



With over 18400 MW installed capacity of wind power with policy changes in the 12th plan is heading for a dip in the net annual installed capacity from the last financial year's peak of

3100 MW. As of now there is a decrease in installed capacity to the extent of 40 to 50%, when compared to the last financial year. Policies for the 12th plan for wind power in India, need to address this reduction and change the downward trend in the wind power development in India. The impact of withdrawal of accelerated depreciation has to be re-visited in the light of availability of matured technology WTG models with manufacturing base in India. This may be limited to small investors whose sustained interest is already hampered by the tariff payment delays. Even though wind generators have free fuel, their interest on debt-financing is critical issue to new investments in wind power. GBI, had a marginal attraction of IPPs, but needs more clarity on continuation of the scheme with further refinements as early as possible. RECs are plenty from wind but the market seems to be depending on effective enforcement of wind based RPOs. Small wind sector alone need not be considered for off-grid roof top applications, applications of sub-mega watt machines for off-grid uses such as institutional (remote schools, colleges and other) powering, battery bank charging, hydrogen generation, desalination, battery operated vehicle charging facility with renewables in large car parks, mobile tower power systems are a few viable routes to promote and harness wind energy, saving the foreign exchequer payouts, towards costly, imported fossil fuels. With special prayers for a

promotional policy for wind power as well in the lines of National Solar Mission we may go ahead requesting for a National Wind Mission for India to sustain the proliferation of wind power.

Reviewing C-WET's activities during this time, the R&D unit started getting signals from all the sensors for showcasing a remote health monitoring system operation in C-WET's 2 MW wind turbine. Land acquisition for small wind turbine testing, wake studies and 120 m anemometry at Kayathar is in an advanced stage to gear up industry oriented research in wind energy technology. While concentrating on the routine wind monitoring projects all over India, along with several value added consultancies, WRA unit has organized a comprehensive training programme for the officials of state nodal agencies. The scientists and technicians of wind turbine testing unit apart from doing the preparations to complete two contracted Type Test projects, underwent specialized training and discussions at NREL, Colorado, United States of America under the Indo-US program of C-WET-NREL collaborations. S&C unit is busy improving the timely issue of RLMM lists as part of MNRE committee, together with activities of standards preparation in the lines of IEC. The ITCS unit has completed 13th national course on wind energy technology. WTRS unit has installed a Solar panel to operate the battery operated vehicle with green power. C-WET was fortunate to have Honorable Minister and JS & PS (MNRE) to dedicate to the Nation the 51-SRRA stations and the data server during this time. C-WET is improving in its technical capabilities with the constructive suggestions of the industry and the readers of PAVAN. We welcome your valuable suggestions to serve you better than before, always.

S. Gomathinayagam
Executive Director

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Developments in R&D UNIT

Human Resource Development by C-WET through tie-up with Amrita Vishwa Vidyapeetham University

C-WET with approval of its Research Council supports the short term Post Graduate Diploma courses in Wind Power Development & Wind Resource Analysis under a MoU signed with Amrita Vishwa Vidyapeetham, Ettimadai, Coimbatore. Under this MoU C-WET shall support the courses for three years period which started from 2011 and will continue till 2014. The first batch of 2011-12 batch from this HRD program have completed their program successfully.



C-WET Campus visit by Amrita University students

Many lecture sessions were handled by C-WET's scientists both at C-WET and also at the University Campus, Coimbatore. The courses will immensely help in developing inter disciplinary knowledge transfer and creating skilled manpower which is in severe shortage for the wind industry.

Health / Condition Monitoring on the 2 MW R&D Experimental Wind Turbine

As a part of conducting cutting edge R&D in the area of condition



Wear Debris Sensor in the Gear Box Oil loop

monitoring in the 2 MW Experimental/Research Wind Turbine at C-WET's Kayathar WTRS facility, blade and drive train condition monitoring instrumentation were installed for data collection.

A Wear Debris sensor in the Gear oil loop of the Gearbox has also been installed as a new addition to the pioneering effort. The sensor is expected to perform analysis of the gear oil and determine the size and nature of the debris in the oil which will help to identify areas of wear and tear inside the gear box and helps in defect prediction prognosis.

