SolarVoltis™

Roof solar/Solar Thermal Energy Collector

"Harvest heat, make power."

Technology

The technology relates to a system that harvests thermal energy from various sources (e.g., sunlight, cars, power plants, factories, and other industries) and converts it to electricity. In this system, heat energy is harvested and then stored in a storage tank, using water as an energy storage medium. Hereafter, it flows along a gradient to an energy radiator and converts a portion of the thermal energy into electrical energy through a special semiconductor array device. To ensure maximum harvesting and conversion efficiency, the system runs cycles both during the day and at night, creating a continuous supply of electricity to household appliances.

Market need

Although photovoltaic (PV) technology supports global energy demand and the quest for low-carbon emission technology, the cost of PV is still high, and the efficiencies of commercially available systems remain low (approx. 10%). Energy is also stored in expensive high-technology battery systems, while PV cells are only active during peak solar irradiation hours during daytime. Thermal harvesting systems, however, are much more efficient when it comes to collection (approx. 90%), they can be stored easily in water and are extremely cost-effective and environmentally friendly. Our developed system can harvest and store thermal energy at an extremely low cost. The stored heat is used for supplying hot water in households, while 30% of the harvested energy can be converted to electricity through specially developed semiconductor and electronics control technology.

Features

- Thermal energy is harvested from solar and other energy sources
- Thermal energy is effectively stored in special systems
- Continuous conversion cycles to electricity

Benefits

- Extremely cost-effective and sustainable
- Continuous electricity supply
- Environmentally friendly
- Limited moving parts extend the lifetime of systems
- Scaled systems are possible to supply all the energy needs of a household.

Industry
Energy

Potential Applications
- Household and small business power generation, providing both electricity and hot water from a single integrated system.
- Supplementary energy system for residential buildings to reduce reliance on grid electricity.
- Hybrid renewable installations combining thermal and photovoltaic systems for improved efficiency.
- Industrial and commercial facilities requiring low-cost waste heat recovery and electricity generation.
- Rural electrification projects offering affordable, continuous off-grid power and heat supply.

Creator
Prof Lukas Snyman

Stage of Development
Prototype

Intellectual Property
Patent Protection

Desired Relationship
Co-development Investor