# ONLINE CERTIFICATION COURSE ON RENEWABLE ENERGY DEVELOPMENT, GRID INTEGRATION, ENERGY STORAGE SYSTEMS & EMERGING CLEAN ENERGY TECHNOLOGIES

**5th Batch | Commencing 12th October, 2026**

**Empowering Professionals for India's Clean Energy Transition**


**ORGANIZED BY**
**Central Board of Irrigation and Power**
**CBIP Centre of Excellence**

**UNDER THE AEGIS OF**
**The Society of Power Engineer (India)**

**Course Conducted on**
**Microsoft Teams**

**NODAL OFFICER**
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# PARTICIPANT FEEDBACK HIGHLIGHTS OF PREVIOUS BATCHES

The previous batches of the course received overwhelmingly positive feedback from professionals representing leading power utilities, government organizations, EPC companies, and energy sector industries.

## ➢ What Participants Appreciated Most

- Well-structured and comprehensive curriculum covering Solar, Wind, Energy Storage, Grid Integration, and emerging renewable technologies.
- Highly experienced faculty from industry and academia with practical insights and real-world case studies.
- Interactive learning environment with excellent discussions, doubt-clearing sessions, and industry-focused knowledge sharing.
- Balanced coverage of fundamentals, advanced concepts, latest technologies, and business applications.
- Valuable learning opportunity for both experienced professionals and those transitioning into the renewable energy sector.
- Practical understanding of project development, operations, policy, regulations, and future energy trends.
- Useful course materials, presentations, and recorded sessions supporting continuous learning.
- Strong relevance to India's energy transition, Net-Zero goals, Green Hydrogen, Energy Storage, and clean energy initiatives.

## ➢ Overall Participant Rating

⭐ Excellent Faculty Expertise
⭐ Highly Informative & Industry-Oriented
⭐ Practical & Career Enhancing
⭐ Well Planned and Professionally Delivered
⭐ Strongly Recommended for Renewable Energy Professionals

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**"A must-attend course for professionals seeking to build expertise and advance their careers in the rapidly growing renewable energy sector."**

# BUILDING THE WORKFORCE FOR INDIA'S NET-ZERO FUTURE

India is undergoing one of the world's largest energy transitions. With ambitious national targets of achieving 500 GW of non-fossil fuel capacity, large-scale renewable energy deployment, Green Hydrogen Mission implementation, Battery Energy Storage Systems (BESS), smart grids, and carbon-neutral development pathways, the demand for skilled renewable energy professionals has never been greater.

The renewable energy sector is rapidly evolving from standalone solar and wind projects to integrated energy ecosystems comprising utility-scale renewable parks, hybrid renewable projects, energy storage systems, digital grids, electric mobility infrastructure, artificial intelligence-based asset management, and green hydrogen technologies.

To address the growing need for technically competent professionals, the Central Board of Irrigation & Power (CBIP) presents its flagship Online Certification Course on Renewable Energy Development, Grid Integration and Energy Storage Systems.

This industry-oriented program is specifically designed for working professionals, engineers, project developers, utility personnel, consultants, entrepreneurs, and fresh graduates seeking practical knowledge and career advancement opportunities in the rapidly expanding renewable energy sector.

## CURRENT RENEWABLE ENERGY LANDSCAPE (2026)

India's renewable energy sector is witnessing unprecedented growth:

- Rapid expansion of utility-scale solar parks and rooftop solar systems
- Growth of offshore wind energy projects
- Deployment of Battery Energy Storage Systems (BESS)
- Launch of Green Hydrogen and Green Ammonia projects
- Development of Renewable Energy Parks and Hybrid Projects
- Smart Grid and Smart Meter implementation across utilities
- Growth in Electric Vehicles and charging infrastructure
- AI and Digital Twin applications in renewable energy management
- Renewable Energy Certificates (REC) and Carbon Markets
- Increasing focus on Grid Stability and Flexibility Services

The renewable energy industry is expected to generate significant employment opportunities in engineering design, project development, operations, maintenance, energy analytics, storage systems, and sustainability consulting.

# COURSE MODULES

## SOLAR POWER

- Power Sector Scenario of India including Renewable; Solar Power Technologies and Its Applications
- Overview of Solar System its Types and Components
- Load calculation Analysis
- Plant location identification- Site survey, Plant layout, Shadow analysis
- Solar geometry, Solar resources, Solar radiation
- Balance of Plants: Battery, Inverter, Charge controller, Mounting Structure, Cables, Junction Box etc.
- Components Selection Criteria and Sizing of Solar PV Systems
- Inspection, Testing & Commissioning of Solar PV System and Troubleshooting of Solar PV System
- O&M of Solar PV System and Solar PV Module Testing
- Procedures, Permissions, Approvals for Solar PV System and Preparation of DPR
- Financial Modeling and Tariff calculation of Solar PV System

## WIND POWER

- Introduction to Wind Energy , Evaluation and Development
- Wind turbine technology and developments
- Various Components of Wind Turbine
- Design Criteria of Wind Turbine and Assessment of Wind resource and Its techniques
- Wind Farms- Planning & Designing
- Installation and commissioning of wind turbines
- Troubleshooting, O& M of wind farms and Testing & Certification of wind turbines
- Introduction of Small wind turbine and hybrid systems and Financial Modeling

