



HIGH-EFFICIENCY TECHNOLOGIES: PERC AND TOPCON.

Reaching the high-efficiency level

Superior energy yield

Versatile equipment upgrades

Tried-and-tested manufacture

High return on investment

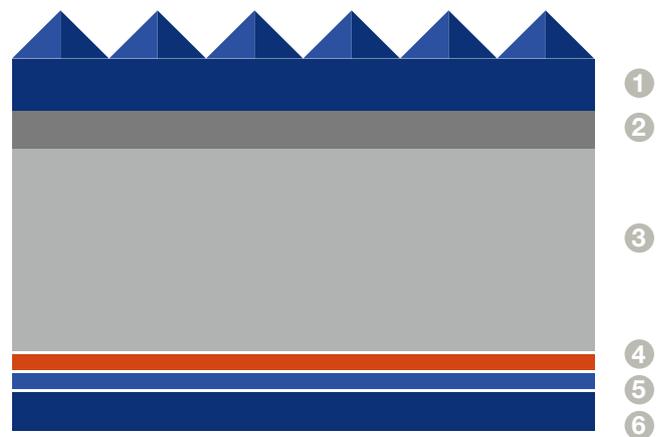
PERC and TOPCon – for reaching high-efficiency levels.

Meyer Burger has long been an industry leader in ensuring ever-increasing highest efficiencies in the industrial production of solar cells. Standard technologies have been lifted to the next level of efficiency after Meyer Burger introduced PERC technology.

For the manufacture of PERC cells, Meyer Burger develops the key processes and offers vanguard production facilities that ideally complement any cell production and enable customers to become manufacturers of highly efficient PERC cells.

Refined structure – higher efficiency

PERC is based on a redesign of the back of cells that improves the capture of light falling on the surface compared to standard technologies. This is made possible by applying a dielectric layer made of aluminum oxide (AlOx) to the back of cells that reflects the light passing through it without being converted into light. The reflected light thus gets a second chance. Besides, passivation layers and antireflection layers out of silicon nitride (SiNx) are applied. As a result, solar cells achieve higher efficiencies, and the Levelized Cost of Energy (LCOE) becomes more competitive.



Cross-section TOPCon cell

- 1 Anti-reflective coating
- 2 Advanced passivation layer
- 3 P-type or n-type silicon wafer
- 4 Ultra-thin tunnel oxide layer
- 5 Passivated contact layer
- 6 Capping layer

Future-proof – with the TOPCon growth option

Current developments in PERC technology continue to focus on passivated contacts (TOPCon) technology. TOPCon reduces the transfer resistance within the silicon cell and boosts efficiency. Based on pilot projects with industry partners, Meyer Burger has developed the CAiA[®] coating system, which will be launched in 2019 and will make TOP-Con technology available for the serialised production of solar cells. CAiA[®] can be integrated into the PERC production platform as an upgrade and enables cell efficiencies of approx. 23% (+1%).

