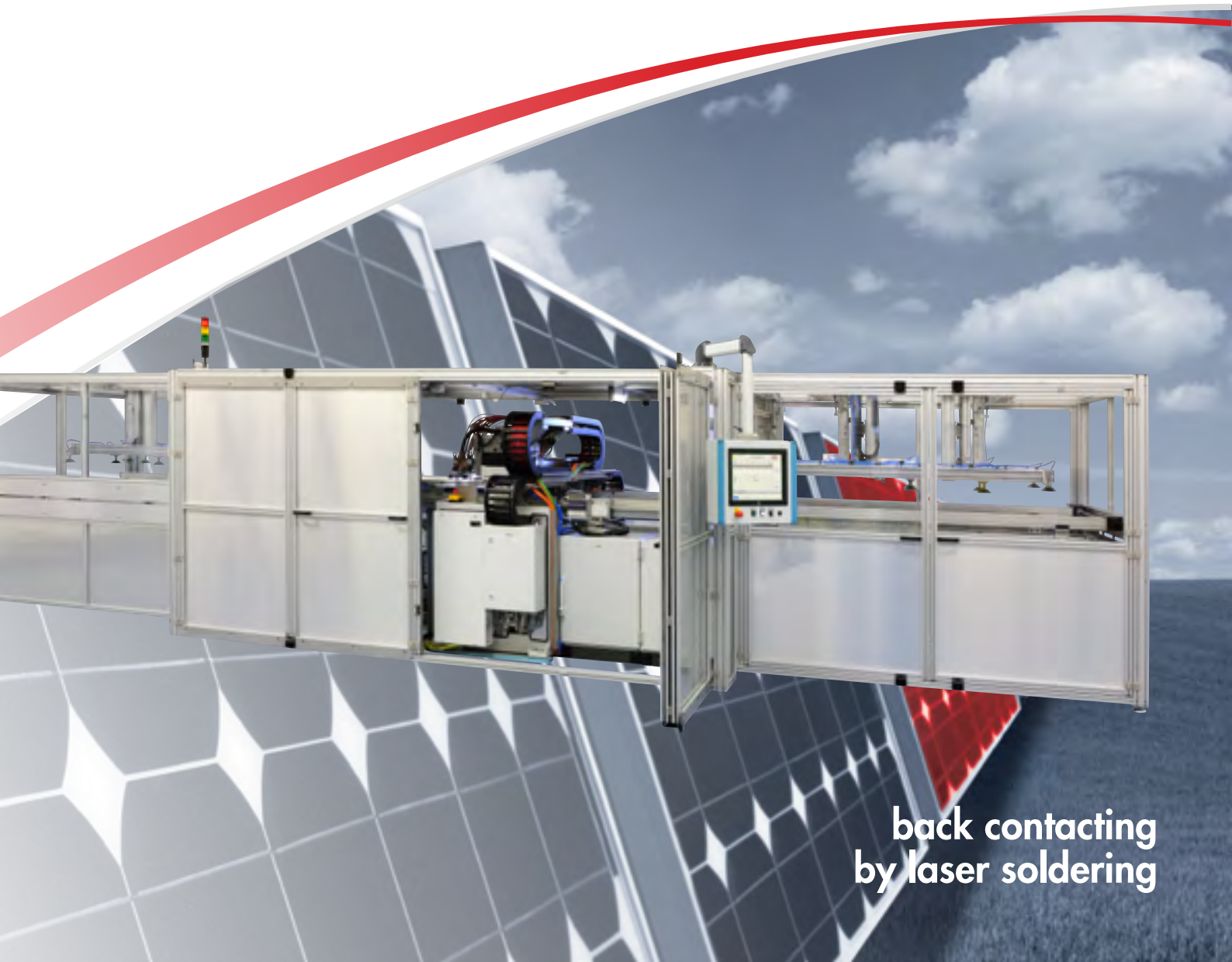
solar

BackContacter

forward thinking



back contacting
by laser soldering

BackContacter

forward thinking in back contacting technology

Back contact cells are considered to be the future of Si-based PV solar modules. Compared to conventional contacting technology, production of solar modules with back contact cells is less sensitive to cell breakage. Also, the module has a higher efficiency because a larger part of the surface is available to catch the sunlight.

IAI has brought the technology of contacting this type of cells to a new level with the introduction of the BackContacter. The BackContacter uses laser soldering technology to produce reliable contacts. Laser soldering has the advantage that it can be applied in a fully automated production process and product costs are low. Both soldering and laser technology have a proven track record in the solar industry and other markets. The BackContacter is the fi rst to combine laser technology and soldering for back contacts in the solar industry.

The technology has been developed in close cooperation with Solland Solar to meet the demands of Solland Solar's In-Laminate Soldering (ILS) process used in the production of its Sunweb® back contact module. The design proved to produce the same accurate contacts again and again while maintaining a high throughput. The system is safe and easy to operate and complies with CE-regulations. All parts of the system are accessible for easy maintenance.

