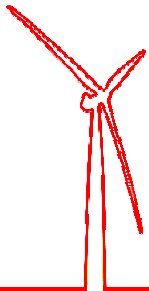


WINDFALL OF ENERGY

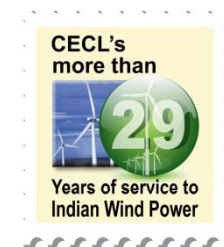


**CONSOLIDATED ENERGY CONSULTANTS LIMITED
BHOPAL**

Towards Total Energy Security

The journey began in 1986,

Conscious of the growing demand for Energy in general and the emerging opportunities for Renewable Energy Sector in particular, a band of electrical engineers, equipped with decades of experience, decided to work together.



Consolidated Energy Consultants Limited (CECL) came into being in 1990, with Wind Energy as its core area of activity.

A large team of engineers and technical experts with proven track record have since been pressed into service to meet the exacting requirements, the new challenges and to upgrade expertise.

CECL believes that acquisition of knowledge is a continuing process, innovation and socio-economic growth are imperative tasks alongside continuous endeavour to develop and sharpen 'skill'.

The ultimate goal is to achieve Energy Security in terms of both availability and affordability.



Consolidated Energy Consultants Limited (CECL)

The Wind Energy Solution Providers

A pioneering organization, first-of-its-kind in India, with world class computing facilities and a strong team of Engineers & Scientists.

CECL today not only offers services on all related technical aspects of Wind Power projects but also beyond Concept-to-Commissioning based on acquisition of the most recent databases and computer software for knowledge enhancement.



