

Nanotree – A Future Source of Energy

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Abstract

Nanotechnology is the word making a huge resolution in our science industry, Nanotechnology has the potential to create many new materials and devices with wide ranging applications such as in medicine, electronics, and energy production, It is a fascinating science for many scientists as it offers them many challenges, one such challenge is creating a nano leaves which will produce electricity using solar botanic methodology .This methodology has a combination of solar and other alternative sources of energy like wind and thermal as a input and produces the electricity efficiently more than the present renewable sources of energy.

This is an article on renewable energy and in particular the innovative technology of artificial trees and leaves known as bio mimicry. This theoretical approach can be made practical in the near future to serve the future power demands

Keywords: *Boiomimicry, solar botanic methodology*

1. Introduction

Nanoleaf technology is an inventive method of green energy collection, combining the conversion of light, heat and wind power. Integrated nano technologies enable the nano-leaves to convert solar radiation (light & heat) into electricity. Furthermore, the leaf petiole or the stem, and twigs comprise nano-piezovoltaic material -- these tiny generators produce electricity from movement or kinetic energy caused by wind or falling raindrops. A fundamental flaw in conventional solar cells is that electrons give too much energy by sunlight and lose that energy in heat form, as the electrons move thermally to the bottom of the conduction band. SolarBotanic "hotcarrier" solar cells would use quantum dots (i.e., nano-particles) to confine electrons long enough so that they could be extracted before their energy dissipates as heat. With this process of combining the conversion of light, heat and wind, more energy is generated, as the "hot carrier" can now be efficiently used with the implementation of thermo-voltaic cells. The design of the nanoleaves is based on the principles of photosynthesis, a natural process where plants extract the light from solar energy, and along with CO₂ from the atmosphere, convert it to starches and oxygen, the oxygen being emitted to the atmosphere. The nano leaves then connected to twigs and branches using tiny piezoelectric elements that convert the movements of the leaves caused by wind and rain into more electricity. It will be interesting to know that one tree depending on the size and location, can produce between 2000 and 12000 kWh per year [2] plus the trees provide shade and function as a windbreak.

2. Implementation of modules

1. Biomimicry

The nano leaves have been specially designed to imitate the natural process of photosynthesis. A mechanism by which, typical plants absorb the light emitted by the sun and CO₂ in the atmosphere. The artificial trees do even copy the natural re-cycling process oxygen. It is very recent that nano leaves technology started to reap even more advanced levels. It can now harvest thermal energy as well. Moreover, the leaves fixed on

artificial trees are also able to collect energy derived through movement of the wind, known as kinetic energy, which is as well converted into electrical energy.

2. Thermal Energy

This is captured through the use of thermovoltaic (TV) cells which convert thermal energy into electricity by using semiconducting materials (a material which is between a metal and an insulator; its conductivity increasing with temperature rise).

3. Light Energy

There are also tiny photovoltaic cells (PV) incorporated in the nanoleaves. These small PV cells capture the light rays emitted by the sun. The light is then converted into electricity.

4. Kinetic energy

Kinetic energy is harnessed through movement. The wind produces motion in stems and branches. This motion is collected via piezovoltaic (PZ) cells. The PZ has semi-conducting devices incorporated into the artificial structure of trees and plants. The PZ and the semiconducting devices convert typical wind energy (kinetic energy) into electricity.

3. System Analysis

The idea of Nano tree is a combination of high Tec materials brought together in a leaf design to convert all 3 energy sources; Light, Heat and Wind into electricity, our trees are a quantum source of power and an excellent electricity provider. Nano tree will be multifunctional, efficient, renewable energy systems. Within our collection, you'll find a host of special options and features designed to bring energy efficiency and beauty to your home. Nano tree will be top-quality multi energy collectors with maximum power output day and night that are installed by our contractors. The energy trees range from 2.000 to 12.000 kWh per year power output, so you can find the right tree, shrub or plants with the right features at the right price.