The innovative use of proven technology, the low production costs, the reproducibility, the high throughput and the ease of use make the BackContacter an asset for your production process.

Laser soldering

The function of the BackContacter is the laser soldering of back contacts. This process takes place in the middle section of the system. A processing head combines multiple laser beams that apply heat to the contact positions of the cell simultaneously. The processing head then moves to the next cell and the process is repeated until all the cells in the module are processed. The exact position and orientation of the cell is detected using machine vision. The high accuracy of the positioning contributes considerably to the reliability of the process.

Buffering

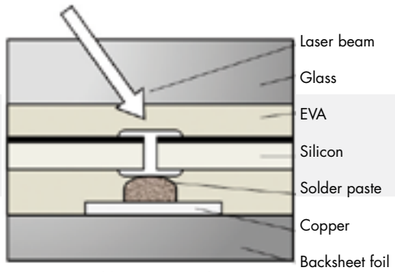
Because the system is equipped with a buffer at the input as well as at the output section, no processing time is lost on waiting. The modules can be transported into and out of the system from the side or from the front, depending on the layout of the production line. The system can process modules of different sizes. The modules are aligned, lifted onto a product carrier and transported to the processing area at high speed. Processed panels are transported to the output section, where they are ready for the next process in your production line.

Interfacing

The system is connected to other equipment in the production line via 'product available signals'. The operator can control the system via a user friendly touch screen or the system can be easily controlled from a central control room over a Local Area Network (LAN) connection.

Patented ILS-technology

ILS-technology involves laser soldering after lamination.



In-Laminate Soldering approach

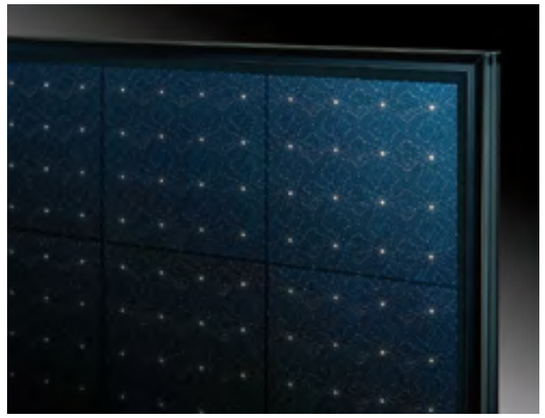
Application examples

Several types of back contacts are possible. The Solland Solar Sunweb® cell is based on Metal Wrap Through.

Metal Wrap Through

Interdigitated Back Contact

Emitter Wrap Through



Sunweb® module produced on the Solland Solar production line

forward thinking

BackContacter highlights:

- High throughput
- Accurate and reproducible results
- Fully automated system
- Low production costs
- Processes various module formats
- Modular design
- Easy to integrate in a production line
- Safe and easy to operate and maintain
- Innovative use of proven technologies

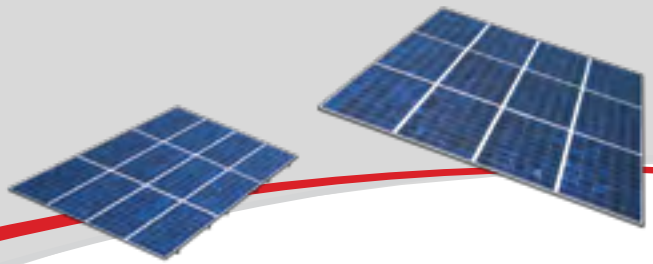
Technical specifications:

Module	Format Glass thickness	Up to 1100 x 2100 mm 2 to 5 mm
System Performance	Throughput	1 minute per module*
Physical data	Dimensions Weight	Approximately 9.4 x 2.9 x 2.1 m (LxWxH) Approximately 3000 Kg
Utilities required	Mains Compressed air Cooling water	400 VAC 6 - 8 bar 6 - 8 bar
Environment	Temperature Humidity Floor	18-30 degrees Celsius RH = 45-60% (non condensing) Dust free coated concrete

* Based on a typical 60 cell module with 32 contacts per cell

IAI supplies advanced production systems to the solar industry. IAI specializes in laser and optical technology and has all disciplines in house for the design, manufacturing, installation and service of its systems.

IAI provides solutions to customers with innovative ideas or new technologies who seek a reliable system manufacturer to translate their ideas into customer specific industrial production systems for both roll to roll and large area applications.



forward thinking

iai industrial systems

in cooperation with

Solland

IAI industrial systems B.V.
De Run 5406
5504 DE Veldhoven
The Netherlands
T: +31 40 254 24 45
www.iai.nl
IAI industrial systems B.V.
is part of Docdata N.V.

IAI industrial systems GmbH
Am Wall 21
14979 Grossbeeren
Germany
T: +49 33 701 74 71 60
www.iai.nl
IAI industrial systems GmbH
is a subsidiary of
IAI industrial systems B.V.

For SunWeb® modules
Solland Solar
Bohr 10
6422 RL Heerlen
The Netherlands
T: +31 45 880 06 00
www.sollandsolar.com