

National Workshop
On

Photovoltaics: Technology and Business Overview

(PTBO – 2017)

04-06 March 2017

**Jointly Organized
by**

Department of Physics & Department of Electrical Engineering

Motilal Nehru National Institute of Technology, Allahabad



In Association with

Global Eco Power, Allahabad



Earth Friendly Solutions

Global Eco Power

Sponsored by
Dean (R & C)
Motilal Nehru National Institute of Technology
Allahabad

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INTRODUCTION

Solar energy is the energy, the earth receives from the sun, primarily as visible light and other forms of electromagnetic radiation. Photovoltaics (PV) system is the field of technology and research related to the application of solar PV cells for energy production by converting solar energy directly into the electrical energy by the photovoltaic effect. The latter refers to the process of converting light radiation to electricity power. There are two broad categories of solar cells; crystalline and thin film.

The key components of a photovoltaic power system are the photovoltaic cells (also called solar cells) interconnected and encapsulated to form a photovoltaic module (the commercial product), the mounting structure for the module or array (several modules mounted and interconnected together to produce a desired voltage and current (power capacity)). The power electronics converters involving DC-DC and DC-AC are used for maximum power point tracking (MPPT), battery charge controllers, grid-interface, standalone power generation etc. The electrical power output of a module is measured under standardized test conditions (STC).

Performance of PV modules depends on the amount of solar irradiation received which varies by location and whether conditions. For this reason, systems normally need to be carefully designed. PV technology can be employed in a variety of applications such as remote telecommunications, cathodic protection of pipelines, PV home systems, vaccine refrigeration, water pumping, grid connected or building integrated systems, miniature electronic devices and toys. Hybrid electric vehicles are upcoming application involving solar PV system.

Solar photovoltaics power generation has long been seen as a clean energy technology which draws upon the planet's most plentiful and widely distributed renewable energy source – the sun. The technology is "inherently elegant" in that the direct conversion of sunlight to electricity occurs without any moving parts or environmental emissions during operation. It is well proven, as photovoltaic systems have now been used for fifty years in specialized applications, and grid-connected systems have been in use for over twenty years.

Recently the solar PV system both grid-connected and off-grid systems becomes profitable business for investors and entrepreneurs. Multiple business models are operating for successful operation of solar PV systems.

OBJECTIVES

To introduce the solar photovoltaics systems, power conversion and its business

Course Content

1. To introduce the concepts and physics of solar photovoltaics
2. Solar cell manufacturing
3. Operational principle and PV characteristics
4. Power Electronics in solar PV systems
5. Grid interface and Microgrid
6. Awareness and incentives being provided by the Ministry of New and Renewable Energy Sources (MNRE), Govt. of India, on installation, design and manufacture photovoltaics systems
7. Standalone and Utility scale projects
8. Information about the finance on investment and payback period
9. How to start a start-up company in the field
10. Other renewable energy systems

COURSE FACULTY

The faculty for this workshop will consist of experts drawn from Industries and Institutions. Experts would be invited to present the real life examples.

TARGET PARTICIPANTS

Students for Masters/Bachelor Course in Applications of Renewable Energy Sources, Electrical Engineering, Environmental Engineering and Geo-technical Engineering. Practicing architects, building technologists, and civil engineers working in construction industry, Private and Public sector and Government organizations are also eligible for participation. A total of about 50 participants are expected for the workshop.

VENUE

The workshop will be organized at **MNNIT** (Motilal Nehru National Institute of Technology) Allahabad from 4th March to 6th March 2017

REGISTRATION FEE

Registration fees for the workshop for Delegates from Industry/Companies is Rs.3000/-, for other faculty members is Rs.2000/-, students from other institutes Rs. 1000/- and for MNNIT Students Rs.500/-, which includes workshop lunch, tea/coffee, and course material. Kindly send your request for registration, along with the remittance of the registration fees to the Coordinators (Dr. Rajesh Gupta or Dr. Naresh Kumar). The registration fee can be paid on the site of workshop also.

