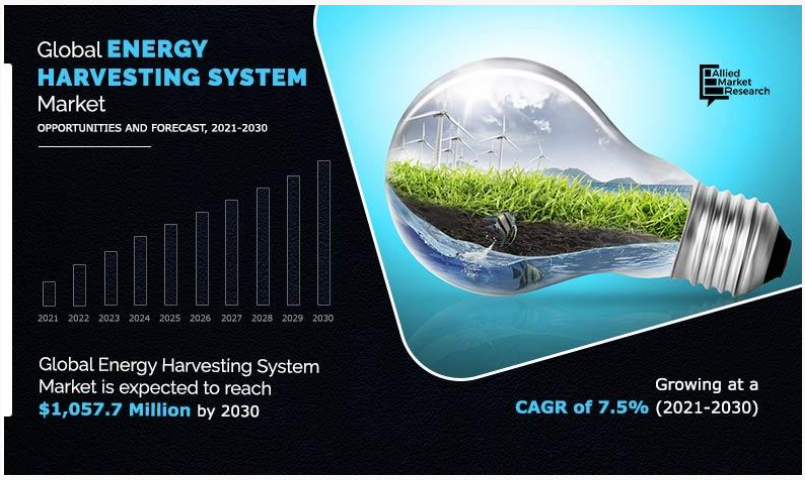
Energy Harvesting System Market: Driving Sustainability Through Technological Advancements

Sustainable Energy Solutions: Exploring the Expanding Market for Energy Harvesting Systems



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According to a new report published by Allied Market Research, the global energy harvesting system market size was valued at $511.6 million in 2020, and is projected to reach $1,057.7 million by 2030, growing at a CAGR of 7.5% from 2021 to 2030.

Energy harvesting (energy scavenging) is the method of conversion of ambient energy in environment into useable electrical energy. Systems that are used for this purpose can be termed as energy harvesting system.

> Rise in demand for light energy harvesting and escalating demand for vibration energy harvesting are the driving factors."
>
> *Allied Market Research*

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The Asia-Pacific energy harvesting system market is projected to grow at the highest CAGR during the forecast period and accounted for 23.4% energy harvesting system market share in 2020. The region accounts for more than half of the global energy consumption, owing to rise in industrialization as well increase in population.

Renewable energy has grown considerably in countries such as China and India. Thus, there is a constant rise in use of energy harvesting systems in this region.

Europe garnered the highest share of 37.3% in 2020, in terms of revenue, growing at a CAGR of 7.3%

Key players operating in the global energy harvesting system industry include Cymbet Corporation, Cedrat Technologies SA, Tekceleo, ZF Friedrichshafen AG, Physik Instrumente (PI) GmbH & Co. KG, Advanced Linear Devices Inc., Mide Technology Corporation, Powercast, Xidas, and Analog Devices.

Rise in demand for energy has increased dependency on fossil fuels for production of energy. However, use of fossil fuel for production of energy leads to high carbon dioxide emission that further leads to environmental degradation.

There is development of energy harvesting techniques from building and urban infrastructure mainly roads. Annually large amount of energy in form of kinetic energy is wasted on roads.

There are several developments in energy harvesting system such as use of solar panels, piezoelectric devices, and thermoelectric & electromagnetic harvesters in order to harvest the energy from roads. This factor is predicted to augment growth of the global market.

The transportation sector is the largest consumer of energy. For instance, the transportation sector in the UK consumed about 56.5 million tons of oil out of which more than 97% was resourced from oil industry.

Consumption of such large amount of energy out of which some part of energy is be wasted in the form of vibration and heat. Thus, a moving truck in one lane with an average of 600 V/h of traffic can generate 150 kWh energy in one-kilometer range. This energy can be used to deform, vibrate, and warm up the road surface and can be a good source of energy for harvesting and converting.

Thus, implementation of energy harvesting techniques with proper use of systems is predicted to offer lucrative growth opportunities in the future.

There are several disadvantages associated with energy harvesting techniques. For instance, solar energy that is to be harvested cannot be further used directly to power sensors and if powered these sensors require overcharge protection. It further increases production cost. In addition, solar form of energy is unpredictable is predicted to hamper the market growth.

By technology, the market is segregated into light energy harvesting, vibration energy harvesting,

radio frequency energy harvesting, and thermal energy harvesting.

The light energy harvesting segment dominated the global market, in terms of revenue in 2020, with over one-third of the total market share, registering a CAGR of 7.9% from 2021 to 2030. There is a growth in demand for light energy harvesting, owing to large number of companies that are actively engaged in supply of solar products and solution based on solar energy for sectors such as building automation, security application, and electronics.

By application, the global market is divided into building & home automation, consumer electronics, industrial, transportation, and others.

The building & home automation segment dominated the global market, in terms of revenue in 2020, with over two-seventh of the total share, registering a CAGR of 8.1% from 2021 to 2030. Self-powered sensors can be used to control lights, HVAC system, security system, and other services. These are maintenance free and can be installed easily into different systems that further supports various applications.

By component, the global energy harvesting system market is classified into energy harvesting transducer, power management integrated circuit (PMIC), and storage system.

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The energy harvesting transducer segment dominated the global market, in terms of revenue in 2020, with over two-fifth of the total share, registering a CAGR of 7.9% from 2021 to 2030. Rise in use of electromechanical transducers for harvesting vibration energy is the key factor that propels the market growth.

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