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EDITORIAL

From increased installations to technological innovations, the wind energy sector continues to expand worldwide, driving us closer to a sustainable energy future.

Global advancement in wind turbine technology, such as larger rotor diameters, taller towers, and enhanced design for greater efficiency, have improved the performance and cost-effectiveness of wind energy. This has strengthened the competitiveness of wind in comparison to conventional fossil fuels.

India has been consistently adding new wind power capacity and states like Tamil Nadu, Gujarat, and Karnataka have been leading in wind energy installations.

NIWE being one of the technical arms of the Ministry of New & Renewable Energy (MNRE) has undertaken R&D projects involving various stakeholders, and multiple research and development initiatives. The 30th Research and Development Council meeting was conducted through hybrid mode at NIWE. After thorough deliberation, the council has approved three research proposals based on their technical and innovative merits. Three research projects were cleared based on their technical and innovation merit.

On the Offshore energy front, NIWE has identified suitable locations for deploying the Offshore Lidar at VOC port (4 to 5 km from the sea shore) and Udangudi Thermal Coal jetty (8 to 9 km from the sea shore) which will cover wind profile of the Tamil Nadu coast. The Installation and commissioning of LiDAR at above mentioned sites have been completed and measurements are under progress. NIWE has initiated the offshore wind resource assessment and geophysical & geotechnical investigation for development of 500 MW of offshore wind farm under Model A.

The Wind Resource Assessment division has been installing Wind Monitoring Stations (WMS) across the country (viz), 2 nos of WMS at Bharatpur, Shaheed Dweep in South Andaman and Sigmundera, Long Island in North & Middle Andaman and collecting wind profile data to assess wind potential for various purposes. The division had successfully commissioned offshore LiDAR at NIOT desalination plant building at Kadamat, Lakshadweep Island. The division has also undertaken the routine inspection of meteorological instruments, including sonic anemometers, temperature sensors, data loggers and solar panel, and humidity sensors to ensure accurate and reliable data collection at 41 locations covering 7 states. In connection with Wind & Solar Resource Assessment Studies at Ladakh, four nos. of 100m WMS and two nos. of SRRA station have been commissioned to assess the Wind and Solar potential. The Division has completed 4 consultancy projects and is actively managing 16 consultancy projects aimed at providing comprehensive support to various stakeholders.

On the area of certification, NIWE has initiated the 2nd stage of the Type Certification process for M/s. Power Wind Limited as per the scheme IS/IEC 61400-22: 2010. NIWE underwent the Witness Inspections for the Mechanical component 'Tower' at Silvassa and the Electrical Component 'Wind Turbine Generator' at Kayathar conducted by NABCB, QCI as per the requirements of ISO/IEC 17020:2012 in connection with obtaining accreditation for Inspection Services.

NIWE has signed an Agreement with M/s. INKEL Limited for Technical and Advisory Consultancy Services (TACS) for the installation of 14 MW wind farm.

With regard to skill development, the Skill Development and Training Division had conducted 1 International training course and trained 28 participants from 11 countries also conducted a Customized training course for their 45 officials of Renew Power Pvt. Ltd. and a National training course with 50 participants.

During the quarter, the division has coordinated the student visit of 473 students to gain insights into Wind Energy. 9 students had undergone an internship at NIWE. Under VSDP, 7 nos. of ToP training batches were completed with 210 participants and 11 batches are ongoing. Also one ToT programme with 25 trainers were completed successfully.

Together, let's continue to champion renewable energy and its vital role in shaping a cleaner, more sustainable world.

Until next time, harness the wind, and let's keep pushing towards a brighter tomorrow.

Dr. Rajesh Katyal, Director General

Contents

Editorial Board

Research and Development

The 30th Research and Development Council meeting was conducted under the chairmanship of Dr M V Ramana Murthy through hybrid mode on 6th March 2024 at NIWE. Three research projects were cleared for their technical and innovation merit. A demonstrative project on the Development of Floating LiDAR Offshore Wind Measurement System proposed by IIT Bombay was one of them. The Project aims at design and development of an integrated floating buoy suitable for mounting LiDAR along with other metrological & oceanographic sensors. The other two proposals were on the (a) Development of tools for power curve turbulence normalization as per the latest IEC standards and validation using experimental performance data, (b) Acoustic Noise Measurement in Flat, Complex and Semi-complex terrains as per the IEC Standards and establish noise emission criteria for Wind Turbines & to understand the feasible distancing of dwellings from the turbines. These research works will be carried out pursuant to the approval of the upcoming Governing council of NIWE.

Offshore Wind Development

Met Ocean Measurement

NIWE has identified suitable locations for deploying the Offshore Lidar at VOC port (4 to 5 km from the sea shore) and Udangudi Thermal Coal jetty (8 to 9 km from the sea shore) which together with the measurements at sub-zone 1 will cover wind profile of the Tamil Nadu coast.

