

**Specially  
for African  
Countries**



**International Training Course on  
DESIGN, INSTALLATION AND  
MAINTENANCE OF SMALL WIND TURBINE**

**15<sup>th</sup> November to 13<sup>th</sup> December 2018**

Organized by



नीवे NIWE

**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 525 GW worldwide as on May 2018. It is estimated that viable wind power potential across globe is 72 TW, which is four times more than 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 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 about 10% (34,193 MW) of the total Indian energy mix of 3,43,898.33 MW and stands fourth in terms of installed wind power capacity worldwide as on May 2018. Indian SWT Installation 2400 KW (Source : WWEA Report 2015). Small wind is the best decentralized form suitable for Urban setup and can work in complimentary pattern with Solar roof top. Ministry of New and Renewable Energy, Government of India has provided the needed impetus to the propagation of this technology through its subsidy program. 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 specially for African countries under Africa India Forum Summit-III (AIFS-III). The Course is sponsored by Ministry of External Affairs (MEA), Government of India. To highlight, NIWE has so far successfully conducted 28 international training courses, wherein 572 professionals from over 80 countries have been trained and has also conducted 27 national training courses and trained about 1300 professionals which includes special course on Small Wind Turbine Design, Installation and Maintenance.

## 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 countries.

- ❖ 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.

## Training Methodology

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

## Resource Persons

The resource persons for the training course would be scientists / engineers of NIWE, Small Wind Turbine Manufacturers, Experts and Engineers, who have contributed significantly for the development of small wind turbine technology. The practical training of design, construction and maintenance of small wind turbine will be provided by the National and International experts with a support of NIWE and Engineers of Minvayu, Auroville, Tamil Nadu near Puducherry, 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.

## 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:

- ❖ Wind energy conversion technology and power generation
- ❖ Wind turbine technology and developments
- ❖ Design of wind turbines
- ❖ Wind turbine components
- ❖ Wind resource assessment and techniques
- ❖ Planning including design of wind farms
- ❖ Wind farm developments and feasibility study
- ❖ Pre-Investment study and cost benefit analysis
- ❖ Installation and commissioning of wind turbines
- ❖ Post installation activities - Grid integration

- ❖ O & M aspects of wind farms
- ❖ Testing & Certification of wind turbines
- ❖ Policies, schemes and legal frameworks
- ❖ Small Wind and Hybrid System
- ❖ Siting of SWT in Urban landscape.
- ❖ Design of Small Wind Turbine.
- ❖ Installation & Commissioning of Small Wind Turbines.
- ❖ Operation and Maintenance of Small Wind Turbines.

Intensive practical training will be imparted on design, construction and maintenance of small wind turbines. The course is designed in such a way that the participants themselves will design the parts / components of the Small Wind Turbines from the low cost and locally available materials and construct, Install, commission of the turbine to produce power and also Operation Maintenance practices. The participants will spent more time at the laboratory for practical. The participants will also be participating the International Conference on Small Wind Turbine proposed during November / December 2018.

### Target Participants

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

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

### Eligibility

- ❖ Applicants should be from any one of the **African country**.
- ❖ **Degree in Science / Diploma / Engineering Disciplines / ITI Holder / Rural Mechanic and Electrician with Knowledge in English.**
- ❖ Age should be between **25 to 45 years**.

### Course Fee

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

### Reason to Attend

The course will offer a good foundation on the principles of engineering behind wind energy technology, power generation & distribution along with financial viability and entrepreneur opportunities. 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 setting up a financially viable large wind farm project and Design, Installation and Maintenance of Small Wind Turbine.

### The Programme

The total programme duration will be 29 days from 15<sup>th</sup> November to 13<sup>th</sup> December 2018.

### Venue

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

### How to Apply?

Interested candidates may download the application and contact Indian Embassy / High Commission of India in respective participant countries to submit application to forward to MEA and NIWE for processing. The application form may be downloaded from NIWE website @ [http://niwe.res.in/departments\\_itcs\\_itc.php](http://niwe.res.in/departments_itcs_itc.php) and may also request through email.

### Course Coordinator

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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. This combination makes it 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 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.



नीवे NIWE

## NATIONAL INSTITUTE OF WIND ENERGY

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