Move on in WRA UNIT

During the period of October to December 2012, 11 new wind monitoring stations have been established in 5 states (2 stations in Maharashtra, 6 stations in Orissa, 1 station in Arunachal Pradesh, 1 station in Mizoram & 1 station in Bihar) and 1 wind monitoring station has been closedown in Andhra Pradesh. Presently, 95 wind monitoring stations are operational in 16 States and 1 Union Territory under various wind monitoring projects funded by the Ministry of New and Renewable Energy as well as by various entrepreneurs.

The following consultancy projects have been completed and submitted reports during this period.

- Wind Power Density (WPD) map for 2 sites.
- Technical Evaluation for proposed 2 wind farm projects.
- Wind Monitoring for 1 site.
- Data Validation of Triton Sound Detection and Ranging (SODAR) Instrument.
- Verification of procedure of wind monitoring for 33 sites.
- Wind Resource Assessment for 4 sites.

R&D projects in progress

- Geo technical soil investigation for Offshore wind profile study at Dhanushkodi, Rameshwaram has been completed.
- Wind Turbine wake modeling (CFD and Linear) and validation with in-situ measurements using Triton SODAR & LIDAR at Kayathar is in progress.

Special Training Programme

WRA unit had successfully conducted a two days training programme on "Wind Resource Assessment Methodology & Techniques" for officials from SNA's during 15th & 16th October 2012. Twenty five officials from Nine State Nodal Agencies (SNA's) participated and they are all, Assistant Directors, Project officers, Engineers & Technicians.

The following lectures were delivered to the participants after the welcome speech by the Executive Director, C-WET.

Topic	Speaker
Wind Resource Assessment Techniques	K.Boopathi Scientist & Unit Chief (i/c)
Siting Guidelines for Wind Measurements	A.Haribhaskaran Scientist
Measurement Parameters and Data Analysis	G.Arivukkodi Assistant Engineer
Monitoring Station Instrumentation and Installation	A.Haribhaskaran Scientist T. Sureshkumar Junior Engineer and R.Vinodkumar Technician
Software Modelling	K.Boopathi Scientist & Unit Chief (i/c) B.Krishnan Junior Engineer

Factory visits to M/s. Gamesa Wind Turbines Pvt. Limited., Chennai were arranged for practical exposure. The course structure, quality of lectures, factory visit and organization of training were highly appreciated by the participants.



Participants during the industrial visit to Gamesa manufacturing facility

Steps forward in TESTING UNIT

- Measurements for Type Testing of Elecon 600 kW wind turbine of M/s. Elecon Engineering Company Limited at Chettikurchi site, Kovilpatti Taluk, Tuticorin District has been completed.
- An agreement was signed between C-WET and M/s. Jyoti Limited for Type Testing of WIND JYOTI – SE 850 – 56/70 kW wind turbine and measurements are expected to start during the windy season of 2013.

Visitors to the Unit

- Mr. Subhash from M/s. Garuda regarding Type testing reports of Garuda 700 kW wind turbine on 21st November, 2012.
- Mr. M.S. Bhoi of M/s. Elecon Engineering Company Limited regarding Type tests on 26th November, 2012.
- Ms. Monika Kramer from M/s. Windtest Grevenbroich gmbh, Germany on 27th November, 2012.



C-WET- NREL Interaction Meeting & Training Programme on "Wind Turbine Testing" during 11-14 December, 2012 conducted by NREL, USA

Marching ahead in S&C UNIT

- Review / verification of documentation / information received from various wind turbine manufacturers for installation of prototype wind turbine models in India as per MNRE guidelines dated 22nd May 2012 has been completed. Organized the first Committee meeting on prototype wind turbine models. Letter has been issued by C-WET for a prototype wind turbine model, as decided by the Committee, to the concerned State Nodal Agency and State Electricity Board in connection with grid synchronization.
- Documentation / information have been obtained from various wind turbine manufacturers in connection with Revised List of Models and Manufacturers of wind turbines (RLMM) Addendum – I to Main List dated 31st July 2012. Review / verification of documentation / information have been completed. Organized RLMM Committee meeting. RLMM Addendum – I dated 27th December 2012 to Main

List dated 31st July 2012, finalized by RLMM Committee has been issued.

- The continual improvement and maintaining the Quality Management System are ongoing.

