CENTRE FOR ENERGY STUDIES

INDIAN INSTITUTE OF TECHNOLOGY
DELHI

C.E.S. IN IIT DELHI

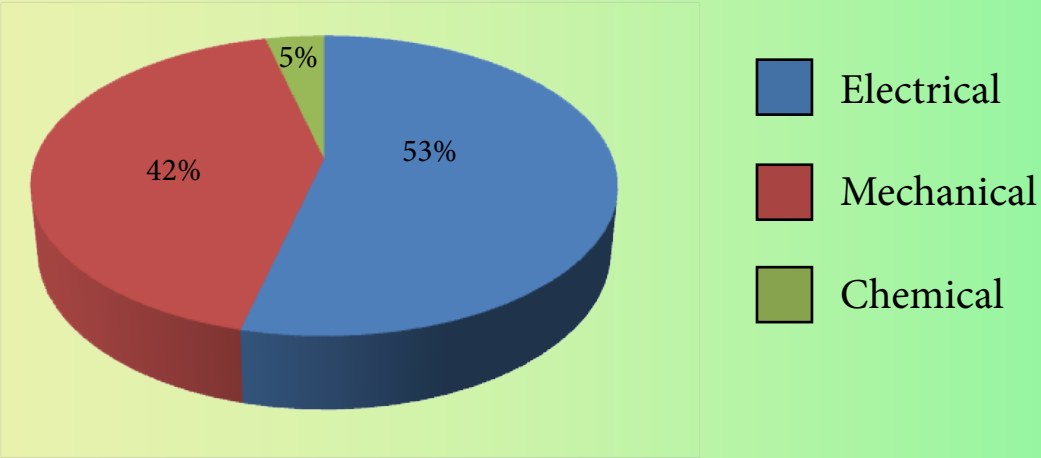
VISION

To play a leading role in capacity building, technology development and dissemination in the field of energy.

ABOUT US

The Centre for Energy Studies at the Indian Institute of Technology was established in the year 1976. It is an inter-disciplinary centre offering M.Tech in Energy Studies (Full time), M.Tech in Energy and Environment (Part time) and Ph.D. The Centre derives its strength from the engineering disciplines of Electrical, Mechanical, Instrumentation, and Chemical along with the fundamental sciences, Physics and Chemistry.

M.Tech. 2014-16 STUDENT BACKGROUND



Message from H.O.D.

It gives me a great pleasure to write about the activities of the Centre for Energy Studies (CES) in the brochure. The present day energy scenario reflects very well the prescience of the Centre founding fathers who recognized the importance of the subject in early 70 s and the pioneering work done the CES in the following years has contributed a great deal to the developments in the area of Energy in the country. The need for training the students in analyzing and understanding the complexities involved and then contribute to the development of different energy devices and systems was also recognized and the M.Tech. programmes run by CES has done this very successfully. The graduating students after the course have a thorough understanding of the energy sources, energy utilization and the environmental impact of energy. The balance between conventional and new energy sources helps the students in recognizing the importance of both and will enable them to find solutions for any energy requirements given the diversity of situations.

The brochure would enable the companies to recognize the training imparted to a multi-disciplinary group of students by a multi-disciplinary faculty. The students are trained to think of energy holistically and the employers should be able to get them to deliver appropriate solutions for the company needs.

My best wishes for the students for embarking on the challenging journey to determine the course of Energy sources in near future.

Viresh Dutta

MESSAGE FROM H.O.D.

COURSES OFFERED

CORE COURSES

- Direct Energy Conversion
- Economics and Planning of Energy Systems
- Energy Conservation
- Energy Laboratory
- Energy, Ecology and Environment
- Fuel Technology
- Heat Transfer
- Non-Conventional Sources of Energy

ELECTIVE COURSES

- Alternative Fuels for Transportation
- Cogeneration and Energy Efficiency
- Electrical Power Systems Analysis
- Energy Audit
- Fusion Energy
- Hydrogen Energy
- MHD Power Generation
- Nuclear Energy
- Operation and Control of Electrical Energy Systems
- Plasma Based Materials Processing
- Power Generation, Transmission and Distribution
- Power Plant Engineering
- Quantitative Methods for Energy Management and Planning
- Solar Architecture
- Solar Energy Utilization
- Solar Photovoltaic Devices & Systems
- Solar Refrigeration and Air-conditioning
- Wind and Small Hydro Energy Systems