**TOTAL FIELD EXPERIENCE - 800 MAN YEARS.
EXCLUSIVELY IN WIND ENERGY - 320 MAN YEARS.
FULL TIME ENGINEERS - 25**

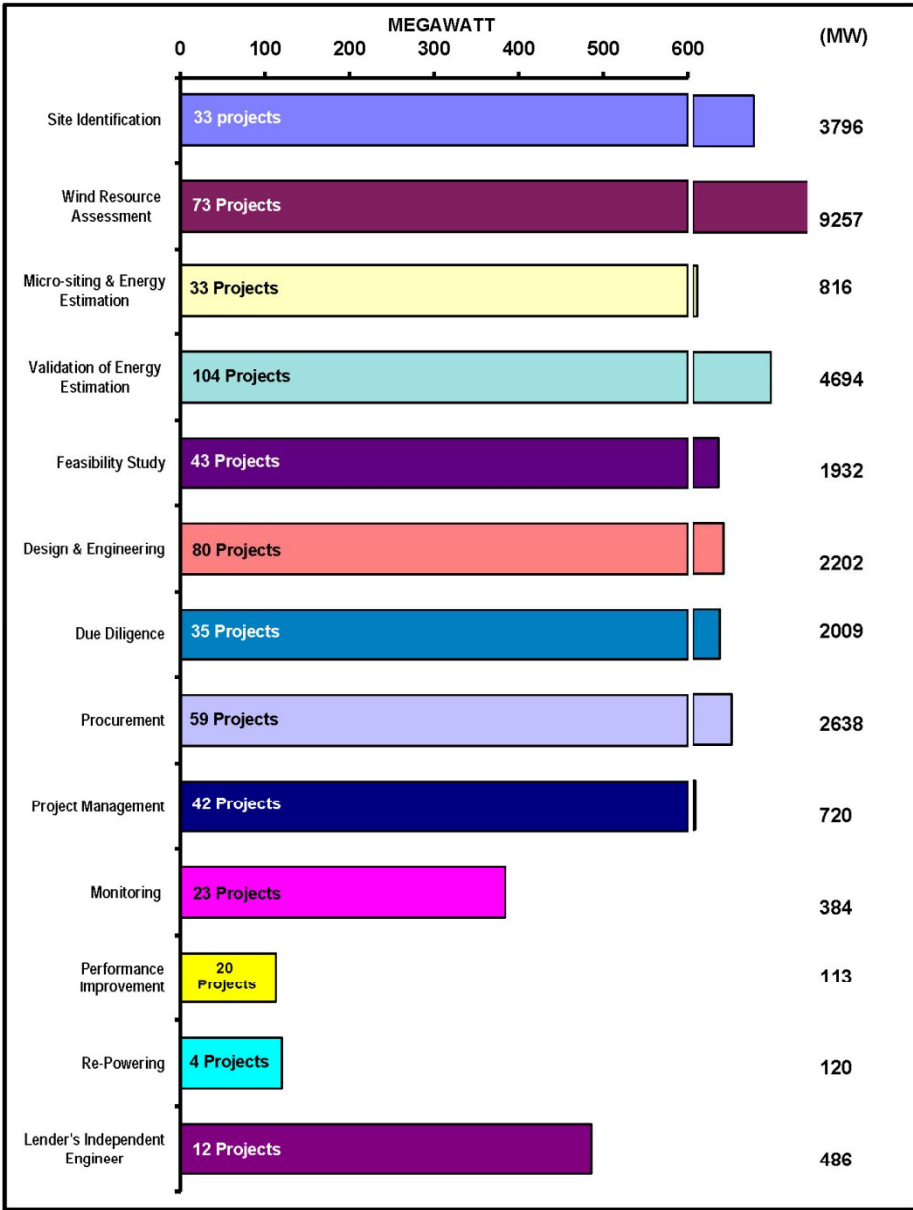
An ISO 9001-2008 Certified Company

Spectrum of Services

- **Site Identification**
- **Wind Resource Assessment**
- **Micro-siting and Energy Estimation**
- **Validation of Energy Estimation**
- **Feasibility Study**
- **Detailed Project Report, Design & Engineering**
- **Due Diligence**
- **Procurement and Contracting**
- **Project Management**
- **Monitoring & Energy Estimation**
- **Performance Improvement**
- **Repowering**
- **Lender's Engineers**
- **Wind Solar Hybrid Systems**



