

MONITORING REPORT
(Version No. 01 Dated: 8th April 2009)

**2.5 MW BEL grid connected Wind Power
Project at Davanagere District, Karnataka, India.**

UNFCCC CDM REGISTRATION. NO – 1216

First Crediting Period from 5th November 2007 to 31st March 2009
(Both days included)
CER's-5082 tons CO₂e

2009



BHARAT ELECTRONICS LIMITED
(A Govt. of India Enterprise)
Jalahalli P.O., Bangalore – 560 013, India

1) Introduction:

This is the first Monitoring report of this CDM project covering the monitoring period from 5th November 2007 to 31st March 2009(both days included). This project is registered with UNFCCC on 5th November 2007 with registration number 1216.

The project operation has been monitored in accordance with the monitoring methodology as described in its project design document (PDD) and the monitoring plan.

The electric energy generated (clean Energy) in this project is injected to the state electricity grid and is made use of to meet partially the electrical energy requirements of M/s. Bharat Electronics Limited which otherwise would have come from fossil fuel based generating plants of the state electrical utility companies. This reduces GHG emissions and contributes to the regional sustainable development in the region.

2) Description of the project activity:

The project consists of the implementation of 2.5MW Wind Energy Power Plant near Basavapatna Village of Davanagere District, Karnataka, India. The Wind farm is composed of:

- Five numbers of Wind Electric Generators (WEG) of 500 KW, 690 V each
- An electrical transformer substation, 690V/33000V for each WEG.
- A common Metering station.

The project proponent M/s.Bharat Electronics Limited (BEL), a leading electronics company in India, installed the plant for producing electricity from the renewable source, namely Wind Energy. This renewable energy will be used to meet partially its power requirement displacing fossil fuel based electrical energy supplied by the electricity supply company and thereby reduce GHG emissions. The energy generated is injected to 66,000volts, grid of the Karnataka Power Transmission Corporation Limited for wheeling to BEL.

3) Project Commissioning:

This Wind project was commissioned on 30th September 2006.

4) Monitoring Period :

The monitoring period considered is from 5th November 2007 to 31st March 2009(both days included).

5) Monitoring System:

The monitoring is based on continuous metering of electricity production by the

Wind project using electronic Trivector meters- (Main and check meters) with 0.2 class accuracy. The meters are calibrated once a year by Karnataka Power Transmission Corporation Limited.

6) **Monitoring Plan:**

The project does not result into any emissions and any kind of leakage. The emission reductions are thus equivalent to the baseline emissions avoided by project activity implementation. Hence, the only data required to be monitored for estimating the emission reductions from the project activity is the net power fed to the KPTCL grid from the project activity. The monthly KPTCL energy receipts submitted to BEL will be considered for this purpose. This can also be verified by the log books to be maintained by BEL personnel at the projects site.

7) **Data to be monitored:**

ID number	Data variable	Data type	Data unit	Measured , (m) Calculate © or Estimated (e)	Recording Frequency	Proportion of data to be measured	How will the data be archived (electronic/ Paper)	For how long data to be kept?	Comment
1	Net Electricity fed to the grid from the project activity	Electricity	kWh	Measured (m)	Monthly	100%	KPTCL wheeling receipts (B form)	Crediting Period plus 2 Years thereafter	-

8) **Quality Control and Quality Assurance Procedures:**

ID number	Uncertainty level of data (High/Medium/Low)	Are QA/QC Procedures planned for these data?	Outline explanation why QA/QC procedures are or are not being planned
1	Low	Yes	The meter reading of net electricity fed to the grid is undertaken by KPTCL personnel jointly with BEL representatives at site. Further KPTCL will submit energy receipts to BEL on a monthly basis. The meters are calibrated and sealed by KPTCL.

9) Monitored Data :

As per the project Design Document, the monitored data are the following:

- Net electricity fed to the state grid in Kwh with a monthly recording frequency
- CO₂ emission reductions (t CO₂).

Sl. No.	Month	Net electrical energy fed to grid (KWh)
1	05/11/2007 to 30/11/2007	194251
2	01/12/2007 to 31/12/2007	342686
3	01/01/2008 to 31/01/2008	243040
4	01/02/2008 to 29/02/2008	109442
5	01/03/2008 to 31/03/2008	178084
6	01/04/2008 to 30/04/2008	199194
7	01/05/2008 to 31/05/2008	443611
8	01/06/2008 to 30/06/2008	802460
9	01/07/2008 to 31/07/2008	634886
10	01/08/2008 to 31/08/2008	547649
11	01/09/2008 to 30/09/2008	442595
12	01/10/2008 to 31/10/2008	184351
13	01/11/2008 to 30/11/2008	252414
14	01/12/2008 to 31/12/2008	298508
15	01/01/2009 to 31/01/2009	298520
16	01/02/2009 to 28/02/2009	144834
17	01/03/2009 to 31/03/2009	134502
	TOTAL	54,51,027

10) Calculation of GHG emissions reductions:

According to the PDD the CO₂ emission factor for estimation of GHG reductions for the BEL Wind Farm is 0.9323KgCo₂/KWh. Therefore the total CO₂ emission reduction for the above monitoring period is 5082 tons CO₂.

11) Monitoring Responsibility :

The above Wind project is being operated and maintained by the project developer M/s. RRB Energy Ltd., from the date of commissioning. They have the responsibility to collect data and report for each wind electric generator with their central monitoring system and SCADA.

12) Quality of evidence to determine emission reductions:

The BEL collects the data for generation, Import, Export, Reactive Energy import/export, grid availability, Machine availability, Losses, Net Energy injected to the grid through the following reports:

- Daily generation Report.
- Monthly Generation Report along with Grid availability, machine availability etc.
- Monthly meter readings of the common calibrated meter injecting energy to the grid Joint by electricity supply companies and our representative the above data are analyzed and put up for approval of BEL Management annually.

13) Sustainability – Economic and social well being:

The project contributes to sustainable development and the benefits are as follows:

- The renewable wind energy is a clean power that will displace equivalent power generation from the fossil fuel based power plants leading to reduction in anthropogenic Green House Gas emissions. It does not have adverse impact on soil, water etc.
- The project not only reduces GHG emissions but also reduces specific pollutants (like Sox, NO_x, and SPM) and adds to conservation of scarce fossil fuel energy sources like coal, petroleum products and natural gas.
- The project activity has led to creation of employment opportunities during construction and operation stages. The Road condition in the nearby villages have improved. Access to pasture land or agricultural land is unhindered. The project also aids in improving the grid stability in the vicinity.

- The successful operation of the project encourages other entrepreneurs to install similar projects in India. The project helps in grid stability in the surrounding remote areas and also reduce Transmission & distribution losses.
