Renewable Energy Sources from Nano Leaf

Mr.S.Sivasamuthira Pandian[1], Dr.A.Gnana Saravanan[2], Mr.K.Narayanan[3]
[1, 2, 3] Department of Electrical and Electronics Engineering
[1, 2] Francis Xavier Engineering College, Tirunelveli
[3] SCAD college of Engineering and Technology

Abstract- *The electricity requirements of the world including India are increasing at alarming rate and the power demand has been running ahead of supply. It is also now widely recognized that the fossil fuels (i.e., coal, petroleum and natural gas) and other conventional resources, presently being used for generation of electrical energy, may not be either sufficient or suitable to keep place with ever increasing demand of the electrical energy of the world. Also generation of electrical power by coal based steam power plant or nuclear power plants causes pollution, which is likely to be more acute in future due to large generating capacity on one side and greater awareness of the people in this respect.*
The recent severe energy crisis has forced the world to develop new and alternative methods of power generation, which could not be adopted so far due to various reasons. The magneto-hydro-dynamic (MHD) power generation is one of the examples of a new unique method of power generation. The other non-conventional methods of power generation may be such as solar cells, fuel cells, thermo-electric generator, thermionic converter, solar power generation, wind power generation, geo-thermal energy generation, tidal power generation etc. A relatively modern technology uses nanoleaves attached to artificial trees and plants to capture solar energy. These exclusively designed nanoleaves contain tiny photovoltaic and thermo voltaic modules that gather heat and light from solar energy, converting this to electrical energy.Solar power and wind power is seen by many as a soln. to the world's energy problemsThis paper elucidates about Different Energy sources, why we are going for non-conventional energy sources.

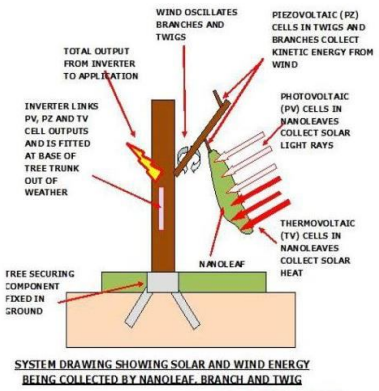
Keywords- Renewable energy, non renewable energy, solar power, nano leaf, ecofriendly.

I. 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-piezo voltaic 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. Solar Botanic "hot carrier" 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 nano leaves 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. However, nano leaves development has gone a step further, in that they are capable of harvesting the thermal and light energy from the sun‟s energy and convert it to electricity. The stems of the nano leaves are designed to collect kinetic energy from the wind, which they also convert to electrical energy.

II. METHODOLOGY OF NANO LEAF

Instead of causing problems for the environment with the abundance of carbon footprint, we should come up with some practical solution to clean up the mess and that is why clean energy sources have become appealing. Solar power keeps the surroundings cleaner and healthier. Photovoltaic cells that harness the solar power is an attractive option for capturing light and generating electric power. Various designers have implemented this PV technology in their designs and have created solar trees that amount to generation of cleaner electricity in an eco-friendly way



SYSTEM DRAWING SHOWING SOLAR AND WIND ENERGY BEING COLLECTED BY NANOLEAF, BRANCH AND TWIG

Solar nano technology is used to collect thermal, light, and wind energy, the leaves and stems incorporate minuscule cells.

III. THERMAL ENERGY

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

IV. LIGHT ENERGY

Light energy is captured by the use of photovoltaic cells (PV), which convert the energy inherent in solar light rays into electricity.

V. KINETIC ENERGY

The kinetic energy contained in wind causes the nano leaf stems, twigs, and branches to oscillate. This motion is captured by piezovoltaic (PZ) cells using a semi-conductor device embedded in these components, converting the kinetic energy of the wind to electrical energy.

VI. TIO2

The nano leaves are designed by using the tio2 nano particles because its very effective power generating nano particles and cost is very less so In cosmetic and skin care products, titanium dioxide is used as a pigment, sunscreen and a thickener. It is also used as a tattoo pigment and

in styptic pencils. Titanium dioxide is produced in varying particle sizes, oil and water dispersible, and with varying coatings for the cosmetic industry. This pigment is used extensively in plastics and other applications for its UV resistant properties where it acts as a UV absorber, efficiently transforming destructive UV light energy into heat. Titanium dioxide is found in almost every sunscreen with a physical blocker because of its high refractive index, its strong UV light absorbing capabilities and its resistance to discolouration under ultraviolet light. This advantage enhances its stability and ability to protect the skin from ultraviolet light. Sunscreens designed for infants or people with sensitive skin are often based on titanium dioxide and/or zinc oxide, as these mineral UV blockers are believed to cause less skin irritation than other UV absorbing chemicals. The titanium dioxide particles used in sunscreens have to be coated with silica or alumina, because titanium dioxide creates radicals in the photo catalytic reaction. These radicals are carcinogenic, and could damage the skin.

VII. LATEST NANOTECHNOLOGY FOR OUR LEAVES

The Nano tree is a combination of high Tec materialsbrought together in a leaf design to convert all 3 energysources; 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. 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.

VIII. NANO-LEAVES

Sun, wind, water, earth and life touch our living senses immediately always, everywhere and without any intervention of reason. They simply are there in their unmatched variety, moving us, our moods, memories, imaginations, intensions and plans. To capitalize on the wealth of designs and processes found in nature, engineering and

technology gave us the ingredients, creative thinking, and unique solutions made it possible to bring all this together into a natural looking leaf – the Nano leaf.

To complete the tree for multi energy exploitation, the petiole twigs and branches are incorporated with Nano piezo-electric elements. A Nano leaf is thin like a natural leaf, when outside forces, like the wind pushes the Nano leaf back and forth, mechanical stresses appear in the petiole, twig and branches. When thousands of Nano leaves flap back and forth due to wind, millions and millions of Pico watts are generated, the stronger the wind, the more energy is generated.

With the progress in nano technology, the photovoltaic, thermo voltaic and piezo electric materials are becoming more efficient and combined in one system it will give our products more efficiency and we believe that soon, Solar Botanic will be a mainstream green energy provider, more reliable/cheaper and above all better looking.

IX. APPLICATIONS OF ELECTRICAL ENERGY FROM NANOLEAVES

The photovoltaic, piezo voltaic and thermo voltaic energy harvesters are linked to individual junction boxes, from where they are amalgamated and fed collectively into an inverter. This converts the electricity from Direct current (DC) into Alternating Current (AC) the electrical power now being suitable for domestic or industrial use. The manufacturers of the system estimate that a six meter area of nano leaves canopy will generate enough electrical power to supply an average household. There are many places were the artificial trees and shrubs can be positioned.

X. DESERTS

The power supplied by these trees “planted” in the desert can be used to power desalination plants to produce fresh water from seawater and brackish water aquifers. This water can then be used for drinking and land irrigation, without any environmental damage to the fragile desert environment.

XI. PARKS, RECREATION GROUNDS, AND GOLF COURSES

The electricity produced can be used to charge electrically powered ground maintenance vehicles such as grass cutters as well as electrically powered hand tools like grass trimmers and pruning shears. When planted on golf courses the power produced can be used to charge golf buggies as well as electrically powered ground maintenance vehicles.

REFERENCES

[1] www.dti.gov.uk/industries_energy (for energy statistics, indicators, new and renewable energy)

[2] www.cabinetoffice.gov.uk/innovation/2000/energy/energyscope.shtml

[3] www.offshorewindfarms.co.uk

[4] www.britishwindenergy.co.ukwww.bwea.com

[5] www.energy-efficiency.gov.uk

[6] www.guardian.co.uk/renewables