Highlights from ITCS UNIT

Thirteenth National Training Course

ITCS unit had successfully organized the 13th National training course on "WIND ENERGY TECHNOLOGY" during 12th – 14th December 2012 to address all aspects of Wind Power starting from Wind Resource Assessment to project implementation and operations & maintenance in a focused manner. The course was attended by 65 participants from wind turbine manufactures, developer, investors, consultants and academicians from 18 States of the Country. The training course was inaugurated by Shri A Mehar Prasad, Professor, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai.



Shri A Mehar Prasad inaugurating the address

Course material was released during the inauguration function and it was distributed to the training participants. The course material is a ready reference study material for the participants to revise their studies, when they will be back to working.

The course content for the training was very comprehensive



Release of Course Material

syllabus and the lectures of the course delivered by eminent Scientists, engineers and other wind energy professionals with years of experience drawn from C-WET, wind turbine industries and academic institutions.

The following were the contents covered in the training course:

- Wind Energy Conversion Technology and Power Generation
- Wind Resources Assessment & Siting
- Design and Layout of Wind Farms
- Forecasting of Wind and Energy Production
- Wind Turbine Components
- Basics of Wind Turbine Aerodynamics
- Design Aspects of Drive Train
- Wind Electric Generators & Types
- Control and Safety System of Wind Turbine System
- Tower and Foundation Concepts
- Installation and Commissioning of Wind Turbine
- O & M aspects of Wind Farms
- Wind Power Evacuation
- Assessment of Power Quality Characteristics of Wind Farms
- Grid Integration of Wind Turbines
- Small Wind Turbines and hybrid systems
- Role of C-WET in Wind Energy Development
- Wind Turbine Testing
- Type Certification of Wind Turbines
- Wind Farm Development and related issues
- Clean Development Mechanism
- Project Management and Economic aspects of Wind Power Projects
- Indian Government Policies

The course structure and organization of training was highly appreciated by the participants, pertaining to the quality of lectures and hospitality.

Shri. Ajit Kumar, CEO & Editor, Radiance Media, New Delhi was the Chief Guest of the valedictory function and he has distributed the Course Certificate to all the participants after his valedictory address. Shri. D. Vaidyanathan, ITCOT Consultancy and Services Limited, also shared his view at the valedictory function.



Shri. Ajit Kumar distributing the course certificate

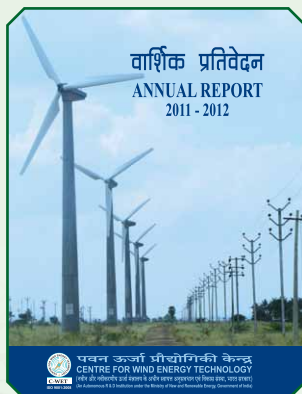
UPCOMING TRAINING PROGRAMMES

Tenth International Training Course

A 4-week international training course on "Wind Turbine Technology and Applications" Specially for African Countries is scheduled to be organized during February / March 2013, which is sponsored by Ministry of External Affairs (MEA), Government of India the supported by Ministry of New and Renewable Energy (MNRE).

C-WET's Annual Report 2011-2012

C-WET Annual Report for the year 2011 – 12 has been prepared covering detailed activities of all the units of C-WET and printed.



Participation in the Exhibitions

C-WET has put up a stall during the "Wind Power India 2012" 2nd International Conference & Exhibition held at the Chennai Trade Centre, Chennai during 28th – 30th November 2012 and disseminated information on C-WET activities & services and also created general awareness on environment friendly wind energy among the public.



C-WET Stall in Wind Power India 2012



Executive Director, C-WET delivering lecture at the Wind Power India 2012 conference

Student Visits

During the period from October to December 2012, the following visits were coordinated by ITCS Unit. Shri. P. Kanagavel, Scientist & Unit Chief (i/c) has made a presentation on Wind Turbine Technology and its status along with C-WET's activities & services during the visits and the campus renewable energy facilities were also explained / showcased in detail.

- 64 Final year BE EEE students along with 2 staff members from Easwari Engineering College, Chennai on 3rd October 2012.
- 64 Final year BE EEE students along with 2 staff members from Easwari Engineering College, Chennai on 5th October 2012.
- 69 Third year BE EEE students along with 3 staff from N.P.R College of Engineering and Technology, Chennai on 8th October 2012.
- 30 International participants of the training course "Wind Power Development and Use" organized by LIFE Academy, Sweden as part of the Regional Phase on 2nd November 2012.



