Spearheading efficiency in the renewable energy sector

As the demand for cleaner, more efficient energy continues to grow, new solar panels from Recom Technologies represent a bold step forward in solar technology. Combining advanced materials with innovative design, these high-performance modules deliver exceptional power output and reliability.

The Lion Series solar panels represent a genuine stride forward in the solar energy technology industry, paving the way for a new era of enhanced power generation and efficiency. These meticulously engineered panels have achieved a remarkable power output of 750 watts per module, coupled with an impressive efficiency rating of 24.1%.

It's worth noting that the concept of bifacial solar cells, including those utilizing Heterojunction Technology (HJT), isn't entirely new. The initial theoretical groundwork was laid out in a Japanese patent dating back to 1960. However, their widespread commercialization and integration into mainstream energy solutions are relatively recent developments.

However, HJT technology has witnessed significant growth in adoption and refinement in recent years and the Lion Series panels stand as a testament to this progress. This advancement offers substantial improvements in energy harvesting capabilities for both domestic and commercial applications within the evolving landscape of renewable energy.

The creation of the panels began in a considered and strategic combination of well-established photovoltaic technologies. For a considerable period, crystalline silicon panels have stood as the industry benchmark, providing a reliable balance between performance metrics and economic viability.

However, thin-film technologies offer an alternative pathway, albeit with varying degrees of success when it comes to overall efficiency. The engineering theories that underpin the Lion Series have consciously sought to harness the fundamental strengths of both these foundational methodologies.

Through a precise and sophisticated process of combining crystalline silicon wafers with ultra-thin layers of amorphous silicon, a highly effective HJT cell structure has been realised. This innovative hybrid design enables the panels to absorb energy across a broader area. This enhanced light absorption translates directly into an approximate 20% uplift in power generation, particularly under conditions of lower light source when compared to their more conventional counterparts.

This significant boost in performance greatly enhances the economic viability of solar installations, particularly in regions with less consistent or lower intensity sunlight.

The technological leaps that define the panels are the direct result of thorough research within material science. A crucial innovation is the strategic use of N-type silicon, which is doped with phosphorus, in contrast to the more commonly employed boron-doped P-type silicon.

This seemingly subtle yet significant material selection plays a vital role in effectively mitigating several long-standing performance degradation issues that have historically caused difficulties with photovoltaic systems. Issues such as light-induced degradation (LID), potential-induced degradation (PID), light and elevated temperature-induced degradation (LeTID) have been greatly minimised through the specific material composition and the overall structural design of the panels.

Consequently, the long-term performance projections for these advanced modules demonstrate a marked improvement when compared with conventional panels. While typical solar panels might experience a reduction in their power output to around 80% of their initial rating after an operational period of 25 years, rigorous testing indicates that the Lion Series panels are capable of retaining an impressive 87.4% of their original power generation capacity even after a more extended 30 year operational lifespan.

The impressive durability and long-term performance of the panels are underscored by a robust 30 year product warranty. This extended coverage reflects strong confidence in the technology's reliability and significantly boosts the financial appeal of large-scale solar investments by offering greater assurance of long-term returns.

The practical results of these high efficiency solar panels are becoming increasingly apparent across the energy infrastructure of Europe. A recently commissioned 50 megawatt solar farm situated in a region of southern Spain, equipped with Lion Series technology, now provides sufficient electrical power to meet the needs of approximately 15,000 households.

Furthermore, this deployment has led to a substantial reduction in land usage, estimated at approximately 30% compared to similar installations using earlier generation panels. This smaller footprint is especially valuable in densely populated areas or regions where available land is limited.

Homeowners in countries like Germany are finding that the Lion Series' higher power output per module effectively overcomes the common challenge of limited roof space. This allows them to generate more electricity with fewer panels, supporting greater energy independence and maximizing the value of their available space.

Needing fewer panels to achieve the same system capacity also brings practical benefits; faster installation, lower labor costs and a simpler overall setup. This streamlined approach makes solar energy more accessible and attractive across a broader range of applications.

In a global context, the unique features of the Lion Series panels offer significant potential to address energy access challenges in regions with high solar irradiance but limited or underdeveloped grid infrastructure.

