Electricity Systems and Future

Scenarios……

# Overview

The continued economic prosperity that has been felt by half the world has only been possible through the use of energy resources. Since the start of the industrial revolution and through the 20th and 21st centuries we have largely relied on fossil fuels to meet our increasing energy demand. Despite attempts to decouple economic and energy growth this demand looks set to continue. However, this economic growth has come at a cost. Pollution and climate change are caused by the burning of fossil fuels. Annually around 3.5 million people die prematurely because of air pollution. Climate change could affect 100s of millions of people. Since the 1992 Rio Earth Summit efforts have been made to cut back on emissions. However, it was the 2015 Paris Agreement has finally led to a global consensus for deep greenhouse gas (GHG) emission reduction to limit global mean temperature rise to 2°C. The Intergovernmental Panel on Climate Change 5th Assessment Report highlighted the need for all key mitigation options to be used in this battle, namely, energy efficiency, renewables, carbon capture and storage.

What is now needed to meet the targets to mitigate further GHG emissions and adapt to change is an energy revolution. In order to understand how this can be carried out and appreciation of how the global energy system has developed is required. This will look at historic data to show energy use and economic development patterns. The types of energy resources, fossil fuels and nuclear will be discussed with consideration given to environmental issues. Mitigation of these pollution matters will be explored by reviewing different renewable energy technologies, improvements in the efficiency of the transmission and use of electricity, storage of electricity and carbon capture. Future scenarios will also be discussed that include storage and smart grid systems.

Internationally acclaimed academics with proven knowledge, experience, and demonstrable ability in teaching, consultancy, research, and training in the field of Energy Systems will deliver lectures and discuss cases in the course.
Course participants will learn these topics through lectures and discussions. Also case studies and assignments will be shared to stimulate research motivation of participants.

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| **Modules** | **A: Energy Systems : Nov 6 - Nov 11**<br>**B: Future Energy Scenarios : Nov 6 - Nov 11**<br>**Number of participants for the course will be limited to fifty.** |
| **You Should Attend If…** | ▪ you are an engineer or research scientist interested in energy.<br>▪ Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories.<br>▪ Student students at all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic institutions and technical institutions. |
| **Fees** | The participation fees for taking the course is as follows:<br>**Participants from abroad : US $500**<br>**Industry/ Research Organizations: ` 30000**<br>**Academic Institutions: ` 10000**<br>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis. |

# The Faculty

**Dr Richard Blanchard** is a lecturer at Centre for Renewable Energy Systems Technology, Loughborough University, UK. His research interests include energy for development, micro-grids and bioenergy. He has worked on research projects in India, Bangladesh, Kenya and other countries.

# The Faculty

**Dr Pinakeswar Mahanta** is a Professor in the department of Mechanical Engineering, IIT Guwahati. His research interests include Fluidization Engineering, Energy Conversion and Conservation and Renewable Energy.

# Course Co-ordinator

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