

MONITORING REPORT

MONITORING PERIOD FROM 01/10/2007 TO 31/07/2008

**“4.5 MW BIOMASS (LOW DENSITY CROP RESIDUES) BASED POWER
GENERATION UNIT OF MALAVALLI POWER PLANT PVT LTD.”**

Ref: No: UNFCCC00000298CDMP

Project Site:- **MPPL Renewable Energy (P) Ltd**
Formerly Malavalli Power Plant (P) Ltd
Kirugavalu,
Near Santhemaiddana,
Malavalli Taluk, (Mysore-Bannur High way)
Mandya District, Karnataka.

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CURRENT STATUS OF THE PROJECT

The 4.5 MW Biomass fired Power Project at Kirugavalu, (Near Santhemaiana), Malavalli Taluq; Mandya District was commissioned in July 2001

The project was completed with major equipment supplied as follows:

S/No.	Equipment	Supplier	Technical Description
01	Boiler	M/s. IJT – Noida	Superheated steam flow: 22 MTPH, Type: Water wall Tube, Travelling Grate Boiler Temperature: 445 ±5°C Steam Pressure @ Super heater outlet: 45 ata Feed Water Temp: 105 °C
02	Turbine	M/s. Triveni Engineering & Industries Ltd. – Bangalore.	Turbine Inlet Steam:: 440 °C Inlet Steam Pressure: 42 ata Inlet Steam to Turbine: 21.5 TPH
	Condenser	M/s. GEI Godavari	Condenser cooling water temp: 105 °C Steam Inlet flow to Condenser : 19.80 TPH Steam Inlet temp: 48 °C
03	Balance of Plant	M/s Ion Exchange	DM plant Capacity - 2 Cu M /hr
	DM Plant	M/s Paharpur Cooling Tower	Flow Capacity: 1200 m ³ Cu M /hr, 2 Cell CT
	Cooling Tower	M/s. Avery Weigh Bridge	Weigh Bridge Capacity –15MT
	Weigh Bridge		
04	Fuel Handling System	M/s. Manco Engineers - Hariyana	Straw Cutter output: 3 - 4 TPH

The entire equity was provided by Company and loan taken from IREDA

STATEMENT TO WHAT EXTENT THE PROJECT HAS BEEN IMPLEMENTED AS PLANNED

The project was registered with CDM Executive Board on 21 July 2006.

The project has selected the renewable crediting period; the start date of the crediting period is 1 August 2001 to 31 July 2008 (renewable).

The project was completed as planned and described in the Project Design Document (PDD).

During the first Monitoring Period (01 August 2001 to 30 June 2006) plant exported 103.861GWh of electricity to the grid and issued 77 294 CERs.

During the second Monitoring Period (01 July 2006 to 30 September 2007) plant exported 24.251 GWh of electricity to the grid and issued 17 160 CERs.

MONITORING PERIOD

Methodology Applied: Simplified baseline and monitoring methodology AMS-I.D – “Grid connected renewable electricity generation”, Version 07

The monitoring period is from 01/10/2007 to 31/07/2008

The Plant had suffered major outages as detailed below during the period:

Plant forced Outages -Time Period		
Month	Hours	Minutes
October – 2007	250	40
November – 2007	222	4
December – 2007	232	55
January – 2008	240	59
February – 2008	252	0
March – 2008	705	15
April – 2008	114	35
May – 2008	161	39
June – 2008	492	35
July – 2008	72	0
Total	2744	42

Total = 2744 hours & 42 Min

SUSTAINABILITY – ECONOMIC AND SOCIAL WELL- BEING

The project activity has resulted in sustainable development in the region as follows:

1. Procurement of biomass fuel from local farmers and biomass suppliers has generated additional income and improved economic condition of the community. This has also resulted in local employment generation. Plant has generated employment opportunities directly / indirectly to more than 400 people. As a part of social responsibility, plant has been contributing to social infrastructure by way of employing local people for the plant operations and also paying significant amount as tax for the local Panchayat etc.,
2. Surplus Crop residue is properly used for power generation, which was otherwise burnt in the fields.
3. Project activity has resulted in generation of direct and in-direct employment due to biomass collection, transporting and unloading etc.