LIFE Academy, Sweden participants visiting SRRA Station

- 60 Final year students along with 2 staff from Sri Sai Ram Engineering College, Chennai on 6th November 2012.
- 40 students along with 3 staff from The Gateway Hi Complete School on 27th November 2012.

Windy Acts at WTRS UNIT

Battery Operated Vehicle (BOV) dedicated by the Joint Secretary (Wind), MNRE, New Delhi for utility of R&D wind farm at WTRS, Kayathar was successfully designed to operate by 600 Watts solar powered Panels (SPV panels) mounted on the top of the vehicle and the performance study of the vehicle is under progress.

Preparation of Test Bed for Type Testing of WIND JYOTI- SE 850-56/70 kW wind electric generator is under progress and measurements are expected to start during the Windy Season of 2013.



Preparation of 9 nos of 200 kW MICON wind electric generators of Research wind farm, Kayathar is under progress for trouble free operation during the windy season of 2013.

Technical Visits

- 16 students of final year EEE branch and 2 staff members from Vellore Institute of Technology (VIT), Vellore visited the R&D facilities at WTRS, Kayathar on 13th October 2012.
- 30 International participants of the training course "Wind Power Development and Use" organized by LIFE Academy, Sweden as part of the Regional Phase on 6th November 2012.



Advances in SRRA

- Re-tender floated in November 2012 for the "Turnkey Supply, Installation, Commissioning and Maintenance of Measuring Instruments for Solar Radiation and other meteorological parameters at 60 locations in the country with facility for real time online availability of data and its analysis" under Phase II of SRRA project.
- Re-tender floated in December 2012 for the "Turnkey Supply, Installation, Commissioning and Maintenance of Instruments for Advance Solar Radiation measurements like Sun Photometer etc at 4 locations in the country with

facility for real time online availability of data and its analysis"

- Selling of SRRA data on a commercial mode has been initiated and data has been provided to M/s. Lanco Solar Energy Pvt. Limited, Gurgaon, M/s. Kanoria Chemicals Limited, New Delhi, M/s ACME Tele Power Limited., Gurgaon, M/s. Gamesa Wind Turbines and M/s. Rasi Green Earth Energy Pvt. Limited.
- Quality Control of data from all SRRA stations has been implemented in October 2012 as per the new algorithm v 1.2 developed.

Visitors to the Unit

- GIZ / Suntrace experts visited SRRA unit for implementation and up gradation of the quality control algorithm version 1.2 during 22nd - 26th October and 10th - 21st December 2012.
- M/s. Kipp & Zonen, The Netherlands one of the leading manufacturers of solar radiation measuring equipments along with the representatives from Schneider Electric gave a presentation on their products, technical capabilities and their world wide experience on 4th December 2012.
- Dr. Saifuddin Bharmal, Chairman, Lookman Electro Plast Inds. Limited on 10th December 2012. Mr. C. Narasimhan, Ex-Minister, Chairman, M/s. Raasi Green Earth Energy Pvt. Limited on 28th November 2012.

Invited lecture delivered / meeting attended by C-WET Scientists in external forums

Dr.S.Gomathinayagam, Executive Director

- "Development of Renewable Energy Sources-Reference to Wind Energy" at the Madras Chamber of Commerce & Industry Conference on Tamil Nadu Power Dynamics and Future Perspectives at Chennai on 15th December 2012.
- Wind Energy status review discussions with BHEL Senior Executives on 10th December 2012.
- Chaired Sessions / Panelist at Wind Power India 2012, 2nd International conference & Exhibition at Chennai Trade Centre, Chennai held during 28th to 30th November 2012.
- Standing Committee Meeting on Energy - Examination of subject - International Co-operation in New & Renewable Energy Sector at Parliament House, New Delhi on 26th November 2012.
- Chief Guest at "International Conference on Wind Energy" organized by BITS Pilani Hyderabad on 22nd November 2012.
- Chief Guest & inaugurated "Perspectives of Offshore Engineering" organized by Ocean Engineering Department, IIT Madras, Chennai on 19th November 2012.

