DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CENTRE FOR ALTERNATE ENERGY RESEARCH

AREAS OF EXCELLENCE: Wind Power and Solar Energy

CO-ORDINATOR: Dr.N.Devarajan

FINANCIAL NODAL OFFICER: Dr.P.Maruthu Pandi

OBJECTIVES:

- Innovation in the rapidly growing area of renewable energy resources (solar and wind).
- Curricular engagement through teaching, learning and research that engages faculty from various institutions, students, and industry members in mutually-beneficial collaboration.
- Mission is designed to address industry-identified issues and finding solutions by developing specific renewable energy projects.

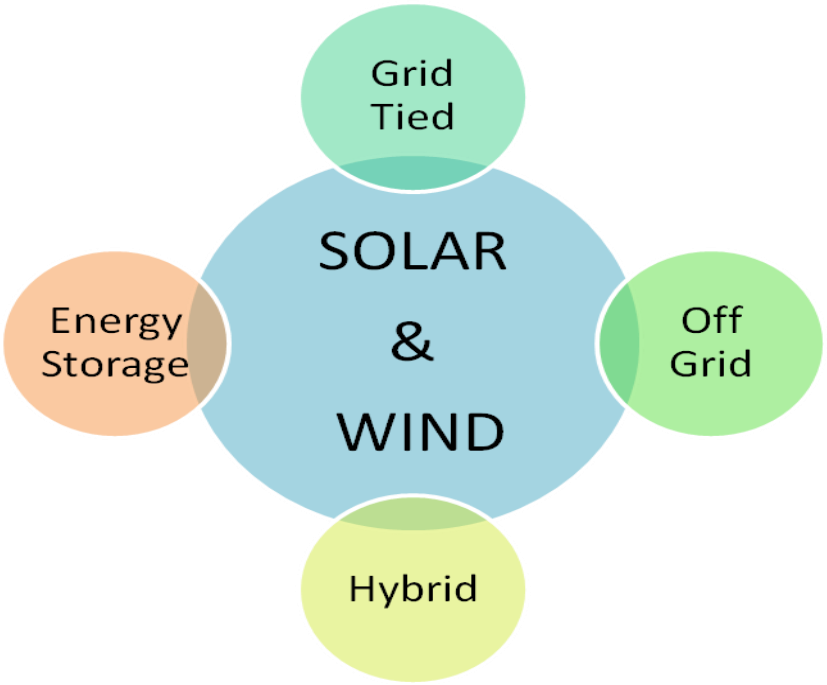
DELIVERABLES:

- Increase societal use of produced engineering R&D through technology transfer and commercialization
- Increase research output through publications
- Increase in joint programmes/projects with international Research organizations

PATICIPATING FACULTY MEMBERS:

1. Prof.V.Geetha
2. Dr.E.Latha Mercy
3. Dr.V.Prasanna Moorthy
4. Dr.N.Narmadhai
5. .Dr.R.Rajeswari
6. Prof.K.Ranjit Kumar
7. Prof.K.Yasoda
8. Dr.P.Maruthu Pandi
9. Prof.S.Chitra

THEMATIC AREAS OF RESEARCH:



I. Off Grid Solar Module

Solar Photovoltaic Module is connected to AC/DC utilities with battery back up

II. Grid Tied Solar Module

Solar Photovoltaic Module is connected to grid through Inverters.

III. Wind and Solar Hybrid Module

Grid tied /off grid operation of solar /wind hybrid power system with remote monitoring and control

IV. Wind Power Systems

Grid tied Wind Energy Conversion System –Doubly Fed Induction Generator and Permanent Magnet Synchronous Generator

RESEARCH PLANS:

Solar Energy:

- Development of Maximum Power Point Tracking (MPPT) controllers for low cost and simple stand alone units with battery storage.

- Investigating the optimum utilization of the Photo Voltaic (PV) panel and the battery using various types of charge controllers.
- Improving the modeling and simulation PV systems to study the impact of Solar systems on the Grid.
- Finding solutions through control algorithms for improvement of Power Electronic Converters to enable the independent control of power and reliable integration of Grid.
- Monitoring the condition of PV panels by developing new measurement techniques.

Wind Energy:

- Developing maximum Power Point Tracking Algorithms using Advanced techniques like fuzzy logic etc.,
- Investigating the Low Voltage Ride Through (LVRT) capability of wind generators by implementing FACTS devices.

Solar/Wind Hybrid Power System and Energy Storage:

- Providing versatile solutions for cost-effective wind and solar hybrid systems with remote monitoring and control
- Identification and Implementation of various methods of Energy Storage(Batteries, Super Capacitors etc.,)

COLLABRATIVE INSTITUTIONS, INDUSTRIES AND RESEARCH ORGANISATIONS:

- Indian Institute of Technology, Madras.
- Indian Institute of Technology, Bombay.
- National Institute of Technology, Trichy.
- National Institute of Technology, Calicut.
- Anna University, Chennai.
- Amrita University, Coimbatore.
- Center for Wind Energy Technology, Chennai.
- Coimbatore Solar Energy Solutions (P) Ltd, Coimbatore.