

TECHNICAL NOTE · SOLAR PANELS

A world record for bifacial solar: 93% from the back side

Tongwei's 770 W TOPCon panel, verified by TÜV Rheinland, and how it compares with the bifacial panels on the market today

93.07% bifaciality, world record	94.3% cell bifaciality	770 W panel power	24.8% front efficiency
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What Tongwei achieved

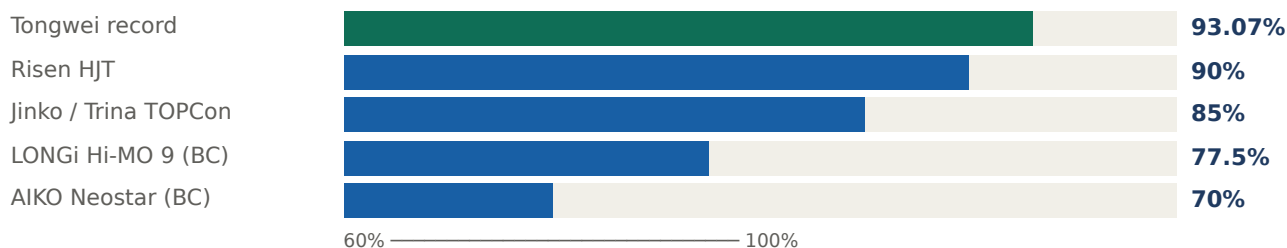
- **The record.** A 770 W TOPCon panel with a bifaciality of **93.07%**, verified by TÜV Rheinland: the back produces 93% of what the front produces from the same light. The cell inside reaches 94.3%.
- **Performance.** 24.8% front efficiency, and it loses only 0.26% of its power per °C of heat.
- **How.** A new “sunken pyramid” texture on the back of the cell and an improved “zebra-crossing” passivating contact let more light in through the rear and collect it with less loss.
- **Fast progress.** Up from Tongwei's own 91.7% one year earlier. Tongwei estimates about €180,000 of extra revenue a year for a 100 MW solar farm in Hamburg.
- **Not on sale yet.** No mass-production date has been given. In 2025 Tongwei called 90% module bifaciality in mass production “a big challenge”, one to two years away.

How it compares with bifacial panels worldwide

Panel	Technology	Bifaciality	Front efficiency	Heat loss per °C	Status
Tongwei 770 W (TNC 3.0)	TOPCon	93.07%	24.8%	−0.26%	World record, not yet on sale
Tongwei 722 W (2025)	TOPCon	91.7%	—	—	Previous record
Risen Hyper-ion Pro 740 W	Heterojunction (HJT)	90%	24.8%	−0.24%	Mass production
JinkoSolar Tiger Neo 3.0, 650–670 W	TOPCon	85% (up to 90%)	24.8%	−0.26%	On sale
Trina Vertex N 670 W (2026)	TOPCon	≈ 85%	up to 24.8%	−0.26%	On sale
LONGi Hi-MO 9, 670 W	Back contact (HPBC 2.0)	75–80%	24.8%	—	On sale
AIKO Neostar 2S / 2P (glass-glass)	Back contact (ABC)	70%	up to 24.2%	−0.26%	On sale
LONGi Hi-MO X10, 650 W	Back contact (HPBC 2.0)	Monofacial	24.1%	−0.26%	On sale, our rooftop pick



Bifaciality: how much the back produces compared with the front



What 93% is worth on a real site

Site	Light reaching the back	Extra energy, 85% panel	Extra energy, 93% panel
Normal roof, panels close to the sheet	≈ 0-2%	≈ 1%	≈ 1%
Carport or A-frame over concrete	≈ 10%	+8.5%	+9.3%
Ground mount over gravel or a white surface	≈ 20%	+17%	+18.6%

What it means in Thailand

- **Rooftops:** the back of the panel sits in shade, so bifaciality adds almost nothing. Single-sided back-contact panels such as the LONGi Hi-MO X10 still give the most power per square metre of roof.
- **Carports, A-frames and ground mounts:** this is where the record matters. A 93% panel gives roughly 1-2 points more energy than today's best 85% TOPCon panels, more over white or light-coloured ground.
- **Heat:** all of these panels lose 0.24-0.26% per °C, far better than older panels at 0.35-0.40%, which counts on a hot Thai roof.
- **Buying advice:** until 93% panels are on sale, choose high-bifaciality TOPCon or HJT panels (85-90%) for open structures, and back-contact panels for rooftops. See our 650-670 W panel comparison on this page.

Sources: pv magazine, "Tongwei claims record-breaking 93.07% bifaciality factor for 770 W solar module", 17 July 2026 (record figures, credit to pv magazine and Tongwei); pv magazine India, Risen 740 W HJT (July 2025); JinkoSolar Tiger Neo 3.0 press release; pv magazine, Trina 670 W TOPCon (24 June 2026); TaiyangNews, LONGi back-contact bifaciality; Portlandia Electric, AIKO Neostar guide. Extra-energy figures are Solar ESS estimates (extra energy ≈ bifaciality × share of light reaching the back). October 2026.