- Indo-ASEAN Ministerial Meeting at MNRE New Delhi on 7th November 2012 & Indo-ASEAN Meet at Delhi during 5th & 6th November 2012.
- "Wind power development in India - way forward" in the Regional Phase of International training programme 'Wind Power Development and Use' organized by LIFE Academy / SIDA, Sweden at Hotel Raj Park, Chennai on 31st October 2012.
- Discussion on final Project Report on "Action Plan for Comprehensive Renewable Development in Tamil Nadu" at TEDA- organized by WISE, Pune on 30th October 2012.
- Visited the facilities at Great Lakes Institute of Management, Chennai on 22nd October 2012.
- TN State Council for Science & Technology (TNSCST) on 19th October 2012.

- SRRA Phase I Meeting at MNRE New Delhi on 18th October 2012.
- Key Note Address in the Faculty Development Programme at S. A. Engineering College, Chennai on 15th October 2012.
- "Enhancing Energy Security in the Asia Pacific Region" in the "UN-ESCAP Regional Dialogue on Promoting Off-grid Renewable Energy Technologies" organized by UNESCAP at Hotel Raj Park, Chennai during 4th – 5th October 2012.

Rajesh Katyal, Scientist & Unit Chief

- "Small Wind Turbine and Hybrid Technology" in the "UN-ESCAP Regional Dialogue on Promoting Off-grid Renewable Energy Technologies" organized by UNESCAP, at Hotel Raj Park, Chennai during 4th – 5th October 2012.
- "Offshore Wind Energy – An Overview" in the Faculty Development Programme S.A. Engineering College, Chennai on 15th October 2012.

Dedication of SRRA Station / Facility to the Nation

Hon'ble Union Minister for New & Renewable Energy, Dr. Farooq Abdullah visited C-WET on 28th November 2012 and dedicated the Solar Radiation Resource Assessment (SRRA) facility to the Nation. Hon'ble Minister has officially released the SRRA brochure and supply of solar radiation data to the project developers.



Hon'ble Union Minister dedicating SRRA station / facility to the Nation



Hon'ble Union Minister visiting National Solar Data Centre, C-WET



Hon'ble Union Minister releasing the SRRA Brochure



Hon'ble Union Minister releasing SRRA data



- "SWT testing and empanelment in India – How far we have come?" at one-day conference on Small Wind and Hybrid Systems organized by Wind Power India held at Chennai Trade Centre, Chennai on 29th November 2012.
- "Small Wind Turbine and Hybrid Technology" in a "Short-term training program for Architectural Faculty" organized by SRM University, Chennai on 19th December 2012.

J. C. David Solomon, Scientist

- "Performance Testing of Small wind system: Issues & Solutions" in the "UN-ESCAP Regional Dialogue on Promoting Off-grid Renewable Energy Technologies" organized by UNESCAP at Hotel Raj Park, Chennai during 4th – 5th October 2012.

Deepa Kurup, Scientist

- "Performance Testing of Small wind system: Issues & Solutions" in the "UN-ESCAP Regional Dialogue on Promoting Off-grid Renewable Energy Technologies" organized by UNESCAP at Hotel Raj Park, Chennai during 4th – 5th October 2012.
- "Grid Integration of Turbines" in the Faculty Development Programme S.A. Engineering College, Chennai on 17th October 2012.

K. Boopathi, Scientist & Unit Chief (i/c)

- "Wind Resource Assessment" at Indian Institute of Technology, Madras on 3rd November 2012.
- Pre bid meeting and consultancy services for M/s.THDC India Limited., Rishikesh, Uttarakhand from 4th to 7th December 2012.

A. Haribhaskaran, Scientist, WRA

- Wind Power developer's meet to formulate wind power policy for Uttar Pradesh at U.P.NEDA, Lucknow on 4th December 2012.

S. A. Mathew, M. Anvar Ali, M. Saravanan, Bhukya Ramdas & S. Paramasivan

- NABL Reassessment Audit ISO / IEC 17025:2005 held at WTTS, Kayathar during 3rd - 4th November, 2012.

M. Anvar Ali

- "Design Aspects of Wind Electric Generators" in the Faculty Development Programme S.A. Engineering College, Chennai on 16th October 2012.

S.Arulselvan, Assistant Engineer

- "Design requirements of control and protection system" in the Faculty Development Programme S.A. Engineering College, Chennai on 17th October 2012.