This unique and efficient product that will make use of natures perfect design features will be sold exclusively by and officially appointed dealers only. Products will be available in broadleaf and needle trees, shrubs, flowering plants and water based plants, each includes specific features and options for a true natural product, and are specially designed for maximum energy efficiency in every climate. Designed according to nature, that allows this product to be installed within cities, rural communities, and places of natural beauty and island communities, for use in new and existing residential projects without causing a negative im-pact. Each product with its unique features is designed to be well-matched with certain types of local scenery. Nano tree are designed and engineered for use in all areas and to withstand extreme weather conditions, they will comply with safety regulations that vary from area to area. Every nano tree is engineered for superior performance, maximum power efficiency and long-lasting beauty.

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4. Featuring of Product

ADVANTAGES:-

a) Eco – friendly :

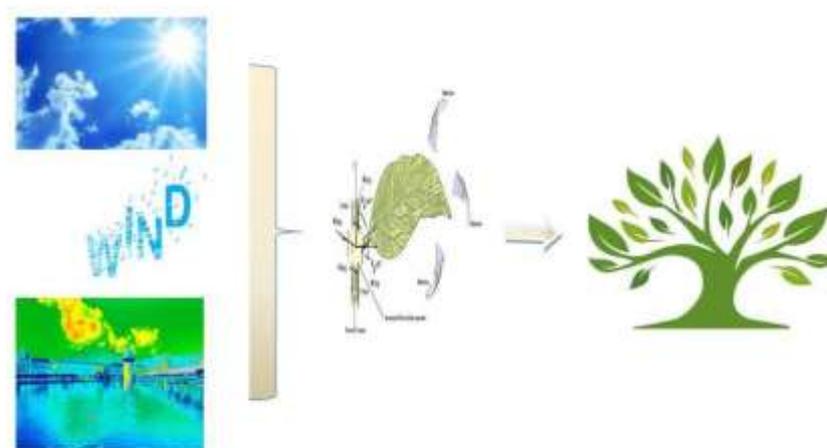
Making a truly eco – friendly product keeps both environment and human safety in mind. At a minimum, the product is non-toxic, pollution free. Other eco- friendly attributes include the use of sustainably grown or raised ingredients, produced in ways that do not deplete the ecosystem.

b) Emerging Technology :

One of the emerging nanotechnologies related to renewable energy is nano leaves and stems of artificially created trees or plants. They are an emerging form of renewable energy through collecting energy from the sun and wind and converting it to electrical energy. The leaves are distributed throughout artificial trees and plants, and when operating at optimum efficiency can supply a whole household with electricity.

4. Implementation of Proposed

Solar Botanic's Nanoleaves create electricity in three ways: Nanophotovoltaic generators in the leaf directly convert solar energy to electricity. Nanothermoelectric cells convert solar heat to electricity. Nanopiezo generators can also convert wind energy into electricity. Solar Botanic is a company that plans to introduce "artificial trees that make use of renewable energy for the sun and wind." They have created what they call "nanoleaves" that produce electricity via photovoltaic (light), thermo voltaic (heat), and piezovoltaic (wind) means. Solar Botanic is claiming that a single one of their trees, depending on size and location, can produce between 2,000 and 12,000 kWh per year, plus the trees provide shade and function as a windbreak. Their Nanoleaves, which they say they can produce in a variety of real tree leaf shapes, contain solar cells to convert the sunlight into electricity and thermovoltic elements to convert thermal radiation into electricity. the nanoleaves are then connected to the twigs and branches using tiny piezoelectric elements that convert the movements of the leaves caused by wind and rain into more electricity.



5. Conclusion

These super eco friendly synthetic trees will make use of renewable energy from the sun along with wind power, which are an effective clean and environmentally sound medium of gathering solar radiation and wind energy. Now, before I go any further, I can't help but express my humble opinion that fake plastic trees are not the best way to transform our urban landscapes. Solar nanotechnology has wide-ranging potential. Using such technology, power producing solar products could be applied to just about any surface downtown or anywhere.

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