AlOx rear contact layer
improves light capturing

SiNx layers provide
excellent passivation

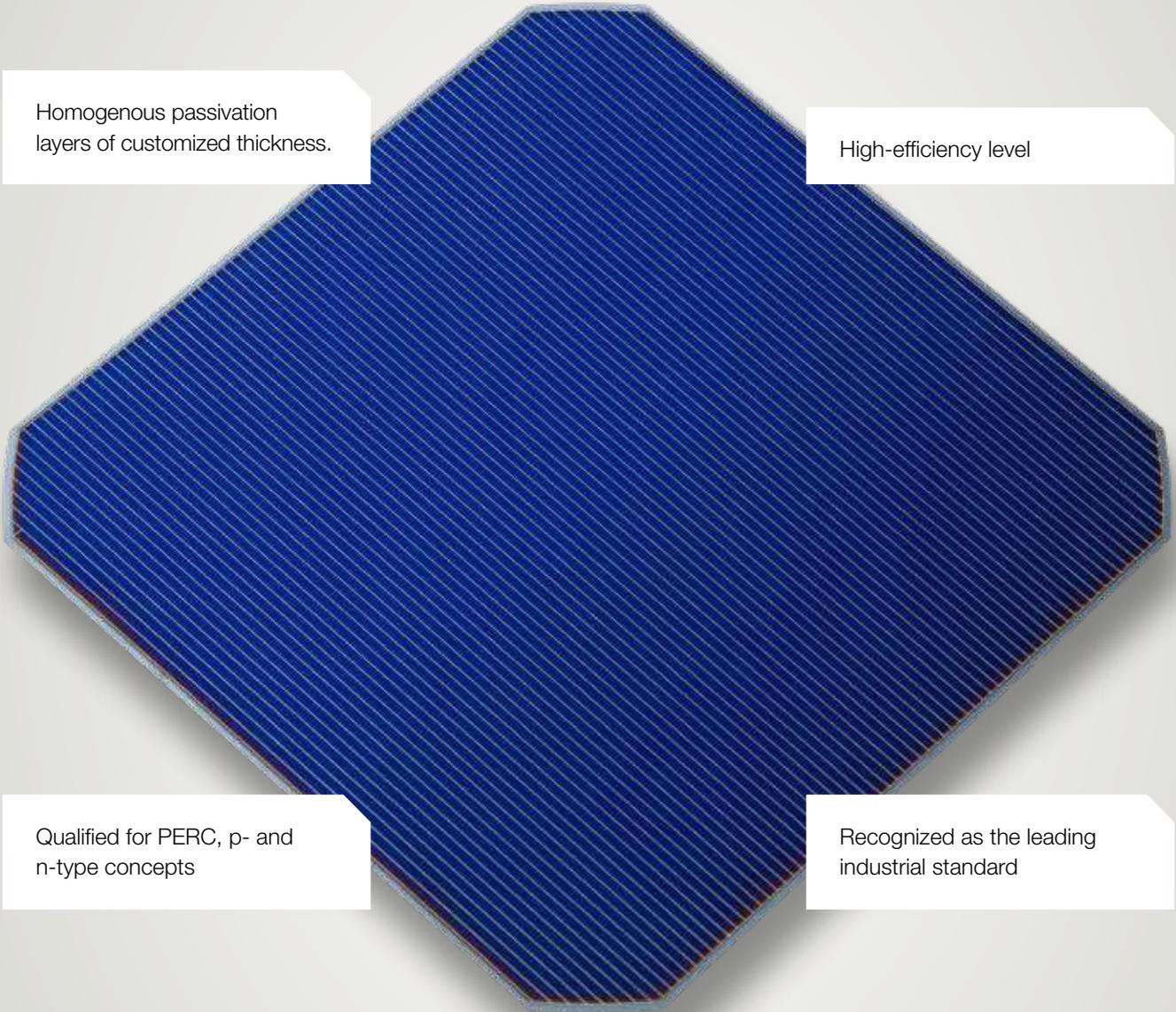
Homogenous passivation
layers of customized thickness.