EXPERIENCE & ACHIEVEMENTS IN WIND POWER PROJECTS

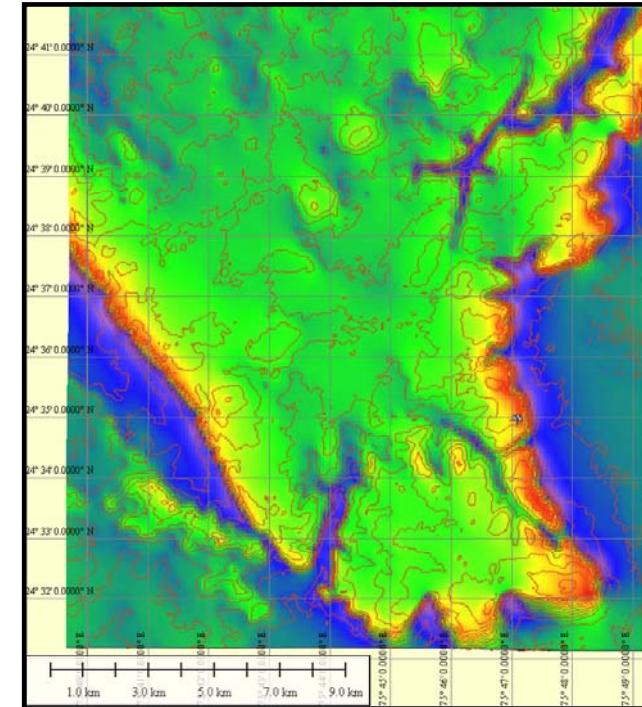


30/09/2015



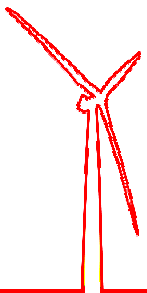
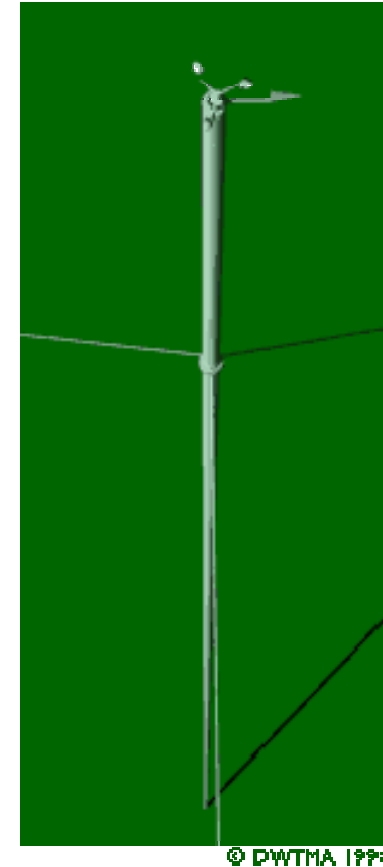
Site Identification

- **VERIFY WIND RESOURCE**
- **MESO-SCALE MAPPING,
IN-HOUSE EXPERTISE**
- **SELECT IDEAL LOCATION
FOR MAST**
- **ANEMOMETRY**



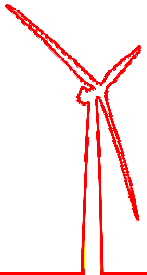
Wind Resource Assessment

- **VERIFICATION OF ANEMOMETRY DATA**
- **CONTOUR SURVEY**
- **SITE FEATURES, ROUGHNESS & OBSTACLES**



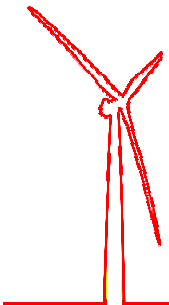
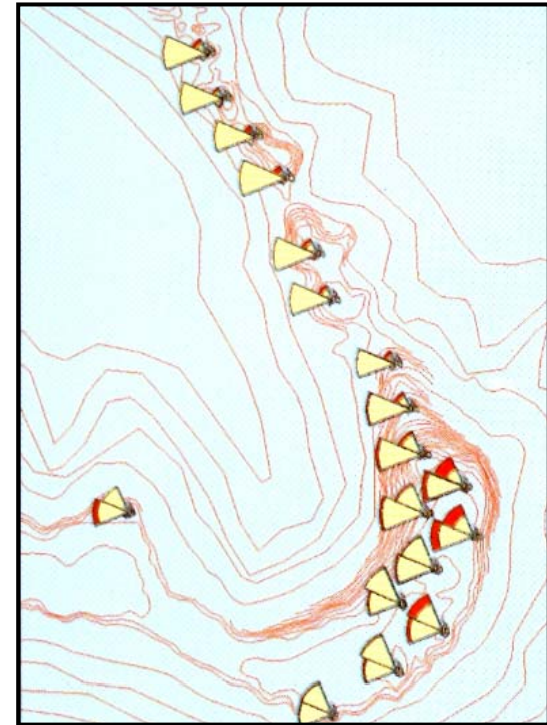
Site Development

- **50 MW site developed and disposed in association with MPWL, MEIL – Betul, M.P.**
- **100 MW Site identified in MP- SPV sale to WEG supplier.**
- **100 MW site identified in MP**
- **400 MW site identified in Gujarat – SPV sale to IPP**
- **200 MW site identified in Gujarat**
- **Anemometry in progress in Rajasthan, Gujarat & M.P.**
- **Identified sites under RFP in MP for about 1000 MW**



