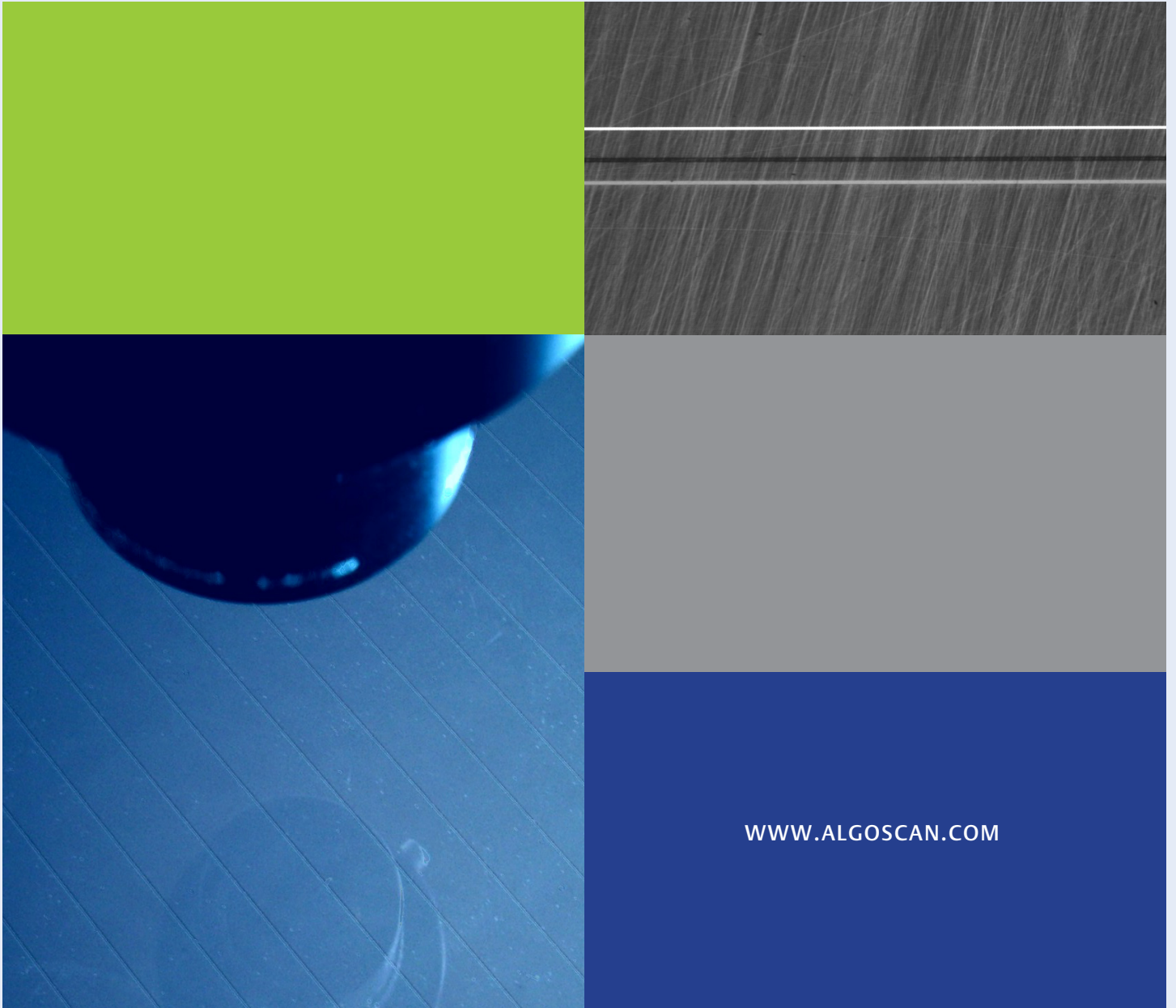


IQLine

Surface inspection systems for thin film solar panels



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ALGOSCAN
Ensuring Quality.

