

Karnataka State Council for Science & Technology
Indian Institute of Science Campus, Bangalore



STUDENTS PROJECT PROGRAMME
(SPP - 37th SERIES: 2013 - 2014)

**“SMART HIGHWAY INTEGRATED ENERGY
PRODUCTION SYSTEM”**

*A Project Report submitted in partial fulfillment of the
requirements for the funded project by KSCST, IISc*

Project Proposal Reference No:-37S1064

Project Associates

MD AMINUL HASSAN
SURENDRA SAPKOTA
SYED NEYAZ IMAM
MD ALAY MOHIUDDIN

1HM10ME045
1HM10ME090
1HM10ME421
1HM11ME416

Under the guidance of
Dr. C B Vijaya Vittala
Dean (R&D), Professor
Department of Mechanical Engineering
HMSIT, Tumkur

ABSTRACT

On keeping, prime focus on the crisis of three imperative components in the world like Energy, Food & Water. We have done an experimental investigation on the highways/expressways, so as to find the method that how these highways can be used as a hub of generating electricity by harnessing the available energy in a better efficient way. Three types of energies are available from wind, sun & light energy present on these highways. From wind energy, we are getting two types of energies:-1) Natural wind energy & 2) Impact wind energy. Solar energy from Sun at day-time & light energy from headlights of vehicles at night-time. But our experimental investigation is concentrated on behaviour or characteristics of Impact wind energy & light energy, as lots of advanced research work has already been done or going on the harnessing of natural wind energy & solar energy. From the above short summary, we can say that there is constant source of available energy on highways, which can help in to generate constant electricity throughout day & night or 24 hour.

As the automobiles moves on the highways, lots of impact wind energy is generated due to the wind pressure difference. A major hindrance in the growth of wind energy is fluctuation in the sources of wind energy. This problem of variability can't be omitted as it is happening naturally. So, one has to think how to extract constant source of energy from the variability.

In order to overcome the problem of energy, we have got success in developing an ESM (Electro-solar Mechanical) System to harness all sources of available energy from highways like Wind Energy (Impact wind energy, Natural wind energy), Solar Energy and Light Energy simultaneously by installing different sub-system in the ESM system.

In this project work, we have successfully charged (4 volts, 1amp) rechargeable cell and also (12 volts, 1 amp) rechargeable cell. The present work demonstrates the capability of harnessing the available energy from highways.