P. Kanagavel, Scientist & Unit Chief (i/c)

- "RENEWABLE ENERGY" in the INSPIRE Science camp at Kamaraj College, Tuticorin on 30th November 2012 sponsored by DST.
- "Overview of Renewable Energy Development in India" in the Regional Phase of International training programme "Wind Power Development and Use" organized by LIFE Academy / SIDA, Sweden at Hotel Raj Park, Chennai on 31st October 2012.

- "Role of C-WET in Wind Power Development" in the Regional Phase of International training programme "Wind Power Development and use" organized by LIFE Academy/SIDA, Sweden at C-WET, Chennai on 2nd November 2012.

- "Wind Energy: At a glance" in the Faculty Development Programme S.A. Engineering College, Chennai on 15th October 2012.

Dr.G.Giridhar, Scientist & Unit Chief

- "Solar Photovoltaic and Solar Thermal Resource Characterization" at "UN-ESCAP Regional Dialogue on Promoting Off-grid Renewable Energy Technologies" organized by UNESCAP, at Hotel Raj Park, Chennai during 4th – 5th October 2012.

- Meeting convened by Chief Secretary, Tamil Nadu, in connection with Pre-Bid Tender for Solar Street lights at Chennai on 8th October 2012.

- Review meeting of Phase – I of SRRA Project under the Chairmanship of Joint Secretary, MNRE, at New Delhi on 18th October 2012.

- Technical Committee Meeting for the evaluation of Global Bids for Phase-II project held at C-WET, Chennai on 26th October 2012.

- Stakeholders Meeting of SRRA at SCOPE Complex, New Delhi organised by SRRA, C-WET and GIZ on 7th December, 2012.

- Meeting on TMY preparation at GIZ office, New Delhi 8th December, 2012.

R.Sasikumar, Scientist

- "Solar Resource Assessment in India" in the National Solar Energy Summit (gro solar) at New Delhi on 13th December, 2012.

- Review meeting of Phase – I of SRRA Project under the Chairmanship of Joint Secretary, MNRE, at New Delhi on 18th October 2012.

- Technical Committee Meeting for the evaluation of Global Bids for Phase-II project held at C-WET, Chennai on 26th October 2012.

- Visited Nasik, in connection with micro siting of a site for SRRA Phase-II program on 8th November, 2012.

Prasun Kumar Das, Scientist

- "Enhancing Energy Security in the Asia-Pacific Region" in the "UN-ESCAP Regional Dialogue on Promoting off-grid Renewable Energy Technologies" organized by UNESCAP at Hotel Raj Park, Chennai during 4th - 5th October 2012.

R.Karthik, Scientist

- Stakeholders Meeting of SRRA at SCOPE Complex, New Delhi organised by SRRA, C-WET and GIZ on 7th December, 2012.

- Meeting on TMY preparation at GIZ office, New Delhi 8th December, 2012.

The following C-WET staff delivered lecture(s) in the 13th National Training course on “Wind Energy Technology” during 12th – 14th December 2012

No	Title	Speakers
1	- Wind Energy Conversion Tech. and Power Generation: Introduction - Wind Turbine Tower Concept	Dr. S. Gomathinayagam Executive Director
2	- Wind Resources Assessment & Techniques - Wind Turbine Components	K. Boopathi Scientist & Unit Chief (i/c), WRA
3	- Design Aspects of Drive Train - Wind Turbine Testing	J.C.David Solomon Scientist, R&D
4	Wind Electric Generators & Types	A. G. Rangaraj , Scientist, S&C
5	- Wind Turbine Foundation Concept - Small Wind Turbines and Hybrid Systems	Rajesh Katyal , Scientist & Unit Chief, R&D
6	Grid Integration of Wind Turbines	Deepa Kurup , Scientist, R&D
7	Role of C-WET in Wind Energy Development	P. Kanagavel , Scientist & Unit Chief (i/c), ITCS
8	Type Certification of Wind Turbines	A. Senthil Kumar , Scientist & Unit Chief, S&C
9	Indian Government Policies	Mohammed Hussain , Scientist & Unit Chief, WTRS
10	Control and Safety System of Wind Turbine System	S. Arulselvan , Assistant Engineer, S&C

Publications

- Rajesh Katyal, Testing of Small Wind Turbines, Akshay Urja, Vol. 6 Issue - 2, October 2012, pp 31-34.