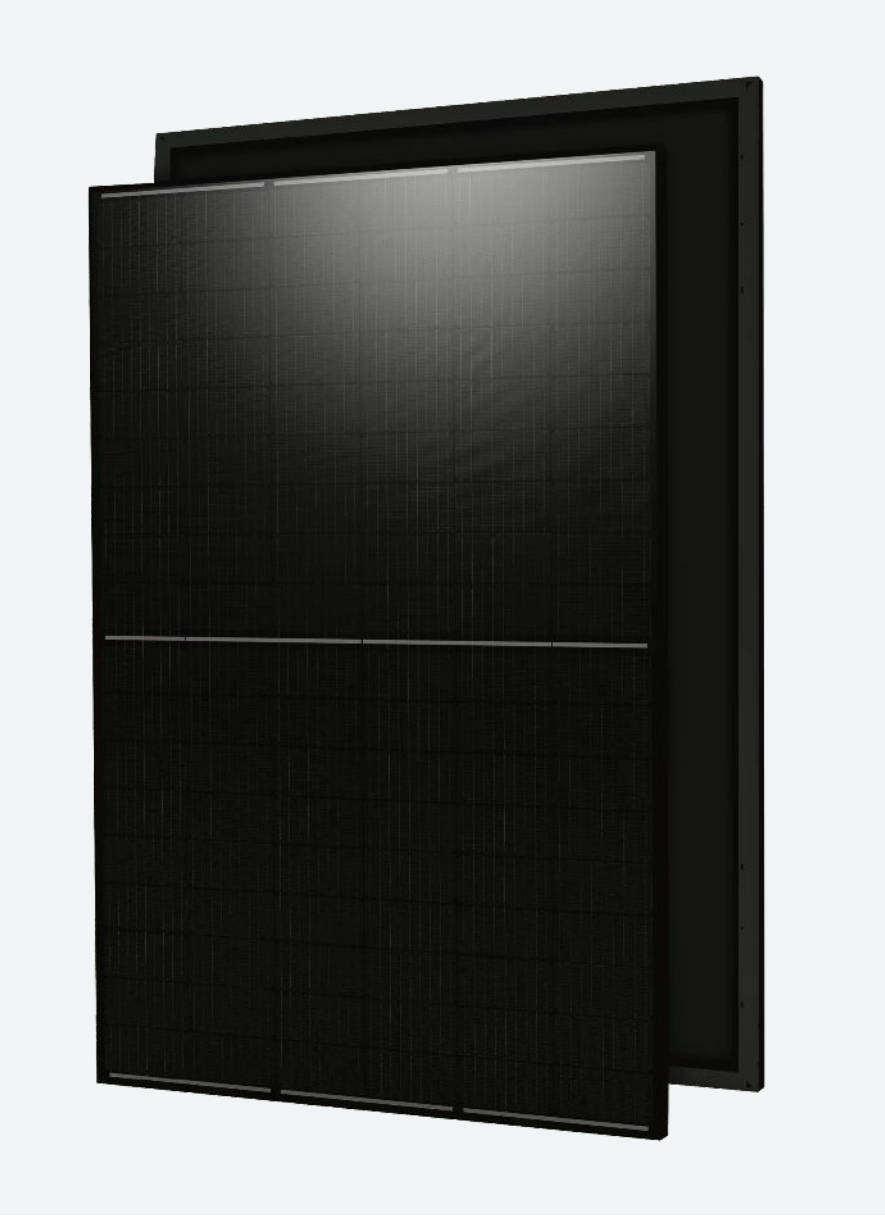
Notably, certain bifacial models within the Lion Series product line offer an enhanced energy yield by their ability to capture not only direct sunlight but also light that is reflected from the ground surface or surrounding environment. This feature is particularly advantageous in environments with a high reflectivity, such as snow covered landscapes or light-coloured desert terrains, where a significant amount of sunlight is reflected upward.

The panels are not just a product; they represent a commitment to innovation and a tangible contribution to a cleaner, more efficient energy landscape for generations to come.

The robust design and the broad and thorough testing protocols that the series of panels undergo emphasise their durability when subjected to extreme environmental conditions. This ensures that they can deliver reliable and consistent performance across a diverse spectrum of geographical locations.

This is crucial for the widespread and dependable deployment of solar energy solutions in various climates and terrains around the world.

While the current peak efficiency of 24.1% achieved by the panels undoubtedly represents a significant and commendable achievement in the field, ongoing research and development efforts continue to actively explore and identify avenues for further enhancement and optimisation.



The development of innovative tandem cell technologies, such as structures that combine the strengths of perovskite and silicon materials, has already demonstrated remarkable laboratory efficiencies exceeding the 30% threshold. This indicates a promising trajectory towards the future development of even more powerful and efficient photovoltaic modules.

Furthermore, the combined integration of these high efficiency solar generation technologies with parallel advancements in energy storage solutions presents compelling and exciting opportunities for achieving enhanced energy autonomy across a diverse range of deployment options, from individual households to large-scale utility grids.

The advancements used by the Lion Series panels signify a critical and meaningful step in the continuous evolution of renewable energy technologies, driving down the overall costs of solar electricity generation, increasing the performance and reliability of solar installations and ultimately facilitating a more sustainable and environmentally responsible energy future for all.

The panels are not just a product; they represent a commitment to innovation and a tangible contribution to a cleaner, more efficient energy landscape for generations to come. Their impact will be felt not only in reduced carbon emissions but also in greater energy security and affordability for communities around the globe.

www.recom-tech.co.uk/

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