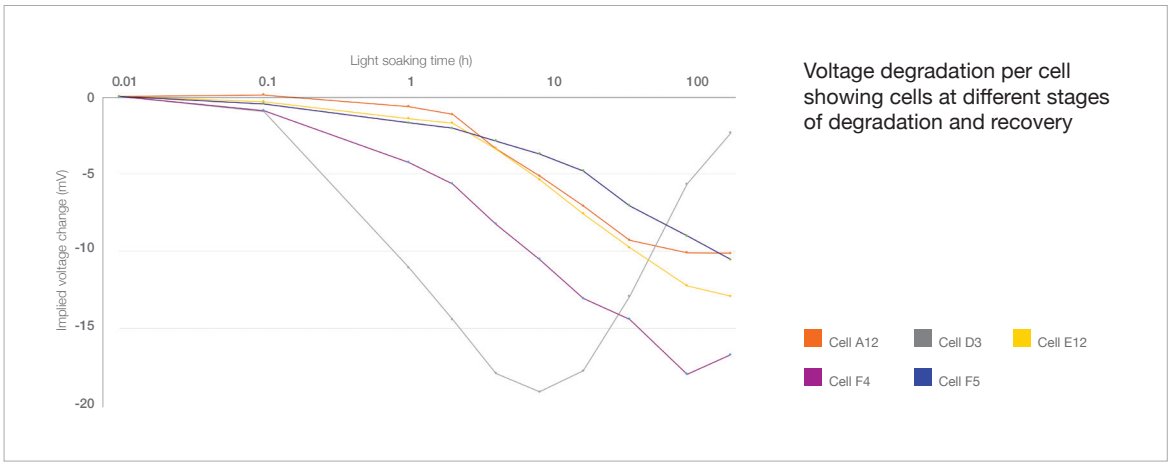


Cell with fully and partially isolated areas due to cracks

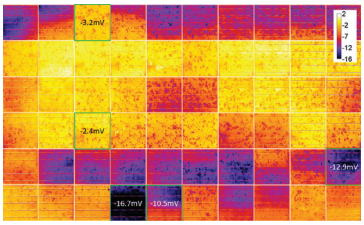


Wide range of resistance or contacting issues detectable

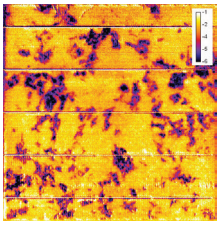
**Quantitative loss analysis in degradation studies on fully assembled modules**




Voltage degradation per cell showing cells at different stages of degradation and recovery



Average voltage loss analysis on cell level (colour scale shows voltage loss in mV)



Voltage loss analysis showing local variations in degradation dynamics (colour scale shows voltage loss in mV)