Residential Solar Hybrid Inverter Market Assessment, By Type [Central Inverters, String Inverters, Others], By Connection [On Grid, Off Grid], By Phase [Single Phase, Three Phase, Others], By Region, Opportunities and Forecast, 2017-2031F

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Report description:

Global residential solar hybrid inverter market size was valued at USD 4.55 billion in 2023, which is expected to reach USD 8.56 billion in 2031, with a CAGR of 8.22% for the forecasted period between 2024 and 2030. Rapid technological advancements in hybrid inverters, such as improved efficiency, enhanced grid integration capabilities, and smart energy management features, are driving the growth of the residential solar hybrid inverter market, which is projected to experience significant growth over the next few years.

Residential solar hybrid inverters offer efficient energy utilization seamlessly integrating solar and grid power for homes. Their key benefits include reduced electricity bills, increased energy independence, and environmental sustainability. Moreover, these inverters help to reduce reliance on the grid, lower carbon footprint, and enhance power generation. The growth of the residential solar hybrid inverter market is driven by rapid technological advancements, increasing investments in solar power systems, favorable government policies and initiatives, the growing adoption of renewable energy sources, and the prevalence of efficient energy management systems.

In September 2023, Hoymiles, a prominent provider of smart energy solutions and microinverters, launched its latest high-capacity single-phase HYS-LV-EUG2 hybrid inverter series in South Africa. It has proliferated the company's energy storage portfolio, aiming to ensure a dependable solar power supply for South African households while promoting energy independence. With a power class of up to 12.0 kW, these hybrid inverters are well-suited for homes with high-power appliances, contributing to reliable and efficient solar energy utilization in the region.

Emergence of Central Inverters is Proliferating Market Growth

Central inverters with their enhanced efficiency and power management capabilities play a pivotal role in optimizing solar energy utilization thereby accelerating the market growth. Their integration in residential solar systems enhances reliability and performance fostering the adoption of solar hybrid inverters. Moreover, the trend is driven by the increasing demand for

sustainable energy solutions driving innovation in the residential solar sector, contributing to the market's expansion.
In July 2023, the Proteus central PV inverter, or Proteus PCS-E, was introduced by Gamesa Electric. It is said to be a powerful hybrid inverter available in the market, as it has the ability to operate massive energy storage systems. The device is scalable and has a 99% efficiency rating. It can discharge 5.6 MVA of batteries at 40 C and 1,300 V of voltage.

String Inverters are Playing a Crucial Role in Market Enhancement

The market is experiencing accelerated growth due to the widespread adoption of string inverters. These inverters enhance efficiency of solar power systems by optimizing energy production and distribution. Their modular design allows scalability and flexibility in residential setups thereby contributing to increased solar utilization. Moreover, the rise in eco conscious consumers seeking sustainable energy solutions further drives the demand for string inverters, amplifying their role in shaping the growth trajectory of the residential solar hybrid inverter market.
In December 2023, Sungrow introduced the latest hybrid string inverters known as the SG5.0RS-L, featuring a high input DC current carrying capability of 16 A per string. The inverter can is strongly capable with higher-capacity large format modules. In addition to ensuring that PV modules operate to their full potential, Sungrow's integrated PowerMax global MPPT scanning and PID Zero features maintaining the system's optimal power generation status even when it is obscured.

Increasing Utilization of Hybrid Inverters for Rooftop PV Applications

The continuous surge in the adoption rate of hybrid inverters in residential rooftop PV systems is fueling the expansion of the market. These inverters efficiently manage energy from both solar panels and grid offering enhanced flexibility and reliability. The integration of advanced technology enables homeowners to optimize energy consumption and storage. As the demand for sustainable energy solution rises, the residential solar hybrid inverter sector experiences increased opportunities for development and market expansion.
In June 2023, SMA created new single-phase hybrid inverters for residential rooftop applications. The German inverter unveiled the new rangeThe German inverter maker unveiled the new range at Intersolar Europe in Munich, Germany. The Sunny Boy Smart Energy is available in four configurations, with power outputs ranging from 3.6 kW to 6 kW. The inverters are 500 mm x 586 mm x 236 mm in size and 17.5 kg in weight. The transformer-less inverters include three MPPT points with efficiency ratings of up to 97.5% and 96.8% respectively.

Asia-Pacific Spearheaded the Market Growth Comprehensively

Asia-Pacific leads the residential solar hybrid inverters market due to several factors. Rapid urbanization, increasing power demand, and a growing awareness of environmental issues drive the adoption of solar solutions. Government policies promoting renewable energy, coupled with incentives and subsidies, create a favorable environment. Additionally, substantial technological advancements, declining solar component cost, and rising focus on sustainable living contribute to the region's dominance in embracing residential solar hybrid inverters.
In June 2023, Auxsol, a subsidiary of China's Aux Group, developed a new series of three-phase hybrid inverters for residential rooftop PV projects. The ASG-TL series has five versions, with power outputs ranging from 5 kW to 12 kW. The transformer-less inverters have efficiency ratings of 97.8% and European efficiency ratings of 97% and feature two maximum power point tracking (MPPT) points. These inverters can reduce electricity bills through power output limitation, peak and valley arbitrage mode, and improving self-consumption.

Government Initiatives

Government initiatives play a pivotal role in driving the residential solar hybrid inverters market. Incentives, subsidies, and policy support encourage adoption while reducing costs and promoting sustainable energy practices. These initiatives contribute to energy independence, environmental conservation, and economic growth. Additionally regulatory frameworks often mandate renewable energy integration further boosting the demand for residential solar hybrid inverters and fostering transition to clean and more sustainable power sources.
In August 2023, the chief minister of Meghalaya, India, inaugurated Chief Minister's Solar Mission with the goal of using hybrid solar inverter solution. The hybrid solar inverter can be conveniently charged using both solar electricity and a traditional domestic power connection. When there is no enough sunlight, the device will primarily charge using solar power and can convert into a regular grid connectivity. With latest technology, charging is possible on overcast days.

Impact of COVID-19

The market underwent significant shifts due to COVID-19. Pre-COVID, the market was on a growth trajectory driven by increasing environmental consciousness and government incentives. However, the pandemic disrupted supply chains and lead to economic uncertainties impacting installations of hybrid residential solar inverters. Despite initial setbacks, post-COVID scenario reveals resilience in the market. Accelerating adoption of renewable energy, rising electricity prices, and energy focus on self-sufficiency are amplifying the market demand. Additionally, governments worldwide are prioritizing sustainable initiatives to support the market recovery. So, it can be elucidated that the pandemic acted as a catalyst for evaluating energy sources driving a paradigm shift towards residential solar solutions with hybrid inverters playing pivotal role ensuring reliable and efficient power utilization.
Key Players Landscape and Outlook
The residential solar hybrid inverter sector is experiencing a surge in innovation, with major companies making substantial investments in central and string inverters. These firms are pursuing acquisitions, partnerships, and collaborations to expand their market presence and profitability, driving rapid advancements in the industry. The trend is evident in the development of hybrid solar power inverters, which combine efficiency with innovation to meet the evolving demands of homeowners globally.
In March 2023, at Solar Solutions International, held at the Expo Haarlemmermeer, the Netherlands, Delta showcased its full range of Flex Series string inverters, suitable for residential, commercial, and industrial rooftop PV installations. Additionally, Delta demonstrated its PV inverter monitoring solution and integrated Bluetooth solution that enabled smartphones to be connected to the inverter.

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*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work.

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