

Maximum efficiency of solar panels

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Panels built using back-contact (IBC) cells are currently the most efficient (up to 24.1%) due to the high purity N-type silicon substrate and no losses from busbar shading. However, panels developed using the...

Key takeaways about solar panel efficiency

Today, the majority of commercially available solar panels have efficiency ratings between 15% and 20%, which means they can convert 15% to 20% of the available sunlight into energy. The most efficient panels today...

The solar cell type, design, and configuration all impact panel efficiency, with the N-type back-contact (IBC) cells being the most efficient.

Jason Svarc is an accredited solar and battery specialist who has been designing and installing solar and battery systems for over a decade. He is also a qualified engineer and taught the off-grid solar design course at Swinburne University (Tafe). Having designed and commissioned hundreds of solar systems for households and businesses, he has gained vast experience and knowledge of what is required to build quality, reliable, high-performance solar power systems.

Next generation tandem solar panel achieves 25% efficiency, delivering significant breakthrough to accelerate the energy transition.

Oxford PV, a pioneer in next-generation solar technology, has set a new record for the world's most efficient solar panel, marking a crucial milestone in the clean energy transition.

Produced in collaboration with the Fraunhofer Institute for Solar Energy Systems, the panel achieved a record 25% conversion efficiency, a significant increase on the more typical 21-23% efficiency of commercial modules.

With solar power accounting for three-quarters of renewable capacity additions worldwide in 2023¹, increasing the efficiency of solar panels has transformative potential in the drive towards net zero and an all-electric future. As the installation of solar power continues to gather pace, more efficient solar panels will generate more power over the same area, reducing the cost of electricity and further accelerating the adoption of clean energy.

Oxford PV, a spin-out of the University of Oxford, is a world leader in the development of perovskite-on-silicon tandem solar cells, which have a theoretical maximum efficiency of over 43%, compared to less than 30% for silicon solar cells.



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Chris Case, Chief Technology Officer, Oxford PV, said: "Our record-breaking solar panels demonstrate that we are on the cusp of the next solar revolution, which will be delivered, in part, by our tandem cell technology.

"Solar energy is currently among the most cost-effective and sustainable energy sources. Our continuous advancements in technology will further enhance module efficiency - producing more electricity from the same area - and extending their use to all market sectors from residential, commercial through to utility scale.

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