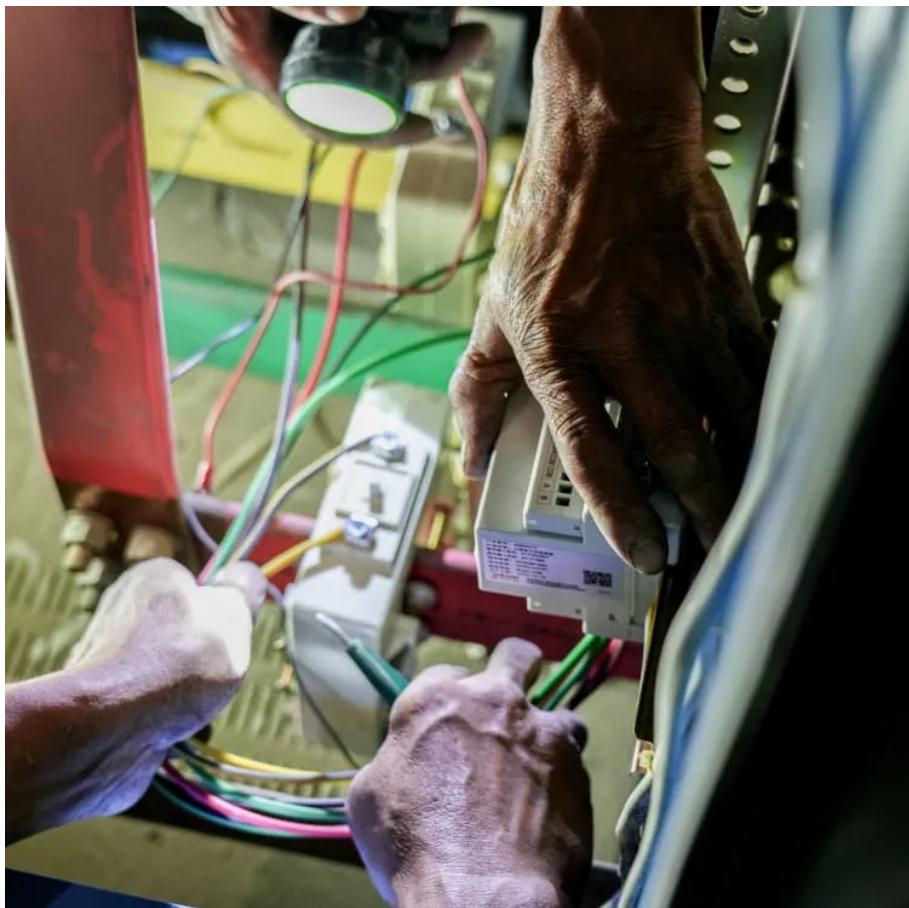




MODERNIZATION SOLAR

# Service life of thin-film solar modules





## Overview

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Do thin film solar cells have a life cycle assessment?

The main objective of this review is to evaluate current Life Cycle Assessment (LCA) studies conducted on thin film solar cells, highlighting the key parameters considered including life cycle stages, impact categories, and geographical locations.

What are thin-film solar modules?

Thin-film solar modules transform the renewable energy landscape with their lightweight design, flexibility, and cost-effective production. Unlike traditional silicon-based photovoltaics, thin-film technology enables solar energy harvesting on unconventional surfaces, from building facades to wearable electronics.

Are thin-film solar modules the future of photovoltaic technology?

Thin-film solar modules are rapidly advancing in photovoltaic technology, with significant improvements in efficiency, flexibility, and application across various sectors. Ongoing efforts to boost durability and scalability are overcoming past challenges, encouraging broader adoption.

How much energy does a thin film solar cell use?

Review of cumulative energy demand (CED) during the life cycle for various thin-film solar cell technologies in comparison to conventional Si-Based technologies. Among the twelve types of thin film solar cell technologies, only GaAs required more energy than mono-Si (4056.5 MJ/m<sup>2</sup>) and multi-Si (3924.5 MJ/m<sup>2</sup>).



## Service life of thin-film solar modules



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