The Installation and commissioning of LiDAR at above mentioned sites have been completed and measurement are under progress. One year wind measurement campaign will be completed by February 2025.

UDANGUDI, Location: Udangudi Thermal Coal Jetty

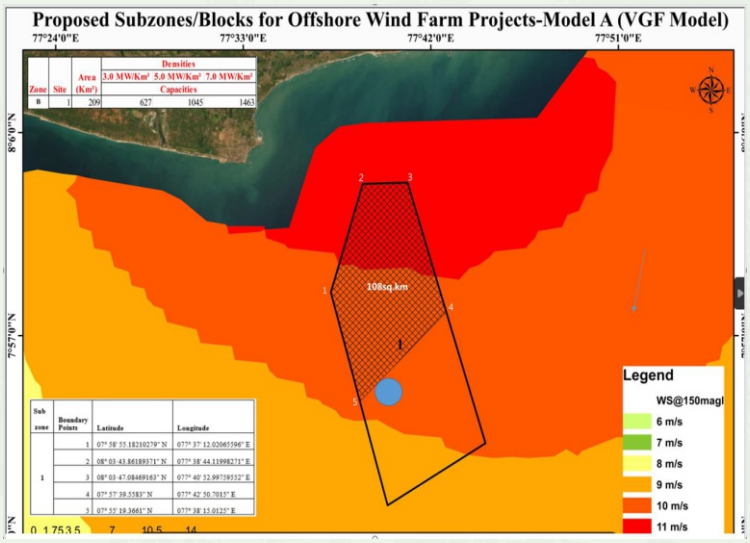
Environment Impact Assessment (EIA) study

EIA study for the offshore National Test Centre at Dhanushkodi / Greening of Rameshwaram under funding from UK-FCDO as a part of ASPiRE programme has been successfully completed and the final report has been prepared. Necessary clearances are underway.

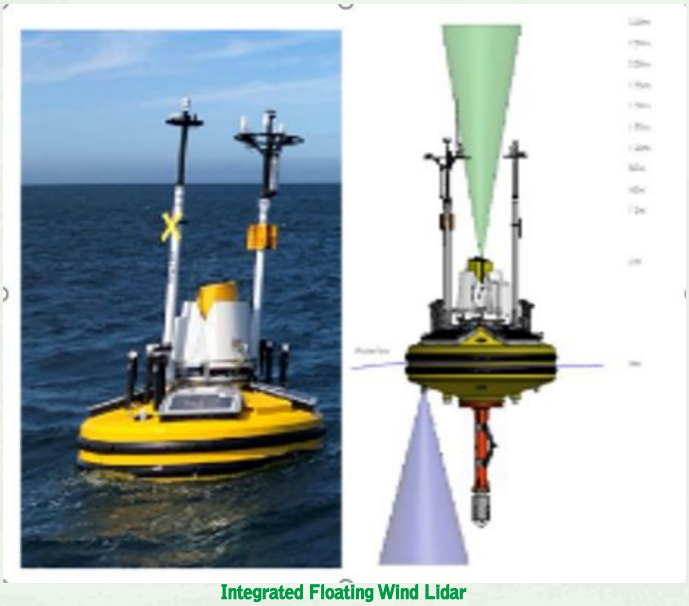
Location of seawater, seabed sediments and biological sampling - Palk Bay

Offshore Wind Development

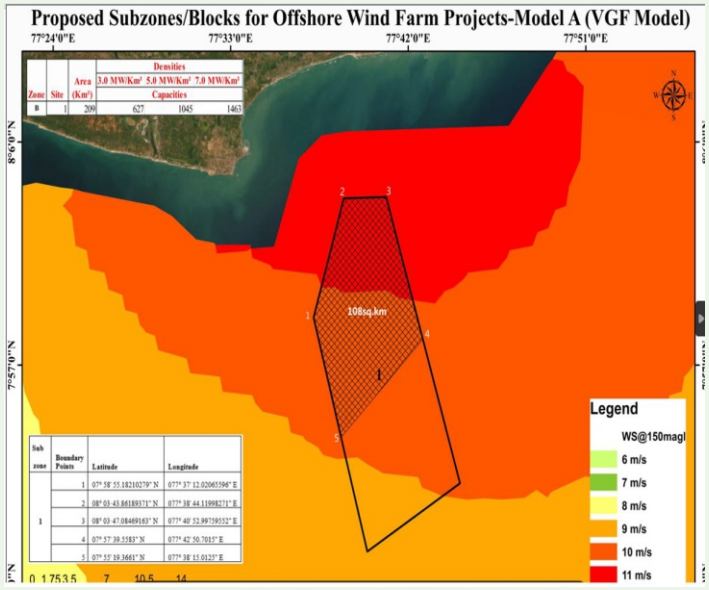
As per the Revised Strategy for Establishment of Offshore Wind Energy Projects published by MNRE on 26th September 2023, offshore wind power development will be undertaken under 3 models of development. NIWE has initiated the offshore wind resource assessment and geophysical & geotechnical investigation for development of 500 MW of offshore wind farm under Model A. Measurement will commence soon.