RESEARCH GROUPS

SOLAR THERMAL RESEARCH GROUP

Faculty Members

- Prof. T.C. Kandpal
- Prof. S.C. Kaushik
- Prof. S.C. Mullick
- Prof. G. N. Tiwari
- Dr. Dibakar Rakshit

Evacuated Tube Solar Water Collector

Research Areas

- Solar thermal power generation
- Solar industrial process heating and co-generation
- Energy conservation studies through solar-aided HVAC systems in buildings
- Solar cooking, drying and green houses
- Economics and financing of renewable energy technologies and policy planning

PLASMA SCIENCE AND TECHNOLOGY GROUP

Faculty Members

- Prof. A. Ganguli
- Prof. R.P. Sharma
- Dr. R. Uma
- Dr. Ramesh Narayanan

Large Volume Plasma System

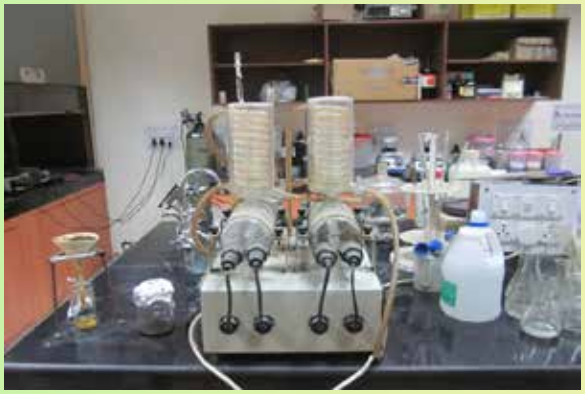
Research Areas

- Plasma theory and simulation
- Development of specialized plasma sources and ion beams
- Energy efficient and environment friendly plasma processing technology
- Dust dynamics in fusion energy devices

FUEL TECHNOLOGY GROUP

Faculty Members

- Prof. D. K. Sharma
- Prof. M. G. Dastidar



Double Distillation Apparatus

Research Areas

- Production of ultra super clean coal
- Production of carbon nanotubes and carbon nanoparticles
- Inorganic leaching of coals to obtain super clean coal
- Liquefaction of coal, lignite and biomass
- Chemical and biochemical sequestration of carbon dioxide
- Value added chemicals and fuels from biomass
- Production of fourth generation fuels from petrocrops, oil seeds, lichens, etc.
- Coal Beneficiation

PHOTOVOLTAIC GROUP

Faculty Members

- Prof. Viresh Dutta
- Dr. Vamsi Krishna

Integrated Thermal Evaporation Glove Box System

Research Areas

- Plasmonic based solar cells for enhancing baseline efficiency
- Improving efficiency for organic photovoltaic devices and dye-sensitized solar cells
- Flexible large area solar cell technologies

RESEARCH GROUPS

INTERNAL COMBUSTION ENGINES AND ALTERNATIVE FUELS GROUP

Faculty Members

- Prof. L. M. Das
- Dr. K. A. Subramanian

Research Areas

- Utilization of bio-diesel in diesel engines
- Utilization of hydrogen in automobiles and for power generation

ELECTRICAL POWER AND RENEWABLE ENERGY SYSTEMS GROUP

Faculty Members

- Prof. T. S. Bhatti
- Dr. Ashu Verma

Research Areas

- Study of Hybrid Power Systems
- Study of Distributed Generation Systems
- Power System - Integration of Renewable sources
- Power system Optimization, Computational Intelligence for Renewable Energy Sources
- Automatic Generation Control of Power System
- Study of micro wind turbines.

Vertical Axis Wind Turbine

AVL Research Engine (SI Engine)

HyAlfa

The world's first hydrogen-powered three-wheeler, 'HyAlfa', was launched at the Pragati Maidan on 9th January 2012. United Nations Industrial Development Organization (UNIDO) funded this project to a consortia consisting of IIT Delhi, Mahindra and Air Products (USA). The technical expertise was provided by Prof L.M.Das of Centre for Energy Studies. The test results provided the technical guidelines and thus the existing designs of engines were converted to run on hydrogen. Based on IIT Delhi recommendations, Mahindra had developed 15 hydrogen operated three wheelers for passenger and cargo versions vehicles which were launched at Pragati Maidan during Auto expo 2012, where a hydrogen refuelling station has also been set up by Air products. These vehicles are on road trials in Pragati Maidan for past 8 months after . Limited field trials in Pragati Maidan show that the hydrogen fuelled three wheelers are giving around 85 km per kg of hydrogen consumption.