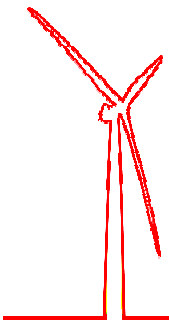
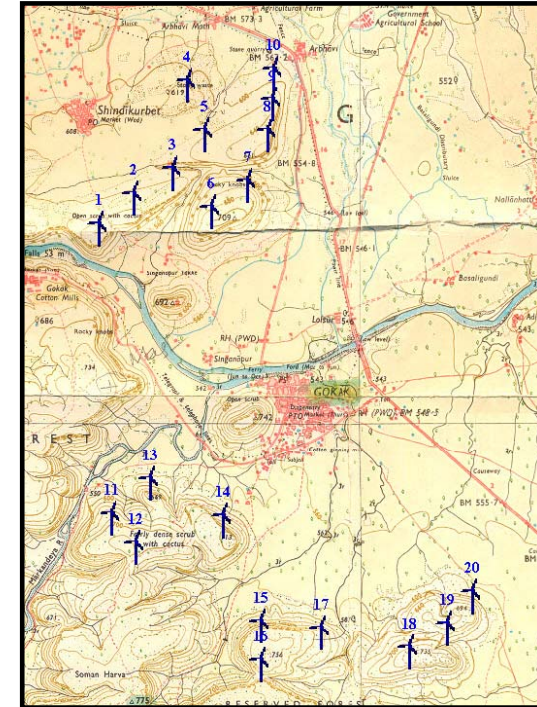
Micro Siting and Energy Estimation

- MICRO SITING
- OPTIMIZATION
- PROBABILITY ANALYSIS



Feasibility Study

- **TECHNO COMMERCIAL OPTIONS**
- **PRIMA-FACIE VIABILITY**



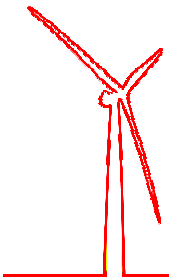
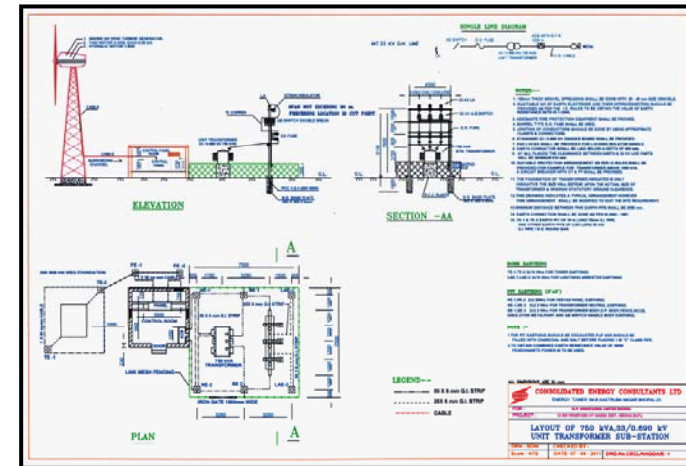
Design & Engineering

CIVIL

APPROACH & INTERNAL ROAD
FOUNDATION

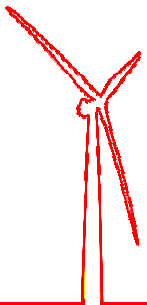
ELECTRICAL

GRID INTERFACING
INTERNAL ELECTRIFICATION



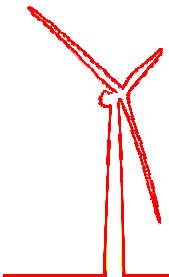
Visualization

3 D – fly by



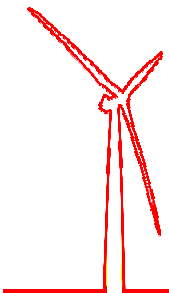
Due Diligence

- **ENERGY ESTIMATION**
- **LAND RIGHTS**
- **POWER EVACUATION**
- **PERMISSIONS & CLEARANCES**
- **SELLING OPTIONS**
- **COMPLETION SCHEDULE**