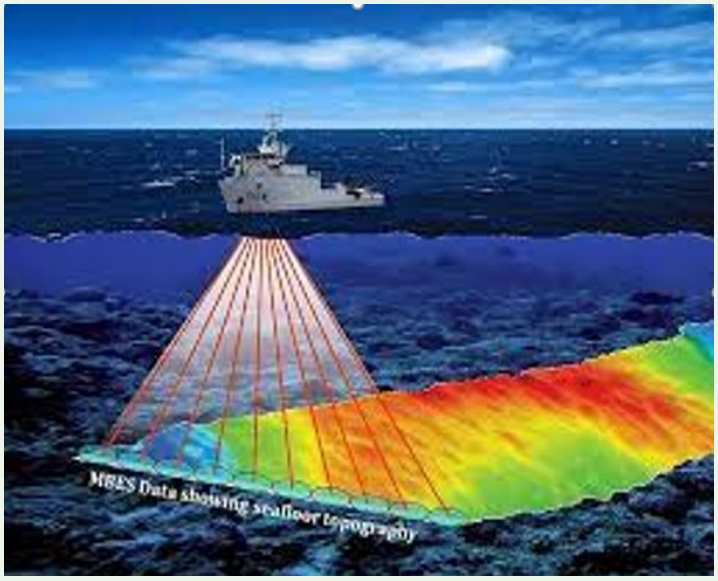
Location of floating buoy with offshore LIDAR



Integrated Floating Wind Lidar



Area recommended for geophysical & geotechnical survey



Geophysical Vessel survey

Latest Update

Tender for allocation of Seabed Lease for 4GW Offshore Wind Power Projects has been published; https://www.seci.co.in/whats-new-detail/2606

Wind Resource Assessment

Wind Resource Assessment

Wind Resource Assessment Studies in Andaman & Nicobar Islands

The Wind Resource Assessment division erects Wind Monitoring Stations across the country and collecting wind profile data to assess wind potential for various purposes.

During the period, the division had successfully commissioned two nos. of Wind Monitoring Stations (WMS) at Bharatpur, Shaheed Dweep in South Andaman and Sigmundera, Long Island in North & Middle Andaman.

WMS installed at Sigmundera

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LiDAR based Offshore Wind Measurement at Kadamat Island, Lakshadweep

- As part of wind resource assessment efforts, WRA division had successfully commissioned offshore LiDAR at NIOT desalination plant building at Kadamat, Lakshadweep Island.
- Data from the LiDAR is being monitored and downloaded daily.

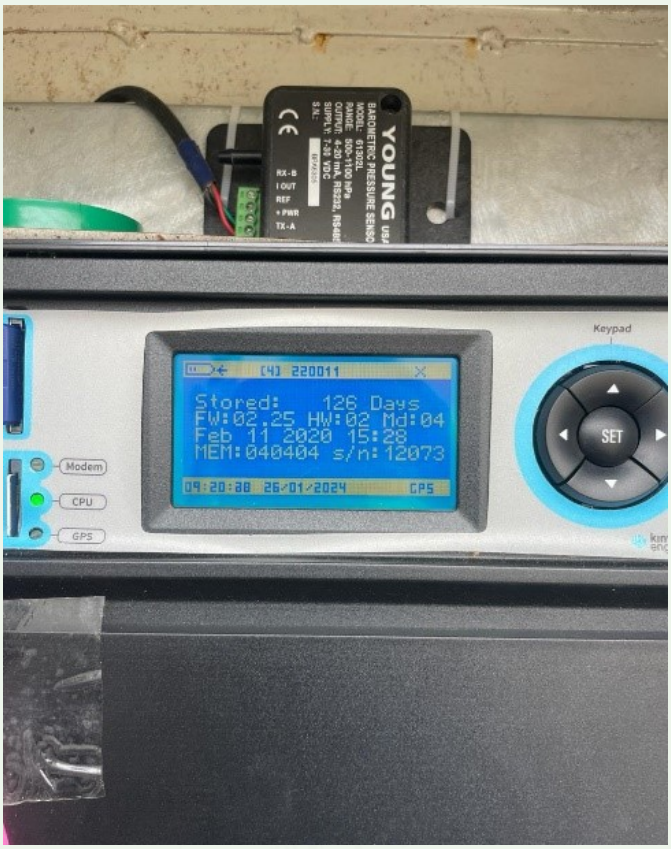
SRRA

- The WRA Division has conducted site visits and inspections of SRRA (Solar Radiation Resource Assessment) stations, focusing specifically on the instruments used for measuring solar radiation and meteorological data.
- The visits involved a meticulous examination of the solar radiation instruments, such as pyranometers, pyrheliometers, and sun trackers, ensuring their proper functioning. The Division also inspected the meteorological instruments, including sonic anemometers, temperature sensors, data loggers and solar panels, and humidity sensors, etc., to ensure accurate and reliable data collection, as detailed below:

