



Services for PV Module R&D

1st Industry Day on Perovskites

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Overview

- PI Berlin
- Expertise in non-standard PV module R&D
- Potential Services for R&D on Perovskites

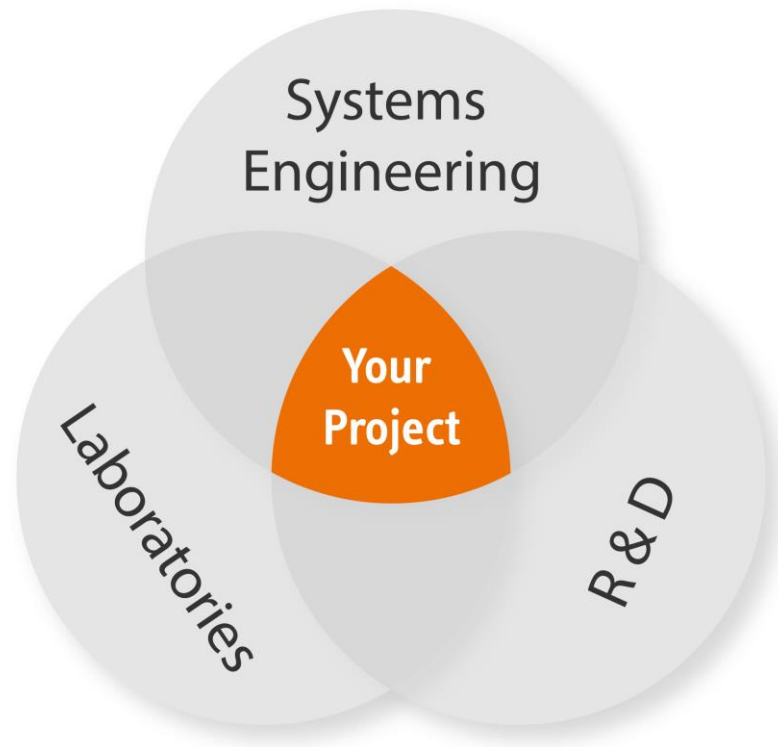
Customer-oriented Independent PV Experts

From solar cells to the power plant, PI Berlin supports your solar project as a **customer-oriented independent expert since 2006**.

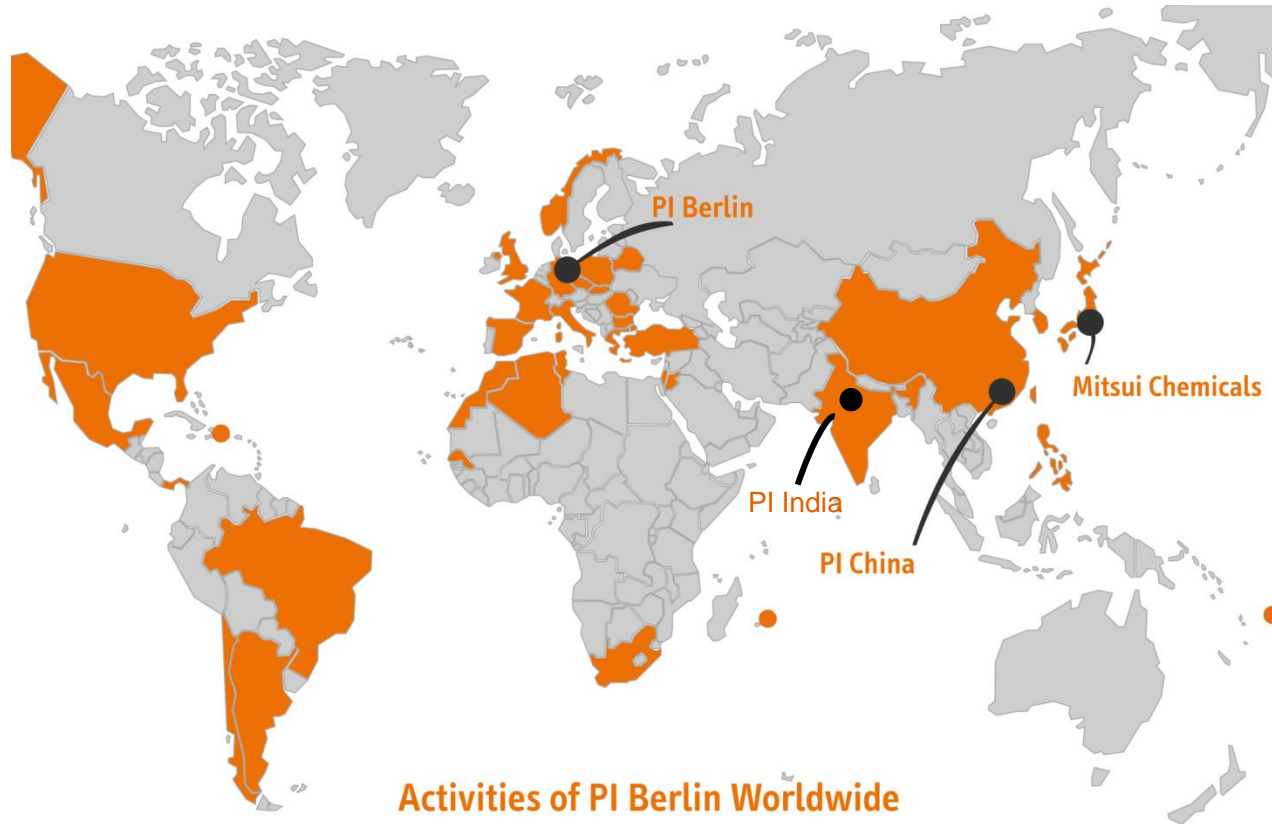
With our international team of experts, PI Berlin provides a wide spectrum of inspection, planning and consultation services. The core of our work is the **implementation and quality assurance for complex PV projects**.

