



Photovoltaic panels and tempered glass breakage rate





Overview

According to a poster presented in March 2023, low-energy glass fracture occurred at an average rate of roughly 14 modules per month. 5%), as detailed in Figure 2. We have seen cases of the glass in solar panels (photovoltaic [PV] modules) breaking differently, and more often, than it did 5 years ago. Several changes have increased the risk of glass breakage. In a feature article for PV Tech Power (Q3 2025), David Devir, principal engineer for VDE Americas, looks at the origins of today's supersized PV module glass problem and considers. In cases seen by Jörg Althaus, director of engineering and quality assurance at Clean Energy Associates (CEA), it starts with a few panels – then dozens, hundreds, even thousands. From pv magazine 6/25 Clean Energy Associates has investigated glass breakages at utility-scale solar sites across. Modern PV modules often use thinner glass to reduce weight and material costs which lead to glass breakage. Glass breakage is a growing concern for the solar power plant operators. The hail impact resistance test, which is part of Kiwa-PVEL's PQP testing protocol, highlighted. Failure rates as defined by a decrease in power below 80% of the original output (blue circles) and linear degradation greater than 0., “Future-proofing photovoltaics module.



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[Growing Panes: Investigating the PV Technology Trends ...](#)

Identify concurrent module changes that may be contributing to increased early failure due to glass breakage, explain the trends, and discuss their reliability implications.

Solar modules under pressure: The growing risk of spontaneous glass

Once considered isolated incidents, spontaneous glass breakages in solar modules are becoming more frequent, highlighting the limits of some manufacturing choices and the need for ...



[Understanding and preventing PV module glass fracture](#)

Scientists and researchers at NREL, including Timothy Silverman and Elizabeth Palmiotti, are investigating early failure in dual-glass PV modules. Dual-glass PV modules are ...

[Tough Break: Many Factors Make Glass Breakage More Likely](#)

Several changes have increased the risk of glass breakage. But there is probably no single change that is responsible for the problem. Here, we summarize our observations and thoughts on PV glass ...



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[How to mitigate solar glass breakage - pv magazine USA](#)

Solar modules are getting bigger, thinner, and more powerful. But from Texas to Thailand, the same problem is appearing: broken glass. Not from hail or mishandling, but from cracks that ...

[Solar Glass Durability and Failure Modes -- RETC, LLC](#)

If you do not have a good temper on the glass, it is relatively easier for the glass to break. In other words, as solar glass gets thinner, it takes fewer defects to cause a strength-limiting flaw in ...



NREL finds thinner and taller modules contribute to breakages

The growing trend of building larger and thinner PV modules has contributed to an increased number of breaks in module glass at utility-scale solar projects, although there is no single

[Breaking point: understanding and](#)



preventing PV module ...

module glass breakage has long been an observed failure mode in fielded solar projects. In recent years, however, the nature and causes of solar glass fracture have changed in alarming and ...



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Understanding and preventing PV module glass fracture

Dual-glass PV modules are experiencing low-energy glass fracture under expected conditions of use at an alarming rate. David Devir of VDE Americas looks at the origins of today's

Top 5: Factors Responsible for Glass Breakage in Solar Modules

Without proper reinforcement, larger panels can become structurally weak, leading to higher breakage rates. Modules that are mounted incorrectly or have insufficient support points are ...





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