



CDM-SSC-BUNDLE

**CLEAN DEVELOPMENT MECHANISM
FORM FOR SUBMISSION OF BUNDLED SMALL SCALE PROJECT ACTIVITIES
(SSC-CDM-BUNDLE)**

SECTION A. General description of the Bundle**A.1. Title of the Bundle:**

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Bundled Wind Power Project in Jamnagar, Gujarat

A.2. Version and Date :

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Version: 04

Date: 23/06/2011

(Cross referenced PDD Version 6 dated 23/06/2011)

A.3. Description of the Bundle and the subbundles :

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The proposed project is a bundled project activity which involves commissioning and operation of 12 Wind Energy Converter (WECs) of 0.8 MW capacities with a total installed capacity of 9.6 MW. The machines are Enercon E-53 make. The project will generate 20.09 GWh of electricity per year which shall be supplied to the state electricity utility thereby contributing to reducing the energy demand supply gap in the state of Gujarat. The project activity will assist the sustainable growth of the region by providing clean and green electricity to the state electricity grid. The bundled project activity consists of 12 WECs:

Name	No. of WECs
Vish Wind Infrastructure LLP	8
J. N. Investment & Trading Co. Private Limited	4

A.4. Project participants:

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Vish Wind Infrastructure LLP (Vish Wind) is the primary coordinator of the project activity and other promoter is separate company, who's WECs are part of the project activity. Vish Wind as the coordinator for the project activity, has entered into contractual agreements with other promoter to carry out the CDM project activity and shall be single point of contact for all communications with the CDM Executive Board and the National CDM Authority. Vish Wind shall act as a coordinator for providing all relevant information during this exercise.

Name of Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host)	1.Vish Wind Infrastructure LLP	No



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	2. J. N. Investment & Trading Co. Private Limited	
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SECTION B. Technical description of the Bundle:

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B.1. Location of the Bundle:

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B.1.1. Host Party(ies):

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India

B.1.2. Region/State/Province etc.:

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Western Region/ Gujarat State

B.1.3. City/Town/Community etc:

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The Project is spread across villages Butavadar, Chiroda Mulji, Chiroda Sang, Bagadhra, & Mandasan in Jamnagar of Gujarat state in India.

B.1.4. Details of physical location, including information allowing the unique identification of this Bundle:

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Nearest airport and railway station are at Jamnagar city which is located at a distance of approximately 60 kms from the project activity site.

The individual latitude & longitude details of the WECs are as follows:



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Samana Site, Jamnagar District, Gujarat											
Loc. No.	WTG ID No.	Village	Taluka	District	Latitude			Longitude			Commissioning Date
					Deg.	Min.	Sec.	Deg.	Min.	Sec.	
3063	EIL/800/10-11/1822	Butavadar	Jamjodhpur	Jamnagar	21	59	20.8	70	13	19	27-Sep-10
3064	EIL/800/10-11/1823	Butavadar	Jamjodhpur	Jamnagar	21	59	12.7	70	13	19.7	27-Sep-10
3066	EIL/800/10-11/1824	Butavadar	Jamjodhpur	Jamnagar	21	58	42.7	70	13	11.1	27-Sep-10
3113	EIL/800/10-11/1825	Chiroda Mulji	Jamjodhpur	Jamnagar	21	56	1.8	70	11	4.1	27-Sep-10
3114	EIL/800/10-11/1887	Chiroda Mulji	Jamjodhpur	Jamnagar	21	56	13.4	70	11	11.5	29-Sep-10
3115	EIL/800/10-11/1888	Chiroda Mulji	Jamjodhpur	Jamnagar	21	56	19.1	70	11	3	29-Sep-10
3135	EIL/800/10-11/1891	Chiroda Sang	Jamjodhpur	Jamnagar	21	58	57.6	70	10	21.9	30-Sep-10
3136	EIL/800/10-11/1892	Chiroda Sang	Jamjodhpur	Jamnagar	21	59	6.3	70	10	19.9	30-Sep-10
3137	EIL/800/10-11/1893	Chiroda Sang	Jamjodhpur	Jamnagar	21	59	23.3	70	10	14.4	30-Sep-10
3139	EIL/800/10-11/1894	Bagadhra	Jamjodhpur	Jamnagar	21	59	29.8	70	10	8.6	30-Sep-10
3166	EIL/800/10-11/1889	Bagadhra	Jamjodhpur	Jamnagar	21	59	23.7	70	6	53.3	29-Sep-10
3169	EIL/800/10-11/1890	Mandasan	Jamjodhpur	Jamnagar	21	59	48.6	70	6	17.5	29-Sep-10