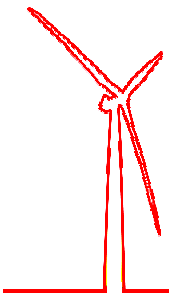
Procurement

- **PREPARATION OF BID DOCUMENT**
- **BID EVALUATION**
- **DRAFTING/VETTING OF CONTRACT**
- **O&M ARRANGEMENTS**



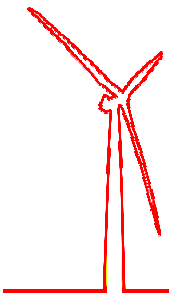
Project Management

- MANAGEMENT OF TIME SCHEDULE
- CONSTRUCTION SUPERVISION
- QUALITY ASSURANCE
- POST COMMISSIONING CHECKS



Monitoring

- CHECK GENERATION DATA
- VERIFY OPERATIONAL DATA
- PERIODIC REPORTING
- SUGGESTIVE MEASURES

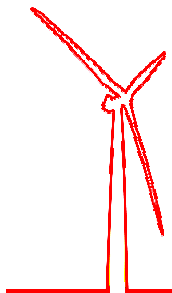


Performance Improvement

**PCGG
(POWER CURVE BASED
GENERATION GUARANTEE)**

ANALYSIS OF PERFORMANCE

CORRECTIVE MEASURES



Repowering

**REPLACING 225 to 250 kW ,
WEGs BY MW-SCALE WEG**

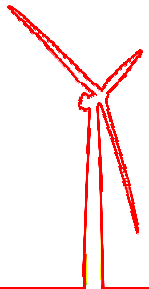
**HAS DESIGNED RE-POWERING
FOR :**

-MNRE DEMONSTRATION PROJECTS

-DALMIA CEMENT BHARAT LTD

-BHARAT WIND FARM LTD

- M.P.WINDFARMS LTD



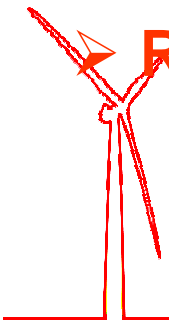
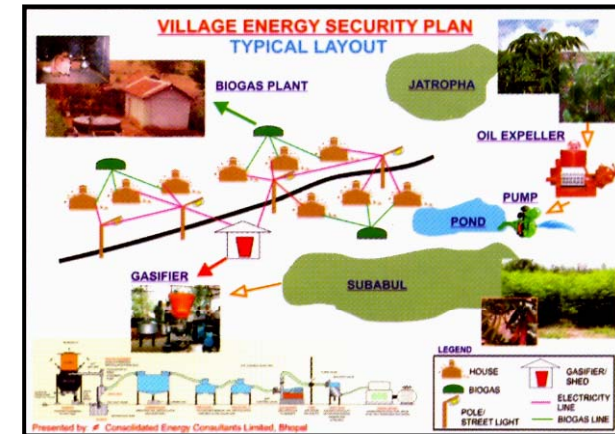
Wind Solar Hybrid Systems

- CECL's latest challenge is to scientifically assess wind resources and development of several projects in the North-Eastern States and Leh and Kargil for MNRE.
- These will be Wind-Solar Hybrid projects and will be designed to meet the mounting needs of people in areas where grid supply cannot be ensured.



CECL in Fringe Services

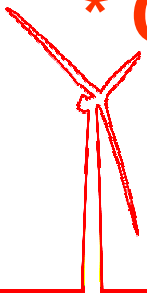
- FOUNDATION DESIGN
- WEG TECHNOLOGY EVALUATION
- ERC REGULATORY ISSUES
- ORIENTATION COURSES
- SOLAR POWER PROJECTS
- GASIFICATION PROJECTS
- RURAL ELECTRIFICATION