ORGANISING COMMITTEE

Patron

Prof. Rajeev Tripathi, Director, Motilal Nehru National Institute of Technology, Allahabad

Chairpersons

Dr. Arvind Agarwal, Head, Department of Physics
Prof. Shubhi Purwar, Head, Department of Electrical Engineering
MNNIT Allahabad

Conveners

Dr Rajesh Gupta & Dr. A. K. Singh
Department of Electrical Engineering
MNNIT Allahabad

Chair (Technical)

Mr. Farrukh Parvez
Director, Renewable and Alternate Energy
Global Eco Power, Allahabad

Coordinators

Dr. Naresh Kumar, Department of Physics
Dr. Soumya Ranjan Mohanti, Department of Electrical Engineering
MNNIT Allahabad

Treasurer

Dr. Animesh Kumar Ojha
Department of Physics
MNNIT Allahabad

Advisory Chairs

All Deans & All Heads of the Departments/Cell, MNNIT Allahabad

About Allahabad City, MNNIT, and Departments

Allahabad is a major city in the North Indian state of Uttar Pradesh of India and is one of the main holy cities of Hinduism. It was renamed by the Mughal emperor Akbar from the original (still unofficially used) native name of **Prayag**, and is by some accounts the second-oldest city in India. It is located about 205 kilometers south of the state capital, Lucknow. It is the administrative headquarter of the Allahabad District. Allahabad has been ranked the world's 130th fastest growing city. **Motilal Nehru National Institute of Technology (MNNIT)** is located in Allahabad in the state of Uttar Pradesh. It was formerly known as Motilal Nehru Regional Engineering College and was affiliated to University of Allahabad. Established in the year 1961, the college became deemed university with effect from June 25 of 2002 and is now known as Motilal Nehru National Institute of Technology. The institute started by offering Bachelor Degree Programmes in Civil, Electrical and Mechanical Engineering in 1961. The institute now offers various B. Tech., M. Tech. degree programs M.B.A., M.C.A & M.Sc. Mathematics & Scientific Computing. It is among the few technical institutions in India.

The department of Physics came into existence from April, 2003. Prior to this it constituted a section of the Department of Applied Mathematics, Applied sciences & Humanities. The Department offers Physics courses to all branches of B. Tech. students in their first two semesters. The Department is actively involved in experimental and theoretical research in the emerging areas of science and technology. Ph.D. programme is going on in the department.

The Electrical Engineering Department (EED) came into existence in the year 1961, with the objective to produce technical man power of high quality and promote research and development activity. With a modest beginning of introducing four year BE degree course in 1961, a post graduate programme in Control & Instrumentation / Power System was introduced in the year 1970-71. The department started a BE degree programme in Computer Science for the first time in the country in 1976-77, which was later followed by other Colleges / Institutes. Envisioning the growth of Electronics and the consequent technical man power requirement, a BE (Electronics) course was introduced in the year 1982-83. With the three under graduate programmes, a Master's Course in Computer Application (MCA) in 1986 and several M. Tech. programmes (regular and part time) were introduced. Currently, EED offers courses leading to a Bachelor of Technology in Electrical Engineering and Post Graduate (M. Tech.) programs in (i) Power Electronics and Drives (ii) Control & Instrumentation and (iii) Power System, and Ph. D. programme under Regular, Part-Time and QIP categories.

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REGISTRATION FORM

Registration Fee

<i>Delegates from Industry/Companies</i>	<i>Rs 3000.00</i>
<i>Faculty members</i>	<i>Rs 2000.00</i>
<i>Students from other institutes</i>	<i>Rs 1000.00</i>
<i>MNNIT Students</i>	<i>Rs 500.00</i>

Name (Prof./ Dr/ Ms/ Mr)

Designation

Qualification

Organization

Address

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CityPin

Telephone

Fax

E-mail

*Please register me for the workshop on "Photovoltaics : Technology and Business overview"
to be held at MNNIT, Allahabad 04-06 March 2017*

.....
Signature

Mail or submit registration form alongwith DD or NEFT/payment receipt drawn in favour of "PTBO-2017" to:

Dr. Soumya Ranjan Mohanti, Department of Electrical Engineering, Coordinator PTBO-2017

Dr Naresh Kumar, Department of Physics, Coordinator PTBO-2017

Motilal Nehru National Institute of Technology

Allahabad – 211004

Phone: **05322271411 (SRM)**, 09454200193 (NK)

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