B.2. Type(s), category(ies) and technology/(ies)/Measure/(s) of the bundle:

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The proposed project activity is a small scale CDM project activity. According to the Appendix B of the simplified modalities and procedures (M & P) for small-scale CDM project activities, the proposed project activity falls under the following type and category.

Project Type(I): **‘Renewable Energy Project Activities’**,
 Category I.D **‘Grid Connected Renewable Electricity Generation’** and
 Reference: AMS I.D, EB 54 Version 16, Sectoral Scope 01.

The project activity involves 12-wind energy converters (WECs) of Enercon make (800 kW E-53) with internal electrical lines connecting the project activity with local evacuation facility. The WECs generates 3-phase power at 400V, which is stepped up to 33 KV. The project activity can operate in the frequency range of 47.5–51.5 Hz and in the voltage range of 400 V \pm 12.5%. The average life time of the WEC is around 20 years as per information provided by the supplier. The other salient features of the state-of-art-technology are:

Turbine model	Enercon E- 53
Rated power	800 KW
Rotor diameter	53 m
Hub height	75 m
Turbine Type	Gearless horizontal axis wind turbine with variable rotor speed



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Power regulation	Independent electromechanical pitch system for each blade.
Cut in wind speed	2.5 m/s
Rated wind speed	12 m/s
Cut out Wind speed	28-34 m/s
Extreme Wind Speed	59.5 m/s
Rated rotational speed	32 rpm
Operating range rot. speed	12-29 rpm
Orientation	Upwind
No of Blades	3
Blade Material	Fibre Glass Epoxy reinforced with integral lightning protection
Gear box type	Gear less
Generator type	Synchronous generator
Braking	Aerodynamic
Output Voltage	400 V
Yaw System	Active yawing with 4 electric yaw drives with brake motor and friction bearing
Tower	74 m concrete

Enercon has secured and facilitated the technology transfer for wind based renewable energy generation from Enercon GmbH, has established a manufacturing plant at Daman in India, where along with other components the "Synchronous Generators" using "Vacuum Impregnation" technology are manufactured.

In the absence of the project activity the equivalent amount of electricity would have been generated from the connected/ new power plants in the NEWNE grid, which are/ will be predominantly based on fossil fuels¹, hence baseline scenario of the project activity is the grid based electricity system, which is also the pre-project scenario. Since the project activity involves power generation from wind, it does not involve any GHG emissions for generating electricity.

B.3 Estimated amount of emission reductions over the chosen crediting period:

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The estimated emission reductions over the 10 year fixed crediting period would be 185,410 tCO₂e.

*1st year begins from the date of registration, and each year extends for 12 months.

Years	Annual estimation of emission reductions in tonnes of CO ₂ e
*1 st year	18,541
2 nd year	18,541
3 rd year	18,541
4 th year	18,541
5 th year	18,541

¹ http://cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm



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6 th year	18,541
7 th year	18,541
8 th year	18,541
9 th year	18,541
10 th year	18,541
Total estimated reductions (tonnes of CO ₂ e)	185,410
Total number of crediting years	0
Annual average over the crediting period of estimated reductions (tonnes of CO ₂ e)	185,410

SECTION C. Duration of the project activity / Crediting period:**C.1. Duration of the Bundle**

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C.1.1. Starting date of the Bundle:

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5-April-2010

C.1.2. Expected operational lifetime of the project activities:

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20 years 0 months

C.2. Choice of crediting period and related information:

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C.2.1. Renewable crediting period:

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Not Applicable

C.2.1.1. Starting date of the first crediting period:

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Not Applicable

C.2.1.2. Length of the first crediting period:

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Not Applicable

C.2.2. Fixed crediting period:

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Applicable

C.2.2.1. Starting date:

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01/09/2011



The project activity is expected to be registered by the 01-Sep-2011 hence crediting period will start from the date of registration with UNFCCC. It is hereby confirms that the crediting period will not commence prior to the date of registration.