Paper Presented in Conferences

- K. Boopathi, A. Haribhaskaran, B. Krishnan, J. Bastin Validation of accuracy of WAsP in vertical Wind Shear Profile Predication, WEMEP 2012 Conference organized by Birla Institute of Technology & Science, Pilani at Hyderabad, 22nd to 23rd November 2012.
- K. Boopathi, Different Methods of Wind Velocity Measurement and Comparison, DEWEK 2012, 11th German Wind Energy Conference at Bremen, Germany, held during 7th & 8th November 2012.
- G. Arivukkodi, Studies on Noise propagation of wind turbines from a wind farm in India & Verification of measurement in wind monitoring stations, DEWEK 2012, 11th German Wind Energy Conference at Bremen, Germany, 7th & 8th November 2012.

Visits Abroad

Dr. G. Giridhar, Scientist & Unit Chief, SRRA

- Indo US Dialogue on Energy led by Joint Secretary, MNRE along with Director General of IREDA at Washington DC, USA during 24th September to 1st October 2012.

G. Arivukkodi, Assistant Engineer

- DEWEK 2012, 11th German Wind Energy Conference at Bremen, Germany held during 7th & 8th November 2012.

S.A. Mathew, Scientist & Unit Chief, WTT

- 2nd IEC CAC test laboratory meeting at Florida, USA during 7th – 9th November 2012.

S.A. Mathew, M. Anvar Ali, M. Saravanan, Bhukya Ramdas, S. Paramasivan, M. Karuppuchamy, A.R. Hasan Ali and Y. Packiyaraj

- C-WET – NREL Interaction Meeting and training programme on “Wind Turbine Testing” in Boulder Colorado hosted by US Department of Energy (DOE) and the National Renewable Energy Laboratory / National Wind Technology Center during 11th – 14th December 2012.

Wind Policy: a loud thinking on possible way-forward for India

With over 18400 MW installed capacity of wind power with policy changes in the 12th plan is heading for a dip in the net annual installed capacity from the last financial year's peak of 3100 MW. As of now there is a decrease in installed capacity to the extent of 40 to 50%, when compared to the last financial year. Policies for the 12th plan for wind power in India, need to address this reduction and quickly reverse the downward trend in the wind power development in India.

The impact of withdrawal of Accelerated Depreciation (AD) has to be re-visited in the light of availability of matured technology and the awareness of the investors not to keep the WTGs idle with no generation. The private profit being dumped into wind energy some more time should be encouraged to provide the much needed electricity in the public utility grid to provide power for all. This market may be limited to small investors as of now even if AD is restored, but may be still many in numbers whose sustained interest is already hampered by the tariff payment delays. Even though wind generators have free fuel, their interest on debt-financing is critical issue to new investments in wind power.

With over 40 WTG models with 16 to 18 manufacturing bases in India, promotional policy directives may help achieve gradual indigenization of component manufacture with scalable tariffs based on levels of indigenization. Generation Based Incentive (GBI), initially had a marginal attraction of IPPs, with the AD spelt out since 1st April 2012 IPPs await more clarity on continuation of the scheme to enthuse the investors in multi-mega watt wind power plants with further refinements on GBI as early as possible.

True contribution of small wind sector with roof top aerogenerators in off-grid is yet to be realized with cumulative achievement pegged at 1.74 MW which is only 0.0095% of the grid connected capacity in India. We in India have 40% our population without grid-power and most of those having connection in rural grids do not have electricity in their grid for all 24x7 in each week of every year. Then why should we loose energy in transmission lines. Policies should address off-grid distributed Wind-hybrid renewable power as per the localized load demand. This goes without saying that Small wind machines alone need not be considered for off-grid domestic applications, applications of sub-mega watt machines for off-grid uses such as institutional (remote

schools, colleges, and other institutions/industry captive use) powering, microgrids in remote villages, battery bank charging, hydrogen generation, desalination, battery operated vehicle plug-in charging facility with renewables in large car parks, mobile tower power systems are a few viable routes to promote and harness wind energy, saving the foreign exchequer payouts, towards costly, imported fossil fuels. Can we not realize every petrol bunk to have a battery exchange kiosk to fuel future hybrid BO-vehicles? To increase the proliferation and awareness of wind power applications of energy recovery using WTGs at exhaust-exit points, a policy measure may be given.

