

3rd Special International Course on

DESIGN, INSTALLATION AND MAINTENANCE OF SMALL WIND TURBINE

Specially for ITEC Partner Countries

28th August to 24th September 2019



Organized by



NATIONAL INSTITUTE OF WIND ENERGY

Ministry of New and Renewable Energy, Government of India
Chennai

Sponsored by



MINISTRY OF EXTERNAL AFFAIRS

Government of India
New Delhi

Introduction

Renewable Energy in particular Wind and Solar has become mainstay in meeting energy needs having achieved grid parity in term of costs as well as technical requirement. The wind energy has proved a highly successful energy option with installation of over 560 GW worldwide end of December 2018. It is estimated that viable wind power potential across globe is 72 TW, which is four times more than the current World's total energy demand. The major wind generator installation is in USA, some of the European countries and Asian countries like China and India and other countries catching up with the rest. Lack of skilled human resource has been one of the main barriers that hinders wind and other renewable energy integration.

The global market for small wind turbines (SWTs) has been on the upswing over the last two to three years, which can be deployed for a diverse pool of applications, both in 'grid-tied' and 'stand- alone' modes. The recorded small wind capacity installed worldwide has reached more than 755 MW by end of 2013 and China contributes 41%, USA 30% and UK 15%. Based on the world distribution of turbine manufacturers, the production of small wind remains concentrated in few world regions in China, in North America and in several European countries. Developing countries continue to play a minor role in small wind manufacturing.

The National Institute of Wind Energy (NIWE), under the Ministry of New and Renewable Energy, Government of India has pioneered in promoting wind Energy and has contributed for promotion of wind energy as one of the primary energy sources in India. Decades of concerted efforts have started to yield gratifying results and today, Wind power contributes 10.6% (35625.97 MW) of the total Indian energy mix of 356100.19 MW and stands fourth in terms of installed wind power capacity worldwide as on March 2019. Small wind is the best decentralized form suitable for Rural and Urban setup and can work in complimentary pattern with Solar roof top. To highlight, NIWE has so far successfully organized 34 international training courses, wherein 693 professionals from 88 countries have been trained and has also organized 31 national training courses and trained 1386 professionals which includes special course on Small Wind Turbine Design, Installation and Maintenance. With this vast experience, India can incorporate lessons learnt from its own experience to foster growth elsewhere in the globe. In this context, a five weeks International Training Course is scheduled by NIWE under ITEC programme sponsored by Ministry of External Affairs (MEA), Government of India.

Objectives

- The prime objective is to transfer knowledge and special skills to the international participants.
- To build skilled human resource so that there will be advancement of wind energy in the participating country.
- To provide an invaluable platform for exchange of professional and cultural experiences among diverse participants.
- To leverage the research that continues to shape this rapidly evolving discipline.
- Exchange of open source technical advances, experiences and discuss global best practices to enable the SWT technology to expand rural wind electrification globally.

Course Syllabus

The course content for the training has been carefully thought out syllabus with specific subject experts giving lectures and going through specific case studies such that, at the end of the course considerable useful knowledge transfer is perceived.

The course will address the following aspects:

- Introduction to wind energy, evolution & developments.
- Government policies and supportive schemes.
- Introduction to SWT & Hybrid Systems.
- Sitting of SWT in Rural and Urban landscape.
- Design, Installation & Commissioning of SWT.
- Hybrid system with Wind component & energy storage.
- O & M aspects of SWT.

The course is designed such a way that the participants will themselves design the parts / components of the SWTs from the low cost and locally available materials, construct, Install, erection and commission of the turbine to produce power and also Operation Maintenance practices. The participants will spent more time at the laboratory for practicals for designing the SWT.

Training Methodology

- (a) Class room lectures including exercises and case studies to stimulate active participation and dialogue.
- (b) Practical classes at different laboratories.
- (c) Hands-on working on wind energy equipments.
- (d) Study visits to operating small wind farms, Testing facility and wind turbine manufacturing facilities to enhance effective transfer of knowledge.