The modular ALGOSCAN concept

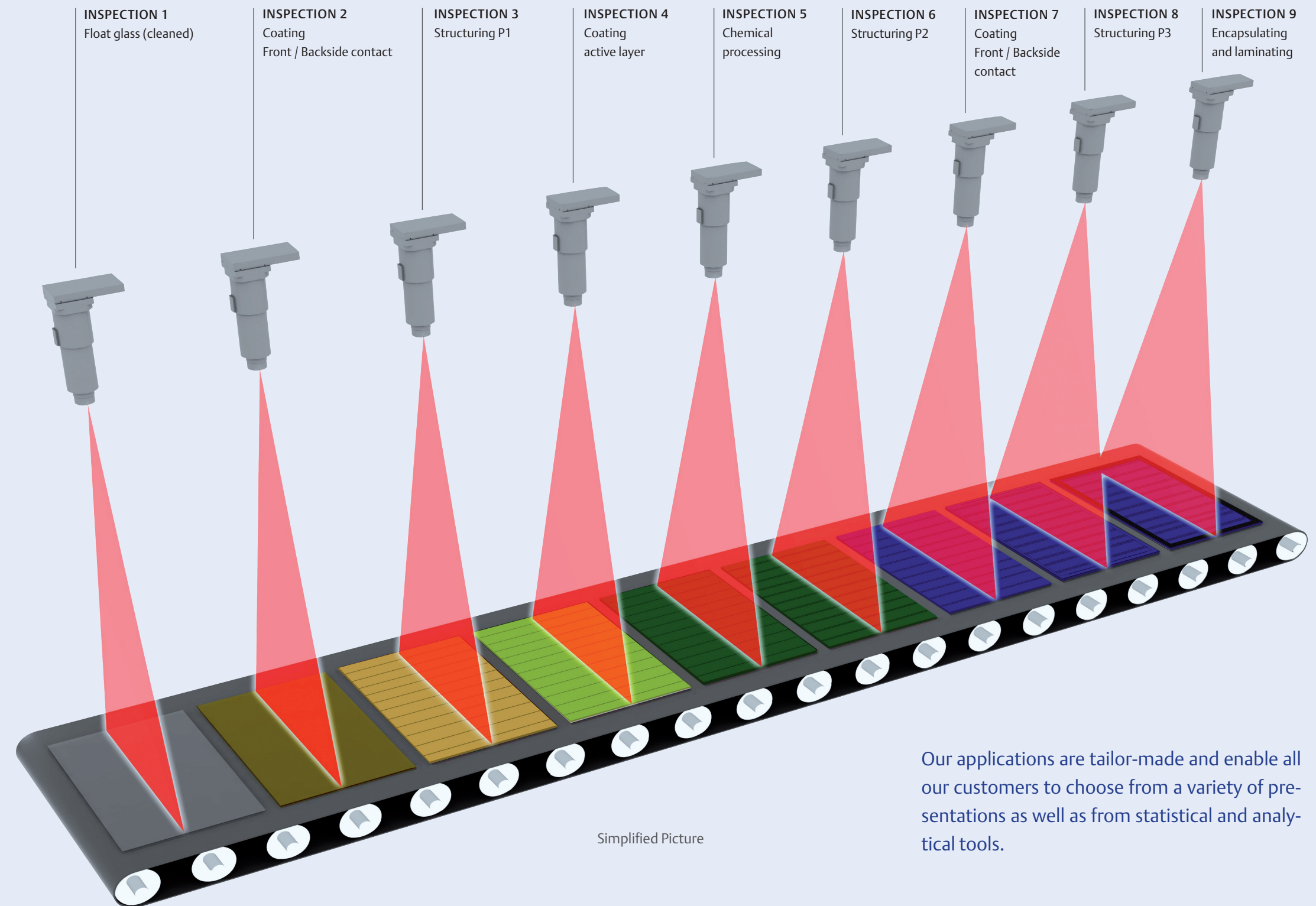
The aim of every producer of solar panels is attaining the best possible profit per Watt solar power. To achieve this aim two factors, efficiency and production costs play the major role.