Consolidated Energy Consultants Limited

WHAT MAKES CECL SPECIAL

- * FIELD ORIENTED – NOT DESK TOP STUDY
- * EXPERIENCE OF OWN ANEMOMETRIC STUDY FOR SITE IDENTIFICATION
- * FIRST HAND EXPERIENCE AS DEVELOPER AND O&M AGENCY FOR WPP
- * COMPLETION – STRICTLY WITHIN SCHEDULE





SOME OF OUR VALUED CLIENTS

 WORLD BANK	 ADB	 DANIDA	 ICFC INDO CANADA	 WINROCK	 MNRE
 ONGC	 REGEN	 JSW	 JINDAL	 SUZLON	 ANERT
 RCF	 GMR	 AMAR JYOTHI	 BSES	 GHCL	 KREDL
 GAIL	 POORVA	 C-WET	 MERC	 SKYZEN	 MEDA
 GSFC	 KSK ENERGY	 DLF	 MSPL	 ELECON	 GEDA
 HPCL	 KRIBHCO	 HZL	 DCBL	 GFL	 MPUVN
 GSPN	 GREEN INFRA	 JP ASSOCIATE	 PAHARPUR	 COWI DENMARK	 RREC (REDA)
 GMDC	 VESTAS	 MBDL	 MAGMA	 SRIRAM	 NEDCAP
 PTC	 IREDA	 PFC	 SBI	 CRISIL	 WBREDA



	CATEGORY	ASSIGNMENTS
A.	INTERNATIONAL AGENCIES	12
B.	CENTRAL GOVERNMENT AGENCIES	14
C.	STATE GOVERNMENT / UNION TERRITORIES	64
D.	PUBLIC SECTOR UNDERTAKINGS	30
E.	FINANCIAL INSTITUTIONS	17
F.	WEG MANUFACTURER	29
G.	IPPS	42
H.	PRIVATE COMPANIES	135



Lender's Engineers

- IREDA
- PTC
- PFC
- SBI CAPS
- YES BANK
- UNION BANK
- SBI
- INDUSIND BANK



Total Customer Satisfaction

- Customer satisfaction is the key parameter to evaluate the services offered.
- High degree of engineering expertise , un-compromising professional ethics and years of field experience in large number of complex projects projects have created a pool of satisfied customers.
- End-of-the-line focus for CECL is achieving total satisfaction of its customers, which has resulted in many repeat assignments.
- CECL has time and again been awarded for excellence in Consultancy Service by National Agencies.



STRENGTH : PROFESSIONAL INTEGRITY

GOAL : CUSTOMER SATISFACTION

Consolidated Energy Consultants Limited

CUSTOMER SATISFACTION INDEX

NO. OF CUSTOMER

8

17

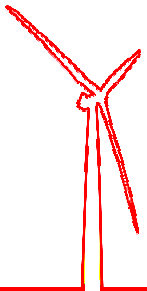
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NO. OF REPEAT ORDERS