High-efficiency level

Qualified for PERC, p- and
n-type concepts

Recognized as the leading
industrial standard

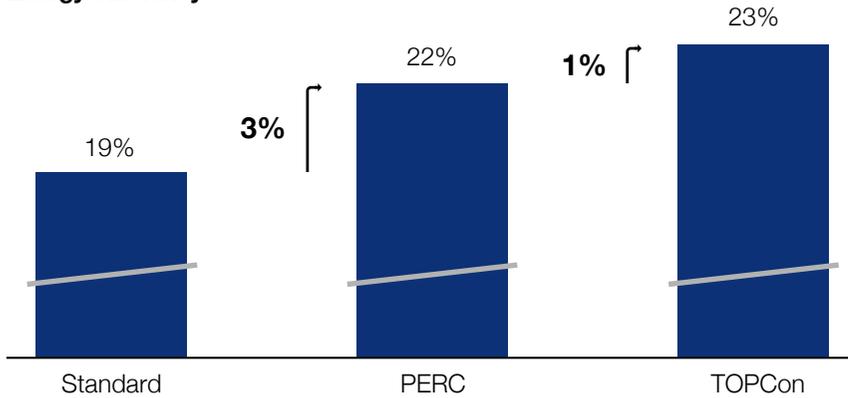
Suitable for multi- and
mono wafers



Reaching the high-efficiency level

PERC has become the global industrial standard. Meyer Burger has continuously developed PERC technology as well as the manufacturing processes and manufacturing equipment, making full use of the potential. Today, cells with an average energy efficiency of 22% are mass-produced on fully industrialized Meyer Burger manufacturing lines.

Energy efficiency



Superior energy yield

Meyer Burger's PERC technology delivers an outstanding energy yield under module operating conditions that significantly exceeds the yield attained by standard technologies. That provides a major competitive advantage for both cell and module manufacturers.

Well-proven PERC production equipment for any application

Tried-and-tested production equipment, available for any manufacturing concept.

The modular production platform enhances any manufacturing concept. Regardless of the existing production system, the versatile Meyer Burger production platform guarantees seamless integration and a compelling upgrade. Customers take full advantage of:

- 15 years of experience
- 70 GW installed capacity worldwide
- Proven track record in industrialization
- Concise ramp-up time thanks to Meyer Burger's prototype production line
- Many proven standard recipes available

The modular production platform is compatible with PERC and other related technologies such as PERT.

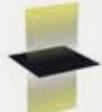


Example - FABiA® 6.1 modular functionality at a glance

The new FABiA® 6.1 combines the proven advantages of industry-leading SiNA® and MAiA®. FABiA® 6.1 integrates three process deposits in a single system. With an additional increased throughput of 6,000 cells per hour and a minimal footprint, FABiA® 6.1 lowers overall production costs and ensures high profitability.

FABiA 6.1 manufacturing equipment

Manufacturing PERC cells

	<p>Texturing</p> <p>A wet chemical process is used to etch a pyramid structure into the wafer surface.</p>
	<p>Doping and Diffusion</p> <p>An emitter layer is formed by the application and diffusion of phosphorus.</p>
	<p>Edge Isolating and PSG Etching</p> <p>Using a wet chemical process, the wafer edges are isolated on the one hand and residues of phosphorus glass on the wafer surface are removed on the other hand.</p>
	<p>AlOx and SiN Layer Deposition</p> <p>The back of the wafer is passivated with aluminum oxide. An antireflection layer of silicon nitride is applied on top and on the front. Ideally, all three steps are carried out within one machine. This is only possible with the Meyer Burger FABiA® 3-in-1 system.</p>
	<p>Laser Opening</p> <p>Laser holes are made in the back of the wafer.</p>
	<p>Printing</p> <p>Thin contact lines (fingers) are screen printed with silver paste.</p>
	<p>Firing</p> <p>The contact lines are fired into the emitter layer.</p>
	<p>Testing and Sorting</p> <p>Meyer Burger offers leading measurement procedures for the precise testing of PERC cells.</p>

Specifications

	AlOx Rear Side Passivation	SiN Rear Side Passivation	SiN Front Side Antireflection	
Expansion Market	FABiA 6.1 (6'350 wph)			Future Applications like TOPCon
	Other solution	DiVA 6.1 (6'350 wph)		
Upgrade Market	MAiA® 6.1 (6'350 wph)			
	Other solution	Other solution		



Worldwide presence



Service

Meyer Burger, with its service centers near you, offers first-class service that only the original manufacturer can deliver. We take responsibility for the availability and productivity of your equipment today and tomorrow.

With a complete range of services, we support you from commissioning through production support and maintenance to life-prolonging system upgrades. All works are carried out by qualified technicians and with original service parts only – at your site or in our local service center.

Wherever you need it, our service is available in time, and of top quality.

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We reserve the right to make changes reflecting technical progress.