The efficiency of a solar module is based on the used technology. There is only one possibility to cut prices: Reduce production costs by a more efficient production process.

When producing thin film solar panels, glass panels run through a number of complex coating and structuring processes. All these processes must be 100% accurate in order to produce a fully functional solar panel. Therefore it is indispensable to detect defects - preferably on the earliest stage - by an on-going step-by-step quality control during the entire production.

ALGOSCAN has developed a modular inspection system to fit perfectly every step of the production process. Our systems can be fitted into existing production lines, too.

Integrated inspection in real time



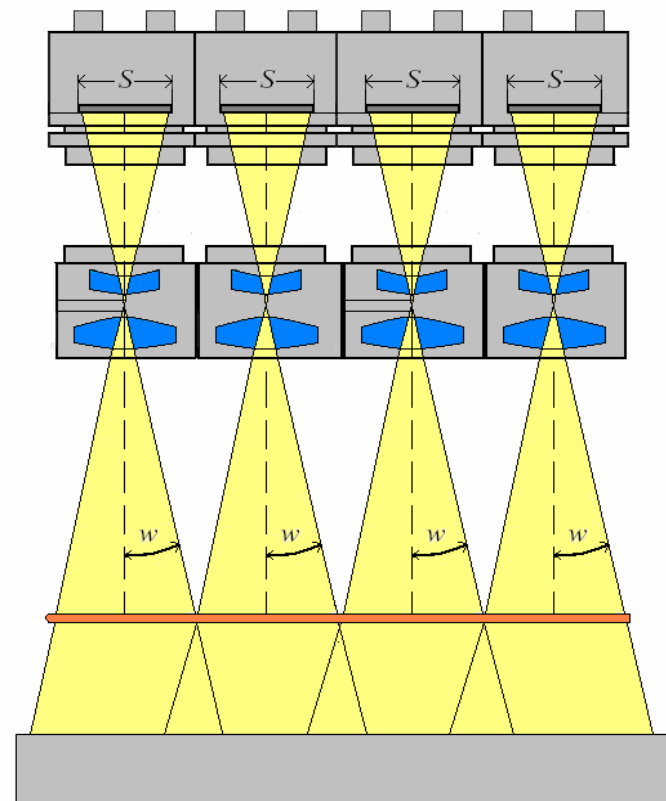
Our applications are tailor-made and enable all our customers to choose from a variety of presentations as well as from statistical and analytical tools.

Inspection of float glass

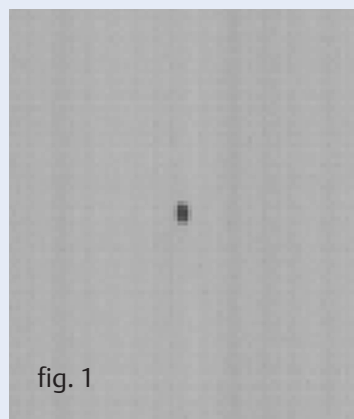
Glass panels on their way to the coating process can have defects.

In order to avoid erroneous glass panels to become part of the time consuming and expensive coating process, ALGOSCAN has developed a specific inspection system enabling the detection of all typical glass defects during the ongoing production.

