



New photovoltaic panels without silver wires





Overview

A team of researchers and industry partners are developing copper contacts for photovoltaic panels to replace the currently used silver contacts. Copper is cheaper and more abundant than silver, and it will lower both the cost of electricity and the environmental impact of solar. A pioneer in this field, the CEA at INES has combined various innovations in metallisation and interconnection to reduce Ag consumption to 14mg/Wp while maintaining performance and reliability. The photovoltaic industry is actively seeking to reduce its dependence on silver, an essential but. Swiss-British university spinoff, GraphEnergyTech, is developing graphene electrode technology to replace silver and other metals traditionally used in solar cell manufacturing. This Premium article, which was one of the most read Premium articles in 2025, has been made accessible/free to all to offer a glimpse of our Premium and PV Tech Power coverage.



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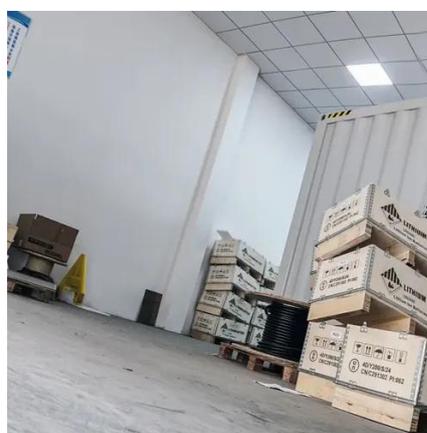


Replacing silver in PV manufacturing with new graphene electrode

Swiss-British university spinoff, GraphEnergyTech, is developing graphene electrode technology to replace silver and other metals traditionally used in solar cell manufacturing.

Silver Recovery from End-of-Life Photovoltaic Panels Based

This study investigates the MFC technology as an alternative method for valuable metal recovery from the chemical extract of PV panels. Moreover, metal recovery from the chemical extract ...



Photovoltaics, using ever less silver in manufacturing

The photovoltaic industry is actively seeking to reduce its dependence on silver, an essential but expensive material in the manufacture of photovoltaic panels. The increase in ...

Sticky Solar releases alternative to silver in solar panels

Sticky solar power offers an alternative to silver in solar panels. With a new type of solar stringer machine we lower the amount of silver used in photovoltaic panels by 60%.



[Silver-Free Solar Panel Technology, Pebblex](#)

By eliminating the need for silver in solar panels, the risk associated with price volatility and potential future shortages of the metal is reduced.



[Lowering Solar Cell Costs: The Shift from Silver to Copper](#)

Explore how researchers are replacing silver with copper in solar cells to reduce production costs and enhance sustainability. Discover the implications for solar panel manufacturers ...



[copper, Silver, and Gold in Solar Panels \(Efficient Or Waste\)](#)

This study reviews recycling methods for solar panel wastes, with a special focus on silver recovery. The operational expenses of material recovery processes must be balanced against the ...

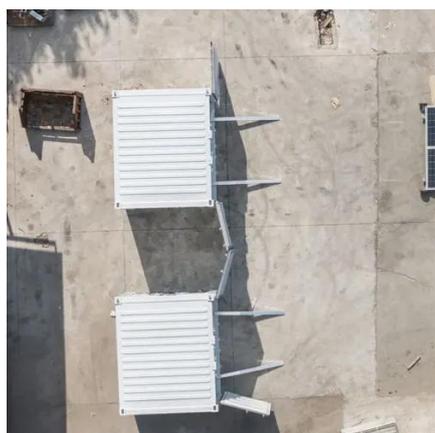


[Could new cell manufacturing processes](#)



replace silver?

While the industry has historically struggled to find a material that can replace the efficacy of silver, last month, Chinese solar manufacturer AIKO announced that it has started using ...

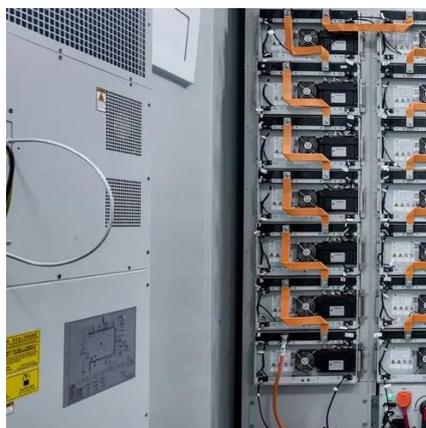


copper, Silver, and Gold in Solar Panels (Efficient Or Waste)

Are There Any Efficient Solar Panels Without Silver? With a 25.54 percent efficiency, an Australian solar business has built the world's most efficient commercial-sized solar cell, breaking the ...

Researchers will lower cost, energy usage, and environmental impact ...

A team of researchers and industry partners are developing copper contacts for photovoltaic panels to replace the currently used silver contacts. Copper is cheaper and more ...



Unlocking silver from end-of-life photovoltaic panels: A concise review

This study reviews recycling methods for solar panel wastes, with a special focus on silver recovery. The operational expenses of material recovery processes must be balanced against the ...



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