

SCIENCE AWARENESS TALK - SERIES III , 22 JUNE 2023 (THUR), 11:30 AM IST

SPEAKERS

TALK - A : RENEWABLE ENERGY: CHALLENGES AND WAY FORWARD

Worldwide renewable installations are growing exponentially in the electricity mix. In a renewable-rich electricity grid, the demand as well as the generation varies in different time scales. It is extremely complicated to meet continuously changing demand with weather dependent intermittent renewable generation. Starting from minute-wise variation to seasonal changes, the grid stability needs to be maintained throughout the gradual decarbonization of electricity supply systems or grids. This is a major challenge for net zero transition in the energy sector worldwide. Further, detail planning is essential to manage low probability high impact events like “Renewable Energy droughts” in a renewable rich grid. There are several technologies that can help in addressing the challenges of large-scale grid integration of renewable wind-solar plants. In this talk, we explore some of the promising solutions like strategic siting of new wind plants to have smoothing in the aggregate generation, selective wind-solar hybridization to avoid extreme energy drought events and strategic wind-solar-storage portfolio design to achieve high reliability within limited cost.



Anasuya Gangopadhyay

PHD RESEARCH SCHOLAR
DIVECHA CENTRE FOR
CLIMATE CHANGE,
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**TALK - B : THE ROLE OF WIND POWER IN THE LOW-CARBON
AND SUSTAINABLE FUTURE**

Wind power is one of the cheapest low-carbon energy resources in the world. It contributes 3% of the total energy supply in 2021, but the global wind power potential (840,000 TWh) is more than 30 times higher than the global electricity demand (24,000 TWh) in 2019.

This talk will introduce the working principle of wind power generators and the potential role of wind power in the low-carbon energy systems.



Barton Chen

POST DOCTORAL RESEARCH
FELLOW | RENEWABLE ENERGY
GROUP, UNIVERSITY OF EXETER

TALK - C : PRINCIPLE AND OPERATION OF SOLAR CELLS

The share of renewable energies in the global energy mix is expected to increase sharply, from 16% in 2020 to 29.3% in 2030 and 63.5% in 2050, according to the Net Zero scenario from the International Energy Agency (IEA). In 2019, just over 2% of global electricity came from solar. Solar energy is the fastest-growing renewable source in the world. Hence, it is imperative that people understand the working principles and mechanisms in the Solar Power energy generation. The talk will focus on the basics of semiconductor physics, the different aspects of sunlight, the different types of losses and the various subsystems required for PV electricity generation.



Adheesh S. Rao

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