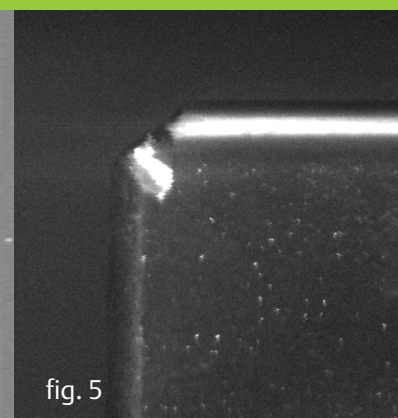
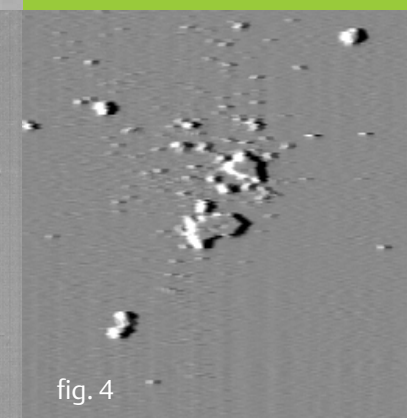
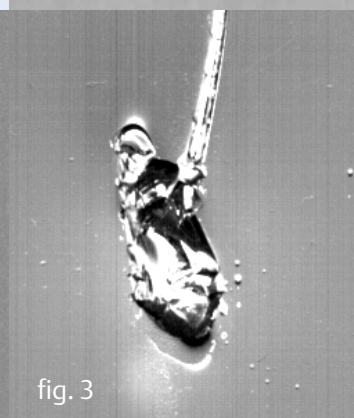
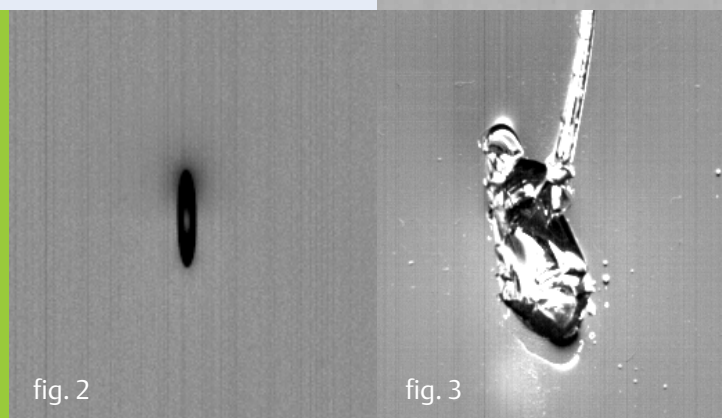
If size or number of defects exceed a certain benchmark - which can be set by customer individually - all non-acceptable glass panels can already be discharged from the production process on early stage.



Scaleable Camera system - applicable for all module formats



- Scratches
- Inclusions (fig. 1)
- Bubbles (fig. 2)
- Glass drips (fig. 3)
- Tin spots
- Dross
- Stain (fig. 4)
- Pits / Digs
- Edge cracks (fig. 5)
- Dimensions



