

International Training Course on
WIND TURBINE TECHNOLOGY AND APPLICATIONS
Specially for African Countries

22nd November to 15th December 2017



Organized by

NATIONAL INSTITUTE OF WIND ENERGY, CHENNAI

Ministry of New and Renewable Energy, Government of India



Sponsored by

MINISTRY OF EXTERNAL AFFAIRS, NEW DELHI

Government of India

Introduction

With the rising concerns on climate change, countries are under pressure to turn to Renewable Energy (RE) sources and reduce CO₂ emissions. Amongst RE sources, Wind energy has proved a highly successful energy option and about 487 GW has been installed worldwide by end of June 2017. Earth's commercially viable wind power potential is estimated at 72 TW which is four times more than World's total energy demand. With such a huge potential, only very few countries are using wind power. USA, some of the European countries and Asian countries like China and India are using wind energy on a large scale and it is in startup stage in many parts of the world. Wind Energy has been least used in African continent, where only very few countries like Egypt, Morocco, Tunisia, South Africa etc. uses wind energy for power generation. Lack of skilled human resource has been one of the main barriers that hinders wind and other renewable energy diffusion.

National Institute of Wind Energy (NIWE), Chennai, India, being first of its kind institution in Asia, perhaps in developing countries, has responsibilities to address this issue. NIWE has contributed for diffusion of wind energy as one of the primary energy sources in India. India, over the years, has been a trend-setter nation with regard to wind power utilization. Decades of concerted efforts have started to yield gratifying results and today, Wind power contributes about 9.8% (32508.17 MW) of the total Indian energy mix of 330273.65 MW and stands fourth in terms of installed wind power capacity worldwide as on June 2017. With this vast experience, India can incorporate lessons learnt from its own experience to foster growth elsewhere in the globe. In this context, a four week 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 organized 24 international training course wherein 486 professionals from 78 countries have been trained and it has also organized 24 national

training courses including special training courses and trained 1211 professionals.

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.

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 this training course will be NIWE scientists, industry professionals, academicians and other national experts who have significantly contributed for wind energy development in the country.

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 and performance characteristics

- ❖ 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 farms
- ❖ Post installation activities - Grid integration
- ❖ O & M aspects of wind farms
- ❖ Testing & Certification of wind turbines
- ❖ Small wind turbine and hybrid systems
- ❖ Wind energy developments in India
- ❖ Indian government policies and schemes and legal frameworks.

Additional lectures during wind farms and manufacturing facility visits would also be organized to give a complete picture of the know-how and how to go about setting up a coordinated wind energy programme at national level.

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
- ❖ Manufacturers
- ❖ Suppliers and Distributors
- ❖ Utilities
- ❖ Consultants
- ❖ Project Developers / Managers
- ❖ Government Organization
- ❖ NGOs
- ❖ Media

Eligibility

- ❖ Applicants should be from any one of the **African country.**
- ❖ **Degree / Diploma in Engineering / Science** with good knowledge in English.
- ❖ Age should be between **25 to 45 years.**

Course Fee

The course is **completely free** which is sponsored by Ministry of External Affairs (MEA), Government

of India under Africa India Forum Summit - III (AIFS-III) which 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 wind farm project.

The Programme

The total programme duration will be **24 days** from **22nd November to 15th December 2017.**

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 download from NIWE website @ 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 young organization with highly experienced professionals with expertise in all related disciplines of wind energy sector. This unique combination makes it a forward looking and practical organization that will take the next logical steps towards advancing wind technology in the right direction. With its open approach to all wind energy related science and technology, NIWE assures assistance from resource assessment to project implementation. As an integral part of NIWE, a world class Wind Turbine Test Station (WTTS) is established at Kayathar in Thoothukudi District, Tamil Nadu. Perhaps, NIWE is the only Testing and Certifying agency in the country.

NIWE has 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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