*pi4*_EL systems now also with optimal fault detection for PERC cells

The *pi4*_robotics GmbH further extends its leading position in inline EL systems.

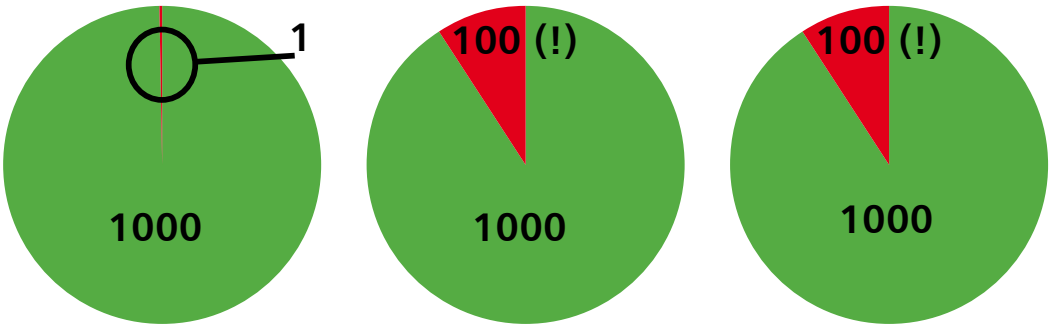
pi4 as a specialist for many years in electroluminescent (EL) inspection, has thoroughly revised its EL systems. Through continuous attention to products, *pi4*_robotics once again been able to further extend its leading position over other EL suppliers. Improved fault recognition is particularly notable compared with other EL inline systems:

The focus here was on the optimisation of the fault detection rate:
Cells which are not faulty should in no case be marked by *pi4*_EL systems as defective. Compared to other manufacturers, *pi4* has succeeded in reducing the number of incorrectly detected cells to a negligible minimum:

Number of cells out of 1,000 monocrystalline cells **incorrectly or not detected**:

=Number of incorrectly or not detected faulty cells

=Total number of inspected cells, here 1,000 cells



pi4 | Producer "M" | Producer "H"

*pi4*_systems achieve up to 100 times higher detection rates than comparative systems of other European premium suppliers.

(in relation to mono-crystalline cells, the detection rate is approx. 30 times higher with multi-crystalline cells)

pi4 has paid particular attention to detection of PERC cells: cracks, shunts, extremely small breaking-off at edges, breaks in fingers and various process problems are reliably detected and classified by the *pi4* EL systems.

"Reliable automatic EL inspection saves materials and costs!"

Causes of faults can be rapidly recognised and eliminated in this way, which not only markedly improves cell and module quality. The necessity of exploiting the potential of increases in efficiency is shown by the increasingly tough price war raging with solar modules in worldwide markets.

The real-time process control enables a decisive process optimisation and thus significant raw material savings. With the use of pi4 systems, customers have the best return-of-investment and the largest cost savings in the market.

The fully automatic pi4 systems save personnel and ensure constant product quality. These important cost effects ensure *pi4's* customers market leadership by providing the best quality with lowest production costs.

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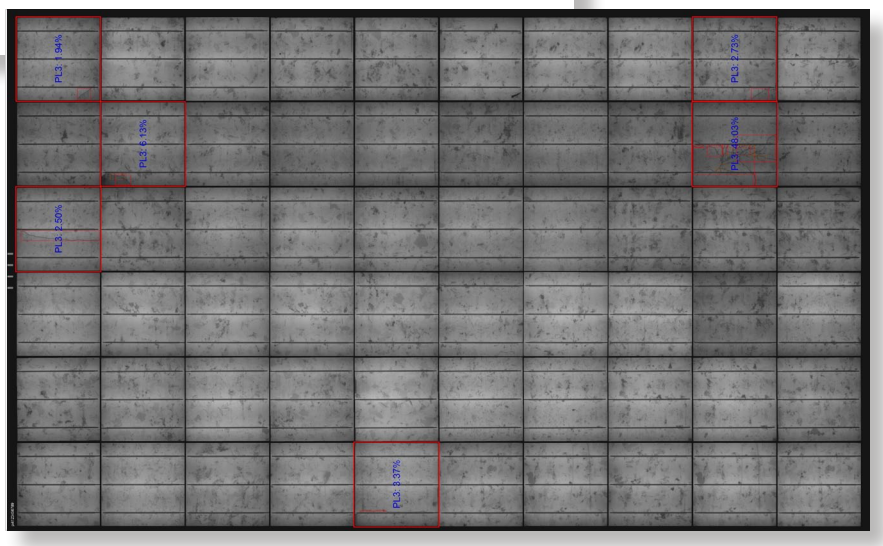
*pi4*_EL Efficiency Inline-System



Automatically inspected EL image
of a multi-crystalline solar module

With headquarters in Berlin, the company *pi4*_robotics GmbH is one of the leading producers of image processing systems, automatic inspection equipment and robots. *pi4* system solutions are presently used mainly in industries such as photovoltaics, plastics, automotive, glass, medical & pharmaceuticals, and also in the area of ceramics.

*pi4*_robotics is the leader in the photovoltaic industry with its quality inspection systems based on electroluminescent technology. *pi4*_robotics GmbH has become also known through the workerbot™, first introduced in 2010.

The workerbot™ is the worldwide first humanoid factory worker in use and is offered by *pi4* in its web shop.

Matthias Krinke founded the company *pi4*_robotics GmbH in 1994. Its headquarters and production facilities are located in Berlin.
*pi4*_robotics GmbH is the only robot producer in Germany which is in 100% German ownership. The company currently employs staff of around 50 employees and five robots. The company has been represented worldwide since 2003 by a network of sales and service partners.

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