Even grid connected mega watt power can be effectively managed with suitable policy support to flow in the planned green corridor TL system thus sustaining the status of a must-run condition of Wind power plants irrespective of the load demand variation in the local grid. Policy support may be needed to provide additional tariff for Wind Power Plants (WPP) with hybrid RE spinning reserve alternatives including biofuel based generations or built-in energy storage systems so that the WPP operates like any other conventional power plant. While repowering is proven to make 2 or 3 fold energy generation with the same installed capacities depending on the site, needs probably well directed policy to kindle and attract those contended early wind investors who are happy with their appreciated land property with low CUF of old machines installed with AD route. RECs are plenty from wind but the market seems to be depending on effective enforcement of Wind based RPOs indicated by the sale with floor prices of non-solar RECs from wind. In the National GRID most of the base power flow is from either North to South or East to west. The entire gamut of wind and solar power is in excess in the southern and western regions of India, which is a complementary combination for power system operation and management according to S.K.Soonnee, the ED of POSOCO. Let there be free current to agriculture but let the load be metered and measured for effective management of the grid to ensure the same farmers to have the guaranteed power when they really want, rather than facing long unscheduled outages or load-shedding.

There could be renewable energy law by an act of parliament and have promotional policy support to those who would like

to forecast their generation and provide exchangeable schedules with a definite time stamping and power quality. Central and State level policies are needed urgently to encourage participation of wind generators and the other RE generators in the Renewable Regulatory Fund (RRF) mechanism to inculcate a grid discipline in the RE penetration with conventional base power proposed to be operated by National and state load dispatch centers of India.

Let there be more stricter GRID-code implementation whose compliances may be rewarded with reduced infrastructure development charges of fractional extra feed-in tariffs. After all, private money mostly borrowed, works to provide electricity in public grid why not the delayed tariff payment compensate for the loss of interest in EMIs as in the case of income tax returned with interest. Such a assured payment will attract even village cooperatives to go for green power generation with wind.

Where land is a major issue we can think of wind farm-cooperatives as successfully practiced in Denmark, with farmers being the owners of wind power plants with societal will to generate green power and share the profit/loss. Encourage open access sale of power to needy industry to avoid closure of operations resulting in low productivity and economic ill health of employees, in turn to the nation as well.

Softer tariffs for those consumers who join smart metering and time of the day costing plans of State Electricity Boards to absorb as much green RE power as possible. Special treatment of offshore wind power infrastructure development is needed for facilitating coastal manufacturing plants special

evacuation infrastructure sub-sea cable and power conversion installations in offshore and onshore location as per the need of adopted technology HVDC/HVAC. Speedy environmental clearances for offshore wind power projects and a mode of single window clearances with policy intervention with state and central initiatives to have uniform attractive tariffs for evacuated offshore wind power, are need of the hour.

Special purpose funds from public at large to finance RE projects at low interest rates (low interest debt regime) or through green cess, special priority sector financing status for wind / renewable, penalties for non-compliance at institutional / industry / district / state level RPOs. With ever increasing craze for comfort with electricity, communication and demography there is no dearth of market pull in India with relatively low power consumption per capita. Every unit produced with wind saves a unit cost of fossil fuel import / transport. Augmented tax deduction may be thought of for the wind developers investing on road & evacuation infrastructure development in their Wind power plants being in the interest to power the public grid. With special prayers for an early re-promotional policy for new wind power as well as re-power the wind sector in the lines of National Solar Mission we may go ahead requesting for a National Wind Mission for India soon to sustain the proliferation of Wind power, and cost effectively meet two goals which are NAPCC targets and power for all. Why should the best (over 70%) RE contribution from wind be let grow as an adolescent child when we pamper the new born solar so heavily? Let's innovate new policies and business models for the wind too.



Dr. S. Gomathinayagam, Executive Director, C-WET addressing at Conference on Tamil Nadu Power Dynamics and Future Perspectives at Chennai



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Published by :

CENTRE FOR WIND ENERGY TECHNOLOGY (C-WET)

An autonomous R&D Institution established by the Ministry of New and Renewable Energy (MNRE), Government of India to serve as a technical focal point of excellence to foster the development of wind energy in the country.

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