State	No. of WMS	Site name
Madhya Pradesh	3	Rewa, Jabalpur & Indore
Karnataka	4	Mysore, Vijayapura, Gokak & Kalabhuragi
Andhra Pradesh	3	Srikakulam, Rajamundry & Guntur
Chhattisgarh	2	Ambikapur & Bilaspur
Maharashtra	8	Bhandara, Jalgaon, Karad, Osmanabad, Shahada, Shegaon, Solapur & Wardha
Odisha	18	Bhubaneshwar, Rourkela, Chakarkend, Similiguda, Paparahandi, Tadamali, Rayagada, Narayanapatna, Achyutpur, Ramasing Prasad, Puri, Astranga, Shankeshwar, Kusumi, Gopalpur, Sonapur, Nandapur & Marine Drive
Telangana	3	Mahabu Nagar, Medak, Warangal

SRRA Station installed in Karnataka

SRRA Station installed in Madhya Pradesh



Wind & Solar Resource Assessment Studies at Ladakh

- To assess the Wind and Solar Potential, four nos. of 100m WMS and two nos. of SRRA stations have been commissioned.
- Chip/data collection of WMS at Leh, Ladakh, where comprehensive data on wind and solar resources was gathered to assess the location potential for energy generation.

Research Activities

Maintenance and Repair Strategy for Wind Energy Development

- The research focuses on understanding the impact of Indian environmental factors on blade damage. Currently, non-destructive testing (NDT) is being conducted on a damaged blade to assess its structural integrity.
- The goal is to gather insights into the specific challenges posed by Indian conditions and develop effective strategies for mitigating and managing blade damage.

The wind farm SCADA control system at Bhuj, Gujarat

- Successfully commissioned SCADA control system in 5 PSS in the Bhuj area.
- As directed by MNRE a field visit has been carried out by NIWE, along with MNRE, PGCIL and Grid India officials at the implementing sites at Bhuj on 29th February & 1st March 2024. Based on the field visit recommendation of measures for improvising the implementation strategy/protocol in order to meet the requirements of IAF and minimise the concerns of grid operators have been submitted.

Data Analytics

Consultancy projects

During this period WRA Division has completed 4 consultancy projects and is actively managing 16 consultancy projects aimed at providing comprehensive support to various stakeholders within the wind industry. The range of activities encompass a diverse set of tasks and expertise.

- **Energy Yield Estimation:** NIWE utilises the in-depth knowledge and advanced tools to accurately assess the potential energy output of wind projects. This analysis is crucial for project planning, financial projections, and overall project viability.
- **Preparation of Tender documents and conducting Technical Bid evaluations:** NIWE assist the clients in preparing well-structured and comprehensive tender documents that effectively communicate project requirements. Additionally, it evaluates technical bids submitted by potential vendors, ensuring that they meet the necessary criteria and align with project objectives.
- **Wind-Solar Hybrid projects:** By combining the strengths of both wind and solar energy, it helps the clients to explore the possibilities of hybrid power generation systems that maximise energy production and optimise resource utilisation.
- **Preparing Detailed Project Reports (DPR):** Provides comprehensive insights into project feasibility, financial aspects, technical specifications and risk assessment. .
- **Project Management Consultancy (PMC) services:** PMC services ensures that wind turbine components meet required standards, verify manufacturing facilities, and monitor the installation process to ensure compliance and safety. Additionally, it supervises the commissioning process to evaluate performance and resolve the issues. By providing comprehensive project management support, PMC services contribute to the successful implementation of wind turbine project.
- **Verification procedure of wind monitoring stations:** The verification procedure of wind monitoring stations by private developers involves verification of the Wind Monitoring stations, equipment, calibration of instruments to ensure accuracy, continuous data collection of wind speed, direction, and other parameters like geographical locations etc.

Geotagging

Geotagging is a process that involves capturing GPS coordinates of wind turbine locations and assigning a unique ID to each turbine. In the case of a wind farm site with multiple turbines, this process was implemented to accurately map the precise location of each turbine. During the period, 236 geotagging IDs have been created.

RE Projects

2 MWp Ground Mounted Grid Connected Solar Power Plant at Indian Institute of Management (IIM)-Trichy and 1 MW (AC) Ground Mounted Grid Connected Solar Power Plant at Madurai Kamaraj University (MKU), Madurai

The 2 MWp ground-mounted grid-connected solar PV power plant at IIM Trichy campus and 1 MW AC plant at Madurai Kamaraj University are being monitored through daily solar power generation data review and periodic site visits to inspect the solar arrays, inverters, transformers along with oversight of O&M activities like module cleaning, string checks, equipment tests as per the operational and maintenance agreements to validate proper maintenance and optimal performance of the solar assets for maximising clean power generation from the grid-connected plants.