Inspection of the coatings

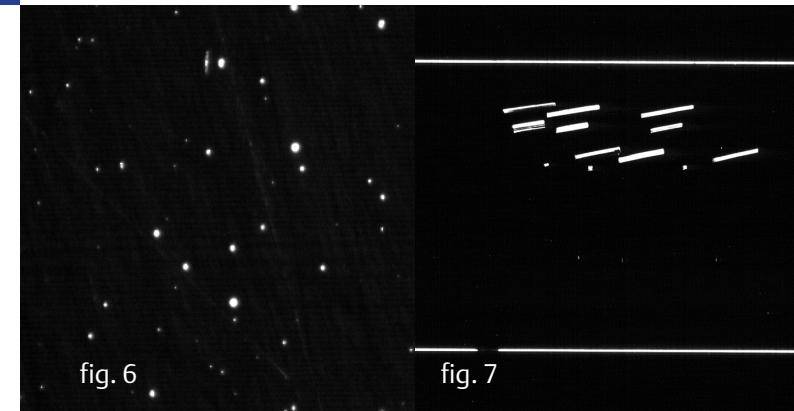
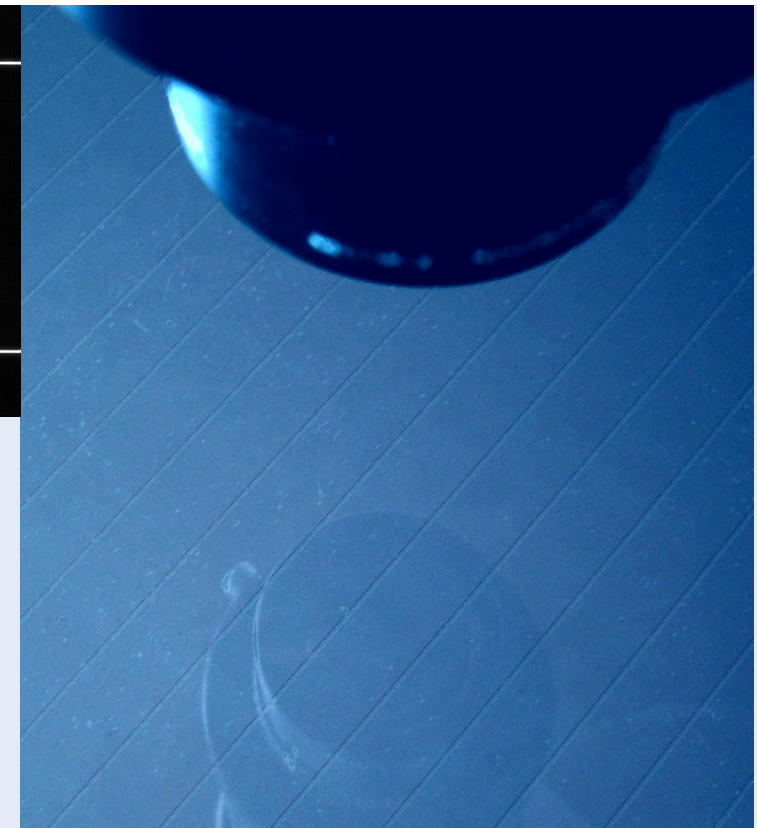


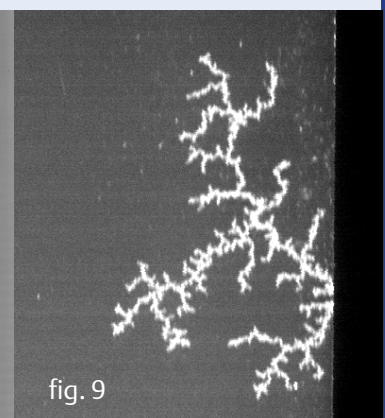
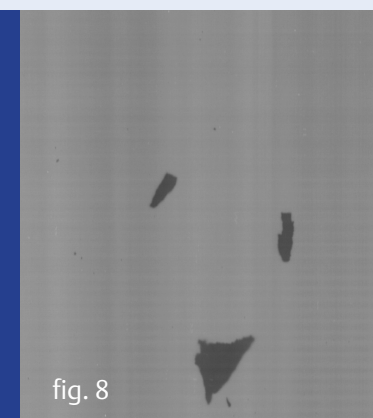
fig. 7

In the production process of solar panels, coating plays a very important part. Even smallest defects can endanger the functionality of solar panels.

ALGOSCAN has developed a specific inspection system which makes it possible to detect all typical coating defects during production process. Scribe lines can be blanked out independent of their orientation. But failures in the scribe lines can still be detected.