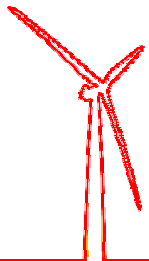
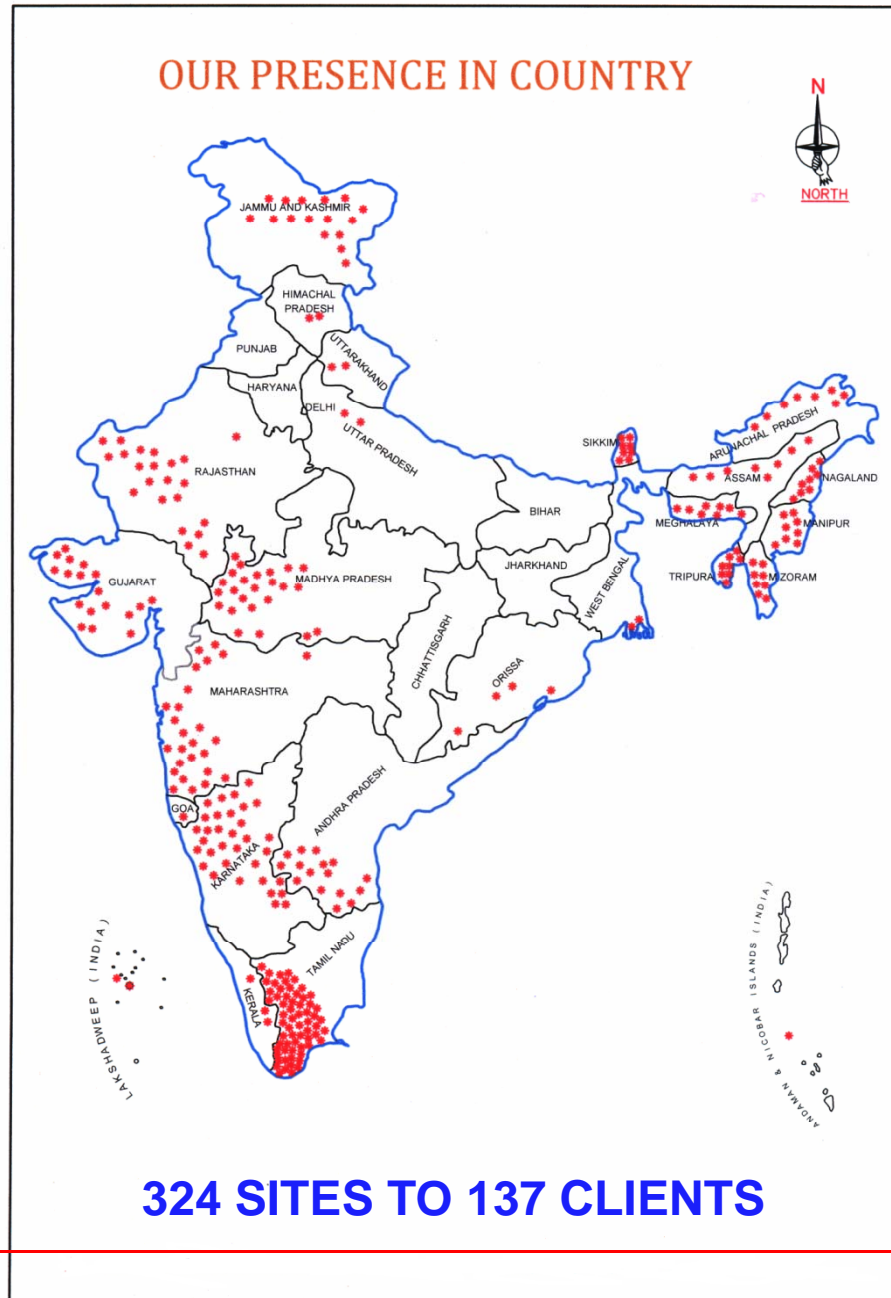
10 & MORE

05 TO 09

02 TO 04



Consolidated Energy Consultants Limited



Consolidated Energy Consultants Limited

INTERNATIONAL ASSIGNMENTS

BANGLADESH

MAURITIUS

NEPAL

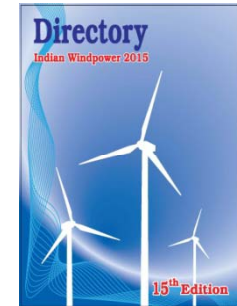
SRI LANKA



Pioneering Efforts

CECL has several 'first's to its credit:

First to publish Annual Directory since 2001 on Wind Power containing most comprehensive information on all aspects. It is the most widely Used reference source on Wind Power in India.



First to launch an exclusive website: www.windpowerindia.com

The website is regularly updated to benefit both national and international viewers.