Other Works

- Data availability reports were prepared for potential customers, explaining the wind and solar resource data available for sale at specific sites or regions. This supports the assessment of renewable energy projects.
- During industrial visits, division engineers showcased the lab facilities to students from various colleges and schools. The capabilities related to wind and solar resource mapping, forecasting, and equipment testing were explained and demonstrated.

- The Division Head travelled to Assam during the period from 14th to 16th February 2024, along with representatives from OTPC, NEEPCO, APDCL. The objective was to identify suitable locations for installing wind monitoring station in the state of Assam. The team surveyed several sites in and around Assam based on factors like wind flow patterns, access roads, proximity to grid infrastructure, land availability etc. Based on site characteristics and available data, one location was finalised for setting up 120/150 meter met masts with equipment to gather wind speed, direction and other parameters.

- The Engineers & Technician travelled to Odisha during the period from 2nd to 10th January 2024, along with representatives from OTPC, GRIDCO, MCL. The objective was to identify suitable locations for installing wind monitoring stations that would collect wind data to assess the viability of potential wind power projects in the region. The team surveyed several sites in and around Odisha based on factors like wind flow patterns, access roads, proximity to grid infrastructure, land availability etc. After evaluating multiple options, five locations were finalised for setting up 120 & 150-meter met masts with equipment to gather wind speed, direction and other parameters.

Certification & Information Technology

- NIWE has initiated the 2nd stage of the Type Certification process viz. Evaluation of documentation for "Powerwind 56" wind turbine model of M/s. PowerWind Limited as per the scheme IS/IEC 61400-22 : 2010. The Manufacturing Evaluation of the wind turbine tower has been completed.
- NIWE underwent the Witness Inspections successfully for the Mechanical component 'Tower' at Silvassa and the Electrical Component 'Wind Turbine Generator' at Kayathar on 11th and 18th of March 2024 respectively conducted by NABCB, QCI as per the requirements of ISO/IEC 17020:2012 in connection with obtaining accreditation for Inspection Services.
- NIWE has signed an Agreement with M/s. INKEL Limited for Technical and Advisory Consultancy Services (TACS) for the installation of 14 MW wind farm.

INFORMATION TECHNOLOGY

- Continued to maintain the IT infrastructure to keep servers, storage, systems, and software up and running.
- Continued to provide IT support for users at NIWE and its stakeholders.
- Initiated the Restructuring of LAN.
- Prepared tender documents for the procurement of new hardware, software, and AMC services.
- CCTV infrastructure in NIWE is in progress.

Web Portals

- Design and development of the NIWE website in line with GIGW guidelines is in progress.
- 20 m wind atlas map web application developed and published.

New Infrastructure

Restructuring of VC Hall Audio and Video Devices have been installed.

Testing, Standards and Regulation

TESTING

- Preparatory works have been completed for carrying out Power Performance Measurements of 3.3 MW capacity as per latest IEC Standards viz., IEC 61400-12-1:2017 for INOX DF/3000/145 3.0 MW Power Booster Mode 3.3 MW Rotor Blade Type SR71 (T-Bolt), Hub Height 100 m IEC WT Class IIIB wind turbine at Rajkot, Gujarat for M/s. Inox Wind Limited.

STANDARDS AND REGULATION

- Review of documentation has been completed for 09 wind turbine models submitted by various wind turbine manufacturers for RLMM. Further, technical support has been provided to MNRE for implementation of Revised Lists of Models and Manufacturers of wind turbines (RLMM) process.
- Organized meeting with Type certification bodies for wind turbines held on 14.03.2024 through video conference which was attended by various Type Certification bodies and NIWE & MNRE officials. During the meeting various issues related to the type certificate documentation were discussed by the RLMM committee.
- Provided technical support to Bureau of Indian Standards (BIS) in connection with the works related to standards. Further, the works related to preparation of draft Indian standards / IEC standards & IECRE documents are under progress.
- The continual improvement and maintaining the quality management system are ongoing.

Skill Development and Training

Special Training Course for the officials of M/s. Renew Power Pvt. Ltd.

The Skill Development and Training Division of NIWE had successfully conducted the special training course on "WIND ENERGY TECHNOLOGY" for the officials of M/s. Renew Power Pvt. Ltd. held during 08th to 13th January 2024. The course addressed all aspects of Wind Power starting from what is wind to wind resources assessment, project implementation and operations & maintenance aspects in a focused manner along with financial and policy aspects towards going in for economically viable wind farm projects. 45 numbers of officials working in different facets of wind projects had participated enthusiastically in the course.