C.2.2.2. Length:

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10 years and 0 months

SECTION D. Application of a monitoring methodology:

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MONITORING INFORMATION**Meter Reading**

- The net electricity supplied to the grid will be taken directly from the share certificate for net electricity generated provided by GETCO.
 - The meter reading is taken jointly at GETCO meters by representatives of Enercon and GEDA/GETCO located at Enercon substation. The GETCO meters are connected to the wind turbines of the project activity and the wind turbines of the other project owners. Therefore GETCO provides the share certificate that apportions the net electricity generated by the project owners.
 - The Cluster meters are provided exclusively to all the project owners having installed wind turbines at the wind farm. The meter readings from these meters are used by GEDA for purpose of apportioning.

Meter Testing

- The main meter at Enercon Substation will be jointly tested & calibrated once in a year.
- If during meter testing the main meter at the Enercon substation is found beyond the permissible limit of error, the meter reading will be taken from the main meter located at the utility (GETCO) substation at Moti Panelli after addition of average historical transmission losses for last quarter (03 months).
- The main meter at utility substation will also be calibrated once in each year.
- All cluster meters which are connected to the Enercon substation will be sealed by GEDA and will also be calibrated annually.
- If during meter testing any cluster meter is found beyond the permissible limit of error, the sum of LCS meter reading located at each wind turbine of that cluster will be provided to GEDA for purpose of apportioning net electricity supplied to the grid.
- The LCS meters do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEGs. In case



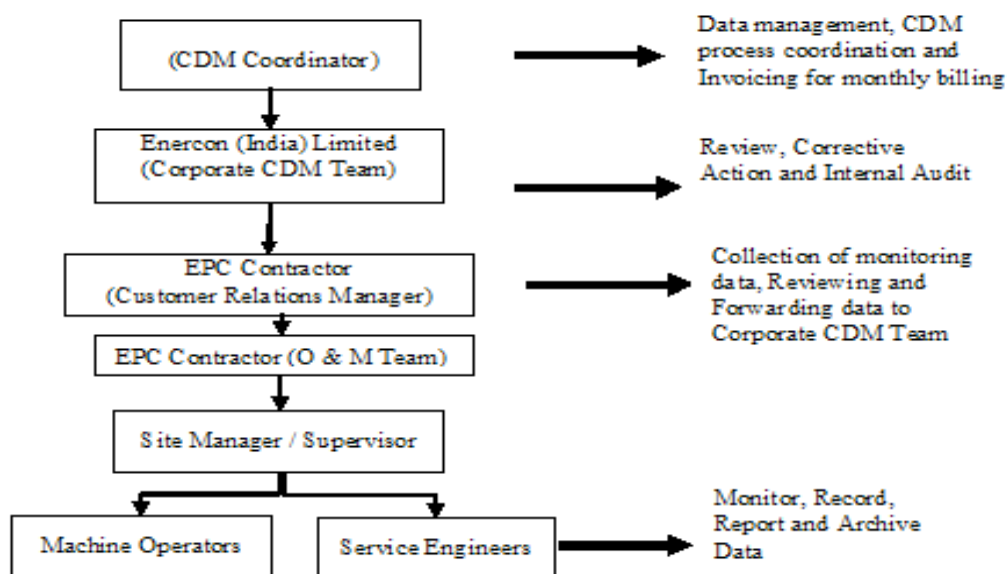
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there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report.

Data recording

- The meter reading at cluster meter and the Enercon substation are monitored on continuous basis. The meter recording at the main meter at Enercon substation and the cluster meters of the project activity will be done each month.
- The panel meter (LCS meter) reading is recorded continuously by the online monitoring system.
- All the monitored data will be recorded and filed electronically and in hard format for 2 years beyond the crediting period i.e. 10+2 years.

The operational and management structure implemented for data monitoring is as follows:



The PP will be keeping and monitoring the data for electricity generation and calibration reports post project implementation. The PP will be keeping data records of electricity generation and calibration reports post project implementation. Enercon (India) Limited will be the O&M contractor who will be having the responsibility for activities such as maintaining electricity generation records, calibration records and maintenance of the WEGs (Wind Energy Generators).