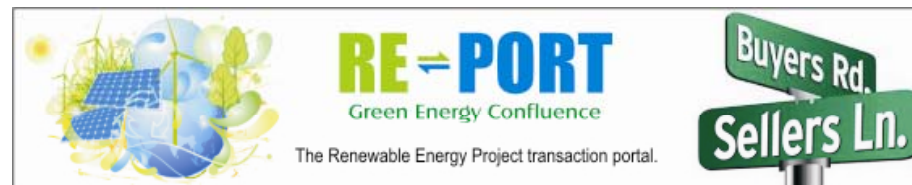


First to form a Joint Sector Company with equity participation of Government of India and State Government of Madhya Pradesh (the only company of its kind so far) for creation of wind power estate to facilitate cost effective implementation and high quality O&M services - a model that is now being followed by all manufacturers.

First to launch an exclusive website: www.re-port.in

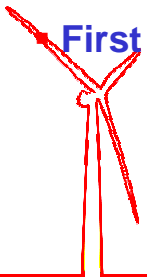
The Renewable Energy Project Transaction Portal.

A meeting ground for Buyer & Seller of Renewable Energy Projects & Sites.



Pioneering Efforts...

- First to import, assemble, erect & commission a 55 kW WEG in 1986.
- First to prepare Master plan for implementation of Wind Farm Projects in Tamil Nadu in 1990.
 - First to carry out grid study for windfarms in Gujarat in 1991.
 - First to prepare Guidelines for DPR, & Tendering for IREDA, World Bank in 1993.
- First to prepare Micro Resource Survey study for potential windfarm areas around qualified wind masts in 2000.
 - First to consult & determine tariff for windpower projects by MERC in 2002.
 - First to assist ONGC, a PSU, to establish 50 MW windpower Project in Gujarat in 2007-08.
- First to conduct Repowering study of Demonstration Wind farm Projects of MNRE in Gujarat & Tamil Nadu in 2009.
- First to carry out in house, MESO scale wind mapping, for identification of potential sites in India.
- First Indian Company to carry out Meso scale wind mapping for Mauritius, Srilanka & Bangladesh.
- First to carry out Meso scale wind mapping of NE states of India and prepare DPR for installation of offgrid wind solar hybrid systems in 2011.



Facilities Available

Computer Facilities

More than 40 Computers and Laptops

Networked for parallel computing

Printers, Large format color Printers,
Digitizers, Scanners

Latest Industry Standard Softwares :

WAsP, Windfarmer, GIS softwares

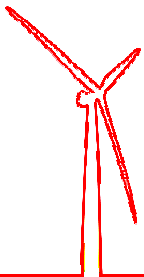
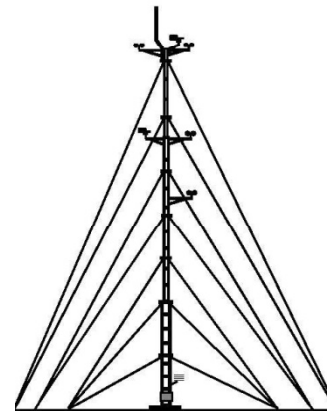
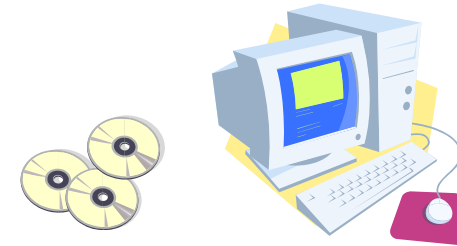
Meso scale modelling softwares

In-house developed softwares for Electrical
and Civil calculations

Others

GPS instruments

14 Anemometry Mast and loggers



Assets

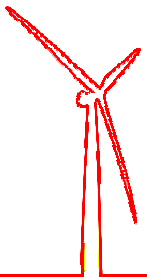
Wind Electric Generators

One 800 kW ENERCON WEG at Rajasthan

One 225 kW NEPC WEG in M.P.

One 250 kW Pioneer Wincon WEG in Tamil Nadu

CECL recently moved into its own 5 storied energy efficient building at Bhopal



THANK YOU

www.cecl.in