STUDENTS PROFILE

Adarsh Kumar

Background
Mechanical Engineering

M.Tech Project
Modelling, simulation and experimental validation of resultsfor packed bed solar thermal storage.

Amit Agrawal

Background
Electrical Engineering

M.Tech Project
Development and analysis of protection scheme for medium voltage DC grid.

Ankita Soni

Background
Electrical Engineering

M.Tech Project
Effect of integrating photovoltaic to distribu tion grid.

Anurag Yadav

Background
Mechanical Engineering

M.Tech Project
Comparative study of Nuclear and Thermal power plant.

STUDENTS PROFILE

Avinash Kumar

Background
Mechanical Engineering

M.Tech Project
Comparative analysis of Synthetic vs. conventional fuel in diesel engine for various applications.

Gagandeep Singh Bawa

Background
Electrical Engineering

M.Tech Project
Dynamic coordiantion of Protection System to integrate Renewable Sources of Energy.

Gaurav Lamba

Background
Mechanical Engineering

M.Tech Project
Pressure Drop studies of Catalytic convertor.

Hara Prasad Padhy

Background
Electrical Engineering

M.Tech Project
Steady state voltage stablity analysis of distribution systems.

STUDENT PROFILE

Harshal Mohite

Background
Electrical Engineering

M.Tech Project
Review of Hydrogen production.

Jey Kishan Kumar

Background
Electrical Engineering

M.Tech Project
Promoting renewable energy technologies through knowledge management.

Manu Saran

Background
Power Plant Engineering

M.Tech Project
Determination of heat transfer characteristics unknown HTF to be used in parabolic trough systems and modelling of that system.

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Medha Singh

Background
Electrical Engineering

M.Tech Project
Efficiency and energy management in thermal power station

STUDENT PROFILE

Mayank Tiwari

Background
Mechanical Engineering

M.Tech Project
Performance analysis of gas turbine power plant.

Navdeep Saini

Background
Electrical Engineering

M.Tech Project
Integration of DC micro grid for hybrid PV/ FC system.

Pranav Kumar

Background
Electrical Engineering

M.Tech Project
Plasmonic and its applications to photovolta - ic energy.

Rahul Sharma

Background
MechanicalEngineering

M.Tech Project
Impact study of energy efficient high perfor - mance lube oil in Automotive Diesel Engine.

STUDENT PROFILE

Saransh Pal

Background
Electrical Engineering
M.Tech Project
Biomass Management

Saurabh Singhal

Background
Electrical Engineering
M.Tech Project
Evaluation of Feed-in-Tariff as incentive for promoting renewable energy based electricity generation.

Sharique Afzal

Background
Electrical Engineering
M.Tech Project
Assessment of the effectiveness of the renewable purchase obligation in promoting rewewable energy utlization.

Tarun Jindal

Background
MechanicalEngineering
M.Tech Project
Modelling simulationand experimental studies on PEM/SOFC based energy system

Akash Bansal

Background
MechanicalEngineering

M.Tech Project
Fluid structure interaction(FSI) studies of LNG transportation.

PAST RECRUTERS

- ABB
- Ansys Fluent
- Ashok Leyland
- BGR Energy
- Coal India Limited
- CSIR
- Cummins
- Daimler
- Deloitte
- General Electric
- GE Energy
- General Motors
- HPCL
- IOCL
- JK Tyres
- Mohan Energy
- Moser Baer
- PGCIL
- PricehouseWater Coopers India
- Reliance Energy
- Rites Limited
- Rural Electrification Corporation
- Rural Electrification Corporation
- Schneider Electric
- Tata Consultancy Engineers
- Tata Motors
- TERI
- TVS Motors
- Wapcos Limited
- Wipro Eco Energy

PAST RECRUITERS

CONTACT US

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