Dr. Rajesh Katyal, DG, NIWE inaugurated the Course

The participants visited the Renewable Energy facilities available in NIWE. They were also taken to the southern part of Tamil Nadu to visit Wind Turbine Test Station at Kayathar, where they got an exposure on small and large wind turbine testing process. They also had a live feel of Transformers & Generator Assembly at Apollo

Participants at the Wind Solar Hybrid System, WTTS, Kayathar

Participants at Apollo Transformers and Engineering, Tirunelveli

Participants at RS Windtech Engineering Pvt. Ltd, Aralvaimozhi

Participants at Suzlon CMS, Thattapaarai

Transformer & Engineering Pvt. Ltd., Tirunelveli, Operation and Maintenance facilities of Wind Turbines at RS Windtech Engineering Pvt. Ltd., Aralvaimozhi and CMS SCADA facilities at Suzlon Global Services Limited, Thattaparai.

After the visits, the certificates were distributed to the participants on 13th January 2024. All the participants appreciated the classroom lectures, renewable facility visit and study visits arranged by NIWE as part of the course.

Group Photo of Participants after receiving the Course certificate

29th International Training Course

The SDT Division has successfully conducted the 29th International Training Course on "Wind Turbine Technology and Applications" during 24th January to 9th February 2024, sponsored by Ministry of External Affairs (MEA), Government of India under ITEC programme. The course addressed all aspects of Wind Power starting from introduction to wind and its technology, wind resource assessment, installation and commissioning, operation and maintenance aspects of wind farms in a focused manner along with financial and policy aspects. 28 participants attended the course from 11 ITEC partner countries, Eritrea, Ethiopia, Ghana, Kenya, Lebanon, Malawi, Maldives, South Sudan, Sri Lanka, Tunisia and Zimbabwe.

During the 18 days course, 19 classroom lectures were scheduled apart from study visits to wind farm and wind turbine manufacturing factory. The participants were taken on a study visit to the southern part of Tamil Nadu to visit Wind Turbine Test Station at Kayathar, where they got exposure on small and large wind turbine testing process apart from visiting the facilities of Gearbox repairs at Narayana Wind Power Pvt. Ltd., Aralvaimozhi, operation and maintenance of wind turbines at RS Windtech Engineering Limited, Aralvaimozhi, data collection and electrical support at Wind World Clean Energy Forever, Manur and centralized monitoring station at Suzlon Global Services Limited, Thattaparai.

Participants at Wind Turbine Test Station, Kayathar

Participants climbing Metmast at WTTS, Kayathar

Participants at Narayana Wind Power Pvt. Ltd., Aralvaimozhi


Participants at RS Windtech Engineering Pvt. Ltd, Aralvaimozhi

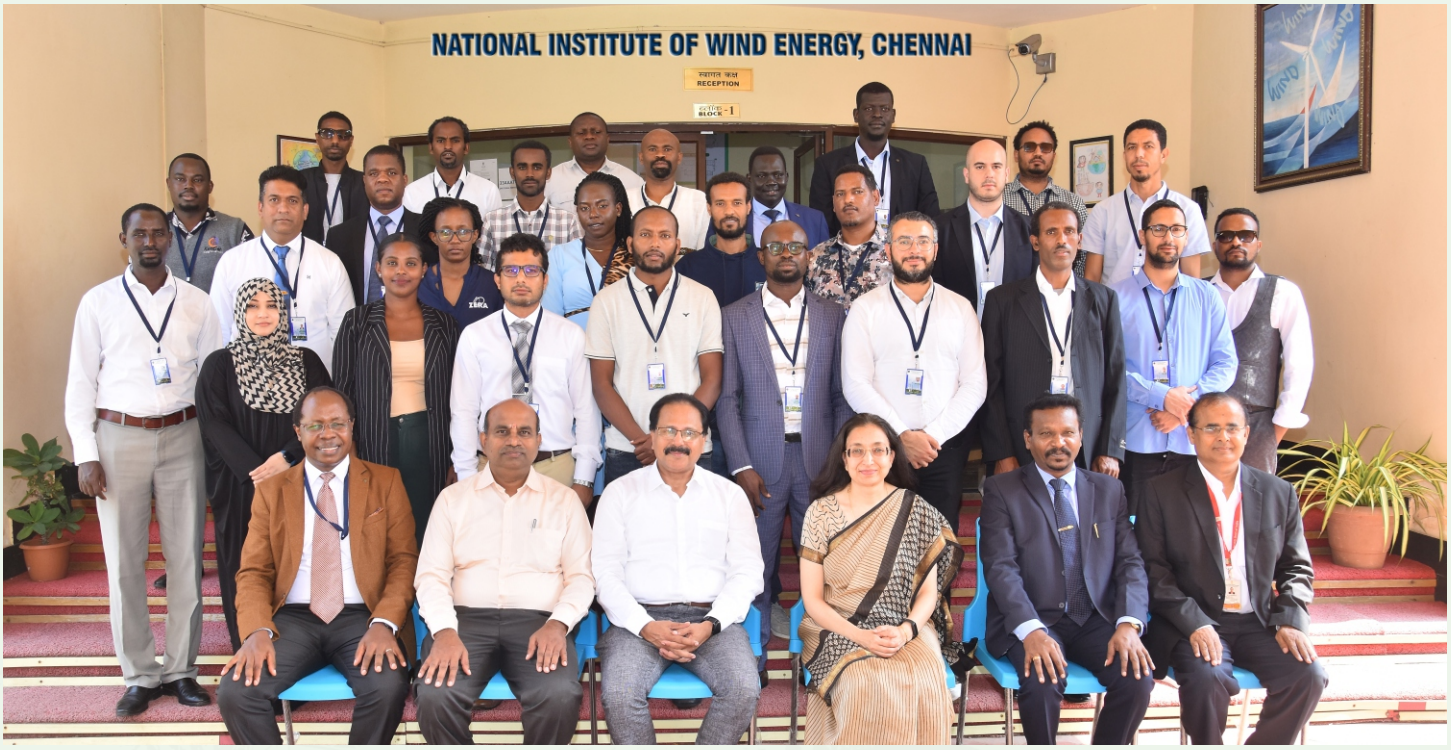
Participants at Suzlon Global Services Ltd., Thattaparai