However, we also have an R&D group which

1. does collaborative publicly funded R&D projects
2. provides support for customer R&D projects



International Presence and Activities



IEC 17025 audited PV module laboratory



Background



Team members have long experience in **industrial** module R&D and manufacturing with focus on commercial aspects such as

- Product and manufacturing costs
- Long-term reliability
- Manufacturability
(low capex; speed; handling; safety; ...)

Expertise in non-standard module R&D

Special aspects of c-Si / Perovskite solar module technology

1

Solar cell interconnection

Solar cells are temperature sensitive

- Solar cells cannot be soldered
- Requires use of ECA which is not industry-standard

2

Solar cell encapsulation

Solar cells are extremely sensitive to moisture

- Edge sealant required
- Encapsulation material is very critical
- Connection to module junction box is a very critical aspect

Expertise in non-standard module R&D

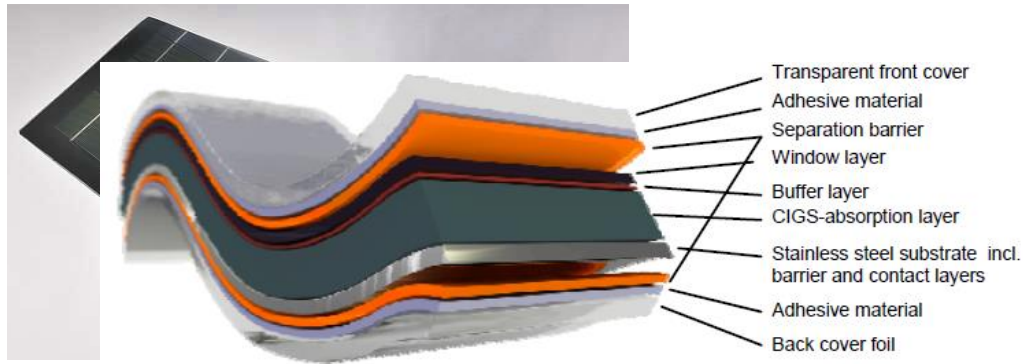
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- Solar cell interconnection with ECA
(materials; commercial production equipment)
- Laminate stack

Expertise in non-standard module R&D

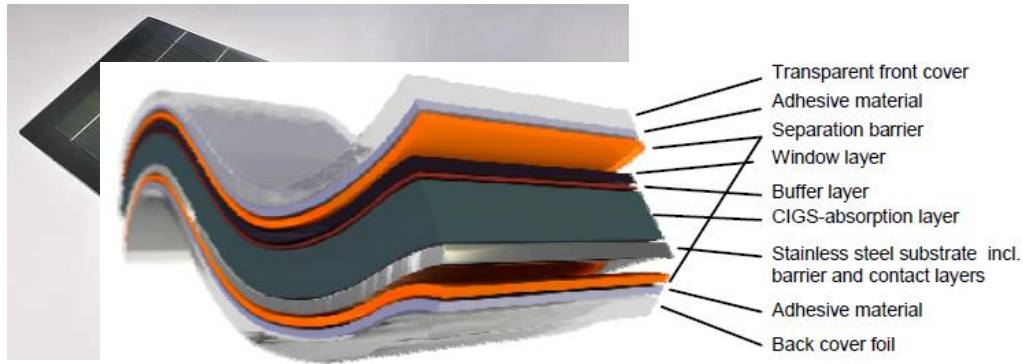
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Expertise in non-standard module R&D

1



- Solar cell interconnection with ECA
(materials; commercial production equipment)
- Laminate stack

2

CONFIDENTIAL

- Lamination
- Edge-seal protection

Summary

- our core experience is solar module technology and manufacturing.
- our aspiration is to make a good PV panel out of (almost) every given solar cell
- we have vast experience in module design with “sensitive” solar cells
- we are an “industry partner” for funded R&D projects

Specifically for projects dealing with c-Si / Perovskite tandem cells we see the following potential activities:

- solar cell interconnection by means of conductive adhesives
- module design optimization (encapsulants; edge sealant; ...)
- cell and module characterization with flash testing
- outdoor yield studies
- feasibility studies for commercial PV module production plants

PI Berlin would be happy to collaborate on any module R&D project based on c-Si/Perovskite technology.



Your independent solar advisors!

Contact us:

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