## ENERGY STORAGE SYSTEM

- Introduction to energy storage system concepts including ESS applications
- Types of electrical energy storage and key characteristics and terminology
- Parameter, Role and Various Applications of Energy Storage System
- Introduction to battery energy storage systems (including Lead Acid, Lithium Ion, Ni-Cd Batteries)
- Introduction to Power-to-gas Technology: Hydrogen Cell
- Roles of storage in the electricity grid and Integration of energy storage into electrical grids
- Grid Level Battery Storage
- Pumped Storage
- Introduction to E- Mobility
- Case Study
- Business Models for deploying Energy Storage

## OTHER MODULE

- **New Initiatives in Renewable Energy -**
- **Renewable Energy Govt. Incentives / policy, regulatory aspect / affairs**
- **Renewable Energy Grid Integration**
- **Introduction to SCADA**
- **Introduction to Smart Grid and Smart Metering**
- **Introduction to Power Trading**
- **Introduction to Power Scheduling – Load Dispatch**
- **Introduction to Financing of Projects**
- **Introduction to Contract & Procurement Management**
- **Introduction to Cyber Security**
- **General Network Access (GNA)**

## COURSE HIGHLIGHTS

- 65 Hours of Expert-Led Learning
- Live Interactive Online Sessions
- Industry-Oriented Curriculum
- Latest Renewable Energy Technologies
- Real-Life Case Studies
- Presentation Material Sharing
- Industry Expert Interactions
- Professional Networking Opportunities
- CBIP Certification
- Flexible Schedule for Working Professionals

## WHY THIS COURSE?

### ➢ Industry-Relevant Learning

The course combines technical, regulatory, financial, operational, and managerial aspects of renewable energy projects.

### ➢ Learn from Experts

Sessions delivered by senior professionals from:

- Renewable Energy Developers
- Power Utilities
- Grid Operators
- EPC Companies
- Equipment Manufacturers
- Research Institutions
- Academia and Industry Experts

### ➢ Certification from a Premier Institution

Certificate awarded by CBIP, recognized as a Grade-A Category-I Training Institute by the CEA, Government of India.

### ➢ Career Advancement

Participants gain practical insights into:

- Solar and Wind Project Development
- Energy Storage Systems
- Grid Integration
- Renewable Energy Policies
- Emerging Technologies
- Project Financing and Business Models

## WHO SHOULD ATTEND?

- Working Professionals
- Electrical Engineers
- Renewable Energy Engineers
- Utility Engineers
- Power Sector Professionals
- EPC Professionals
- Consultants
- Entrepreneurs
- Engineering Graduates
- Diploma Engineers
- Government Officials
- Project Developers
- Researchers and Academicians

## ABOUT CBIP

The Central Board of Irrigation & Power (CBIP), established in 1927 by the Government of India, is a premier institution dedicated to the development of the power, water resources, renewable energy, and allied sectors in the country for nearly a century. Over the decades, CBIP has played a significant role in capacity building and knowledge dissemination through national and international conferences, technical publications, consultancy and advisory services.

CBIP is recognized as a Category-I Training Institute for imparting training in the field of Thermal, Hydro and **Renewable** Generation, Transmission and Distribution by Central Electricity Authority (CEA), Ministry of Power, Government of India.

## MODE OF DELIVERY

Online Live Interactive Sessions through MST

- 18:00 Hrs – 20:00 Hrs (2 hrs each day preferably Monday, Wednesday and Friday)
- 10:00 Hrs – 13:00 Hrs (3 hrs on Sunday)

## REGISTRATION FEE

Course Fee: ₹20,000 per participant

Special Fee for CBIP/SPE Members: ₹18,000 per participant

GST @ 18% Extra

## JOIN INDIA'S CLEAN ENERGY REVOLUTION

Acquire future-ready skills and become part of the rapidly growing renewable energy ecosystem shaping India's sustainable energy future.

## PAYMENT

All payment may be made through Cheque at par/Demand draft in favour of "Central Board of Irrigation and Power" payable at Gurgaon **[OR]**
By Bank Transfer to the following Bank Account-
**Beneficiary Name -** Central Board of Irrigation & Power
**PAN No. -** AAAJC0237F I **GST No. -** 06AAAJC0237F1ZW
**Bank Details -** Indian Overseas Bank, Sco26, Sec-31, Gurgaon, Haryana, PIN-122001
**Saving Bank Account No. -** 236701000000922
**Branch RTGS/ NEFT/ IFSC -** IOBA0002367
**Branch Code -** 2367


## CLICK TO REGISTER - Link

## Registration Form

Delegate _____
(Surname) (First Name)

Designation _____

Name of Organisation _____

Mailing Address _____

City _____

State _____ PIN _____

Phone _____ Fax _____

E-mail _____

### Nodal Officer:

**Shri. Pradeep Gupta**, Jt. Advisor, CBIP,
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