Participants visited and enjoyed the cultural place visit at the Southern tip of India which comprises of the Thiruvalluvar Statue and Vivekananda Rock Memorial, Kanyakumari.

The participants were taken to the training facility of M/s. Vestas Wind Technology India Pvt. Ltd., Ammapettai, which provided valuable insights into the various components and its finer points in the installation and maintenance of wind turbine. The participants were also taken for a visit to CSIR-Structural Engineering Research Centre, Taramani where they were initially shown the wind engineering laboratory consisting of a state-of-the-art Boundary Layer Wind Tunnel (BLWT) facility, one of the largest boundary layer wind tunnels available in the country.

Chief Guest delivering the Valedictory Address

Ms. Abhilasha Joshi distributing the Course Certificate



Participants with the Chief Guest and NIWE officials

The valedictory function was conducted on 09th February 2024. Ms. Abhilasha Joshi, Additional Secretary, Ministry of External Affairs, Government of India was the Chief Guest and distributed the course certificates to all the participants.

The course was appreciated by each of the participant stating that it encouraged a positive learning environment and found it very effective and beneficial.

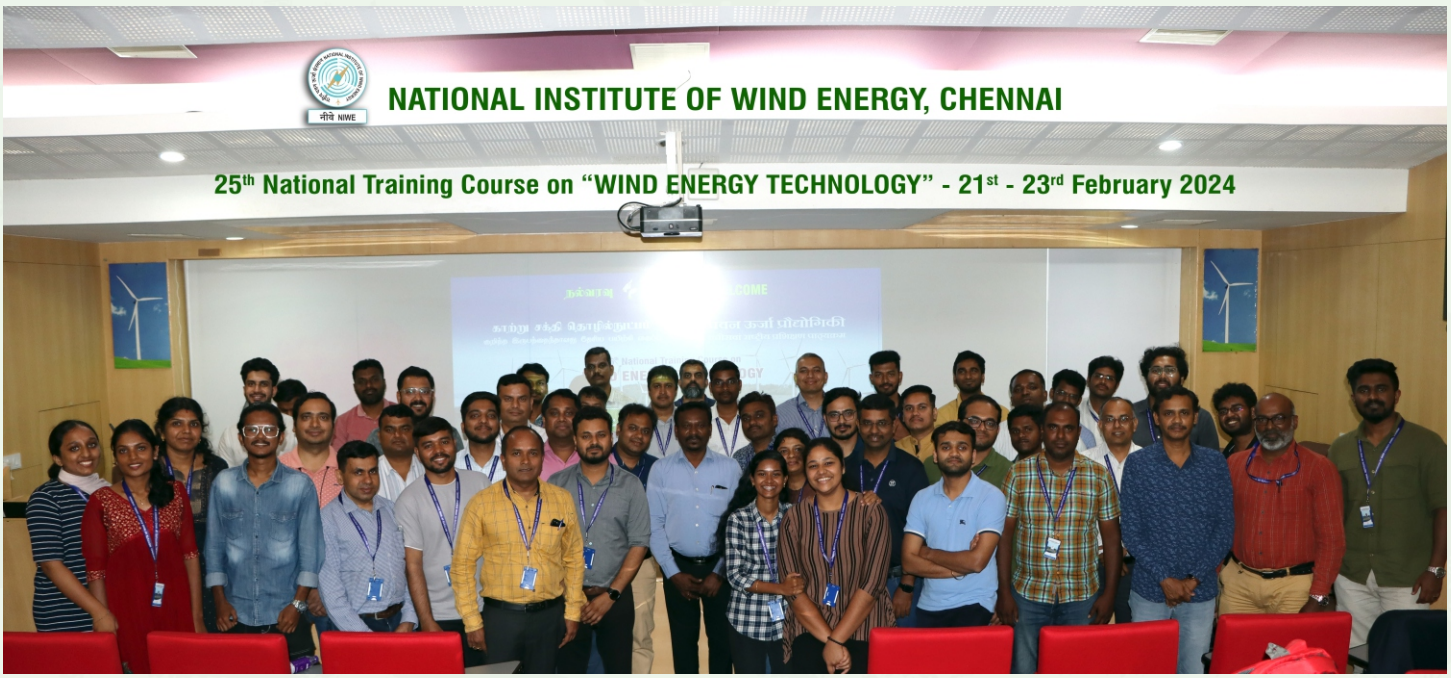
25th National Training Course

The Skill Development and Training Division of NIWE successfully conducted 25th National Training Course on "Wind Energy Technology" during 21st to 23rd February 2024 to address all aspects of Wind Power starting from introduction to wind and its technology, wind resource assessment, installation and commissioning, operation and maintenance aspects of wind farms in a focused manner along with financial and policy aspects. The course

Dr. P. Kanagavel Inaugurating the Course

was attended by 50 participants from 9 States viz. Tamil Nadu, Delhi, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Maharashtra and Odisha.

The training course was inaugurated by Dr. P. Kanagavel, Director & Head, SDT Division, NIWE with the training participants in absentia of the DG, NIWE. During the 3 days course, 11 classroom lectures were scheduled.



The participants visited the Renewable Energy facilities available in NIWE campus for practical exposure, and had opportunity to understand the Vertical and Horizontal Axis Small Wind Turbines, Wind-Solar Hybrid System, Wind Turbine Nacelle Assembly facility, Meteorological Mast, Biogas Plant and SRRA Station and Wind Energy Training Systems.

During the Valedictory Function, the participants expressed their appreciation to NIWE for organizing the training course. Thereafter, Dr. P. Kanagavel, Director & Head, SDT Division, NIWE thanked the participants for their appreciation and distributed the Course Certificates to the participants.

Dr. P. Kanagavel dstributiing the Course Certificate

Vayumitra Skill Development Program (VSDP)

Ministry of New & Renewable Energy (MNRE), Government of India has sanctioned, "Vayumitra Skill Development Program (VSDP)" to create skilled workforce for the Indian wind energy sector especially the trained manpower for the operation & maintenance of wind farms in the country as per the industry demand/needs so as to achieve the Government of India targets and other future targets.