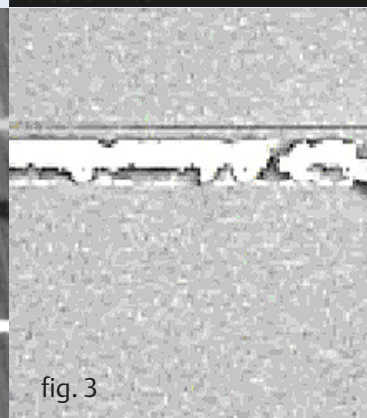
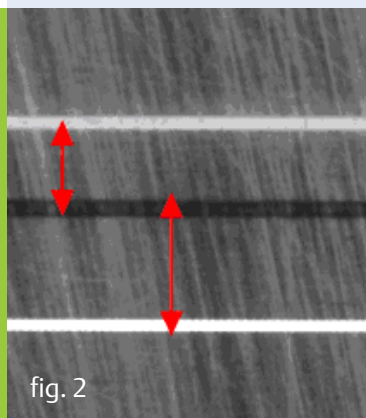
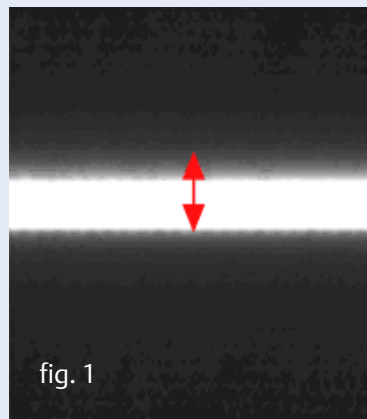
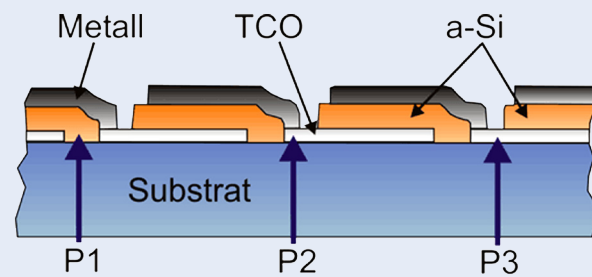
- Pinholes (fig. 6)
- Scratches (fig. 7)
- Coating defects (fig. 8)
- Arcing (fig. 9)
- Discolouration
- Layer thickness
- Ablations
- Holes
- Scribe lines interruptions (fig. 7)



Inspection of the scribe lines

In the production process of thin film solar panels the quality of scribe lines is crucial. Failures or residues can create a short circuit and endanger the functionality of the panels.

ALGOSCAN provides an inspection system which ensures the quality of scribe lines. It helps to identify problems on an early stage and to take action to solve problems during the ongoing production process.



All structure features can be measured and detected:

- Line width (fig. 1)
- Line distance (fig. 2)
- Line defects (fig. 3)
- Layer residues
- Short circuits

Inspection of the cover glass

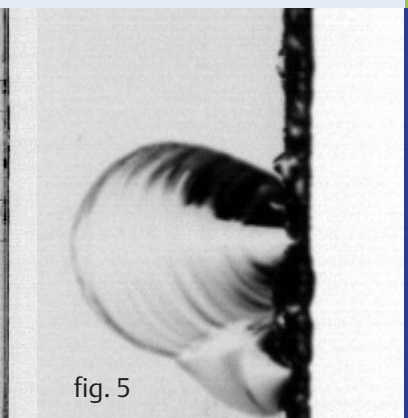


The last step in the production of thin film solar panels is sealing the sensitive layers with the cover glass which is precisely mounted upon the coated and structured plate. In this process, no air bubbles or excessive glue is allowed.

ALGOSCAN has developed an inspection system which is able to detect all typical lamination defects.

All typical defects can be detected:

- Bubbles (fig. 4)
- Excessive glue
- Edge defects (fig. 5)
- Concision
- Conductor defects



Still any defects somewhere along the line?



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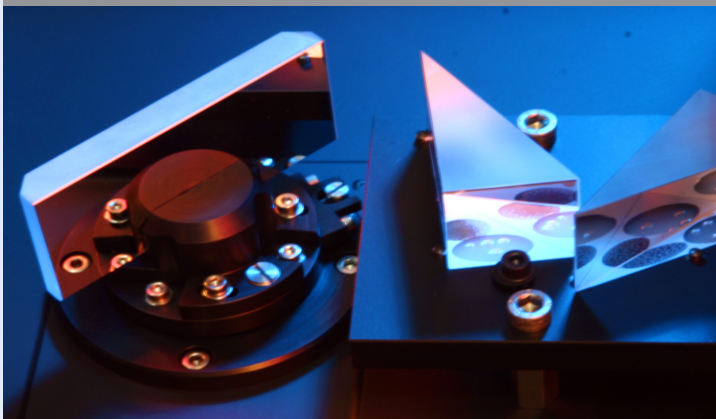
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