Venue

The venue for the programme will be the **Conference Hall of National Institute of Wind Energy, Chennai, India.**

The Programme

The course duration will be 28 days from 28th August to 24th September 2019

Resource Persons

The resource persons for the training course would be engineers of NIWE, Small Wind Turbine Manufacturers, Experts and Engineers, who have contributed significantly for the development of small wind turbine technology. The design, construction, installation, erection, commission and maintenance of small wind turbine parts will be done by the Engineers of Minvayu, Auroville, Tamil Nadu near Pondicherry, who have rich experience in design, construction, supply and providing training for the rural mechanics to build, install and maintain low cost wind turbines with local materials.

Target Participants

The course will be useful for anyone involved in wind energy or those who are looking for an introduction particularly in SWT. Persons from the following fields will find this course very relevant.

- Academic and R & D Institutions
- Power Industry
- Large and Small Wind Turbine Manufacturers
- Suppliers and Distributors
- Utilities
- Consultants
- Project Developers
- Government Organization
- Rural Mechanics and Electricians
- NGO's & independent Green Engineers

How to Apply?

1. Those who are interested to apply for this Training Course are required to visit the website www.itecgoi.in.
2. Click on the **NEW USER** for filling up the online application form. It will take you to the streams to be chosen where you have to choose 'Environmental and Renewable Energy Course' and then select 'National Institute of Wind Energy'.
3. It will take you to the institute page where you have to click on the '**apply**' link provided in 3rd Special International Training Course on Design, Installation and Maintenance of Small Wind Turbine and follow the instructions.

Instructions

- Applicants are required to apply for ITEC training programme by filling up the online application form and take a print out of filled form. This form is to be submitted to the nodal/designated Government Department / Agency of applicant's country.
- Nodal / designated Department / Agency is, in turn, required to forward the applications to the Embassy / High Commission of India, accredited / concurrently accredited to the nominating country along with undertaking by candidate and certification from employer (Part-II of Application Form).
- Candidates may check the status of their application by logging-in at www.itecgoi.in. The credentials for log-in may be noted while filling up the application form.

Reason to Attend

The course will offer a good foundation on the principles of engineering behind wind energy technology and power generation and detailed about making Small Wind Turbines with Installation, Commissioning and O&M aspects. The course would facilitate an invaluable forum for dialogue and open exchange of views and experiences with Indian scientists and professionals. The course would give a picture of complete know-how and pave the way to go about designing and manufacturing Small Wind Turbines as well as the installation and maintenance of the same.

Eligibility

- Applicants should be from any one of the ITEC countries. List of ITEC countries can be found in www.itecgoi.in
- **ITI or Diploma or Degree in any Science or Engineering streams and Rural Mechanic or Electrician with Knowledge in English.**
- Age should be between **25 to 45 years.**

Course Fee

There is **NO COURSE FEE** and is fully funded by Ministry of External Affairs (MEA), Government of India under ITEC programme. The funding includes **to and fro air fare, local travels, accommodation, living allowance and book allowance.** Accommodation provided will be of international standards.

Course Coordinator

Dr. P. KANAGAVEL

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ABOUT NIWE

National Institute of Wind Energy formerly Centre for Wind Energy Technology shortly known as NIWE is an autonomous R&D institution established at Chennai in 1998 by the Ministry of New and Renewable Energy (MNRE), Government of India. It is a premier institution with highly experienced professionals having expertise in all related disciplines of wind energy sector. NIWE is a forward looking and practical institution always well placed to take the next logical steps towards advancing wind technology in the right direction. With its progressive approach to all wind energy related science and technology from onshore to offshore, NIWE assures assistance from resource assessment (both wind and solar, RE forecasting for Energy production) to project implementation. As an integral part of NIWE, a world class accredited services providing Wind Turbine Test Station (WTTS) is established at Kayathar, Tamil Nadu. Perhaps, NIWE is the only Testing and Certifying agency in the country.

NIWE has been vested with the responsibility to provide complete scientific and technical backing to all stakeholders in the field of wind energy and has stated its commitment through its quality policy.

QUALITY POLICY

NIWE is committed to achieve customer satisfaction, loyalty and confidence by providing credible, prompt and complete solutions of international quality to all the stakeholders in the wind energy sector.

NIWE, strives to be technical focal point of excellence for the present and future. NIWE shall stay at the forefront of Wind Turbine Technology application by continuously improving its expertise.



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