Under VSDP, a total of 5010 participants are proposed to be trained through Training of Participants (ToP). The ToP training courses will be conducted through 22 identified institutions located close to the Wind Farms of windy States. To train the participants, NIWE will conduct Training of Trainers (ToT) programme and train 690 trainers who will train the participants.

Activities completed :

- The 7th batch of ToT was conducted from 19-02-2024 to 01-03-2024 and trained 25 trainers. So far 196 trainers have been trained and certified by Skill Council for Green Jobs (SCGJ) and awarded Certificates by National Skill Development Corporation (NSDC) of Ministry of Skill Development and Entrepreneurship (MSDE), Government of India.
- During the quarter a total of 17 batches of ToP programmes were conducted and about 510 participants had successfully completed the programmne. On the whole, 55 Nos. of ToP programme have been completed covering 1650 participants and there are 11 ongoing batches having 330 participants which will conclude in April / May 2024.

Students & Training Participants Visit

To create awareness and to motivate towards research on wind energy, achieving the indigenization and also to create awareness about the activities and services of NIWE, schools and college students are encouraged to visit the campus.

During the period from January to March 2023, the following visits were coordinated.

S.No.	Name of Institution	No. of Students	No. of Staff	Visited on
1	Jerusalem College of Engg., Chennai	61	3	13.02.2024
2	Jerusalem College of Engg., Chennai	61	2	15.02.2024
3	Jerusalem College of Engg., Chennai	56	2	27.02.2024
4	Jerusalem College of Engg., Chennai	60	3	29.02.2024
5	Jerusalem College of Engg., Chennai	60	3	05.03.2024
6	Jerusalem College of Engg., Chennai	53	3	07.03.2024
7	Jerusalem College of Engg., Chennai	58	2	12.03.2024
8	NITTTR, Taramani, Chennai	6	1	12.03.2024
9	Jerusalem College of Engg., Chennai	58	2	14.03.2024

Internship Programme

The "NIWE-Academic Associate Programme" (NIWE-AAP) aims to encourage students and provide an opportunity to choose renewable energy as their career option. To create awareness and interest in the field of renewable energy research among the young talented Sciences, Management and Engineering students NIWE invites applications from the eligible candidates for the "NIWE-Academic Associate Programme" (NIWE-AAP). The duration of the Internship will be two weeks to six months. NIWE-AAP will provide opportunities for the students/post studies students/ Lecturers/Professors to work with scientists/engineers on NIWE's projects.

During the period from January to March 2024, 25 applications were received out of which 9 students got enrolled. 17 students were issued Internship Certificates and 11 are undergoing Internship.

From the commencement of the NIWE-Academic Associate Programme (NIWE-AAP), Ninety one (91) Internship Certificates were issued to the successfully completed Interns.

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