# Solar Air Heater

Thermo-Hydraulic efficiency improvement through creating artificial roughness in Solar Air Heater(SAH) is one of trending area of research in the field of solar energy which conducted through Mr Varun Pratap Singh with association of his students team during Summer Internship Program (SIP) and as well as in final year project under Solar Energy Centre.
In this work researchers are trying to develop and identifying new roughness and their properties which create positive affect on rate of heat transfer and also having significance impact on pressure drop in case of force convection.

Solar Air heater are generally used for crop drying, room heating, air heating and heat exchanging purposes, it can also be used in various agricultural processes and having industrial application.

Solar cycle, Solar divider, Solar tree,, Solar tiles, Solar road, Solar based hot and cold water supply units (with Peltier effect) and Vertical axis wind turbine for highways are other on-going projects in the field of renewable energy on which our students are focusing now days.

# Solar Peltier Cooling/Heating System

Energy is a vital for the progress and development of a nation's economy. Energy shortages and variable power availability is responsible for society's advancement. Energy saving and low environmental impact should be the primary targets for the System designers and producers. Conventional Refrigeration consumes enormous Energy and uses Chlorofluorocarbons which causes ozone Layer depletion. Solar refrigeration has been getting more and more attention. Solar refrigeration is one of the alternative technologies that use solar power in combination with Peltier effect.

Solar energy is the natural source of energy. It is continuously available on the earth surface during the day time. As it is natural source of energy it doesn't produce any harmful by-products. Recently, solar energy has received interest as in attractive energy source for coli systems, especially in places where electricity is expensive or in short supply. The solar energy is available in most areas and represents an important driving source of thermal energy systems. With the use of solar energy, usage of conventional energy sources and its peaks demand will be reduced .This project consist of components Peltier module, charge controller, solar panel ,battery, microcontroller kit, heat sinks, temperature sensor.
In this work a group of student of Mechanical Engineering branch develop a water cooling as well as heating system with the help of Peltier effect, and drawing power from sun through solar panel.

# Solar Tree


Solar tree project was initiated by the Solar Energy Centre (Mechanical Final Year Students) at the College of Engineering Roorkee. Solar tree is a metal construction that resembles a real tree. Solar panels are mounted on top of each branch. Generated energy will be available to everyone and it'll be used for charging batteries of mobile phones and portable computers or can be short out the electric demand for street lightning. Additionally, it does also demonstrate benefits and potential for the students and the community to such technology.

Solar trees are intended to bring visibility to solar technology and to enhance the landscape and architecture they complement, usually in a commercial or public context. An objective of many solar tree installations is to promote awareness, understanding, and adoption of renewable energy. They are not typically used as a primary source of energy for a property—that role is accomplished by rooftop solar systems. Solar trees are complementary to rooftop solar systems, or other green building measures, symbolizing these larger investments and their environmental benefit.

Solar trees may build awareness and interest in solar technology and also provide shade and meeting places.

# Solar Cycle

An attempt is made by Mechanical final year students to fabricate a solar powered electric bicycle. As fossil fuels become costlier and major cause of environmental pollution renewable energy based system can become option for future, where it can replace conventional methods of transportation. In this work students design and fabricate a bicycle which can operate by dual mode, means by peddling as well as battery charged by solar panel mounted on top of cycle.


Solar panel will generate electricity which will be collected in battery and further transfer to a DC electric motor, which will help to produce power during operation. And the plus point is that the drive system of the normal bicycle is not altered. This system is a two in one system. The bicycle is operated either by :

- Pedalling manually
- Solar and motor driving mechanism.

This solar powered electric bicycle having lots of advantages like no fuel cost, no pollution, no fuel residue, and easy starting and can operate for long period of time.