OBTAINED PARAMETERS ACCORDING TO MONITORING PLAN

For the project, following parameters were monitored on a continuous basis:

1. **Power Generation (KWh):** Power generation from the plant is measured continuously using the generation meter installed in the control room of the plant.
2. **Power Export & Import (KWh):** Power exported to the grid and imported from the grid is monitored from energy meters installed at project site on end of every billing month. A joint meter reading for the energy exported to the Grid will be recorded by representatives of KPTCL and MPPL and the readings will be jointly signed by both the parties as a proof of export of Power to the grid from power plant and import of Power from grid by the power plant. These meter readings are the basis for the invoices raised by MALAVALLI POWER PLANT PVT LTD.

3. **Biomass Residues (MT):**

The Biomass Crop residues were procured from farmers, in Carts, Tractor Trolleys, Trucks, etc. For measuring Weighing scale was installed. Fuel was handled through Dozer / Man power from storage yard to cutters. Fuel feeding was through belt and Slat Conveyor to bunker & then fed to the boiler through rotary feeders. All fuels arriving at the plant are weighed and recorded before stocking near feeding points. This weighed stock when charged to the conveyor is recorded as consumption of fuel for each shift. The shift data is then transferred to soft copy to make monthly records.

4. **Net Calorific Value (Kcal/Kg):**

The calorific value of the Biomass residues (of all kinds) used is being measured in the External laboratory on an annual basis, by sampling method as per the arrivals of the biomass and average value is considered. Though this parameter is not directly used in the emission reduction calculations the project proponent monitors the same for maintaining a check on the quality of biomass being fired in the boiler.

MONITORING PERIOD FROM 01.10.2007 TO 31.07.2008

S.No.	Data Type	Data Variable	Calibration frequency	Calibration Validity		Authorised Calibration Agency
				From	To	
1	Calibration of Energy Meter for Electricity Exported and Import	Main Meter # 01955018 & Check Meter # 01955020	Regularly	02/01/2007 12/02/2008	01/01/2007 11/02/2009	KPTCL (MRT Division)
2	Weigh Bridge	Calibration of Weigh Bridge	Yearly	17/04/2007 26/04/2008	16/04/2008 25/04/2009	"Controller of Weights and Measures" department of Karnataka
3	Pollution	Consent for water & air	Yearly	01/07/2007 01/07/2008	30/06/2008 30/06/2009	KSPCB
4	Boiler	Consent to use boiler	Yearly	18/06/2007 18/06/2008	17/06/2008 17/06/2009	Karnataka State Boiler Inspection Department
5	Weighted average emission factor of current generation mix	Weighted average emission factor of southern regional grid of India	Updated on annual basis	721.93	t CO ₂ e/GWh	Carbon Dioxide Baseline Data base, Version 3, 15 December 2007
6	Emission Factor of diesel due to transportation	Emission factor of diesel	NA	2.815	t CO ₂ e/Kl	IPCC
7	NCV of each kind of biomass residues	<div>Cane Trash</div> <div>Coconut fronds</div> <div>Corn cob</div> <div>Rice Husk</div> <div>Toppings</div> <div>Bagasse</div>	Monthly as per registered PDD	Annual 3 rd Party Certificates Available.		

• EMISSION REDUCTIONS

Base line emissions:

Net Electricity Exported x Baseline emission factor = (t CO₂e)

$$= 11.693 \text{ GWh (1, 16, 92,695 kWh)} \times 721.93 = 8,441.307 \text{ tCO}_2\text{e}$$

The project has been considered the ex-post emission factor for the weighted average emissions of the current generation mix (incl. imports) of Southern regional grid. MPPL has reviewed the emission factors were mentioned in the registered PDD and the Carbon Dioxide Baseline Data base, Version 3, 15 December 2007 published by Government of India, Ministry of Power Central Electricity Authority¹, and Government of India. Since electricity generation data for Southern grid for the year 2007-08 was not available on the CO₂ data base of official website of Central Electricity Authority of India till end date of the chosen verification period, the emission factor taken as the weighted average of the current generation mix for the most recent year (2006-07) data available has been considered based on the guidance provided in “**Tool to calculate the emission factor for an electricity system**”.

Project Emission

Project Emissions: Nil

Leakage

Leakage due to Transport = 249.476

Net Emission Reduction=

=Baseline Emission – (Project Emission + Leakages)

$$= 8,441.307 - (0 + 249.476) = 8,191.831$$

Net Emissions (ton CO₂): = 8,191

¹ <http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>

MEASURES TO ENSURE THE RESULTS / UNCERTAINTY ANALYSIS

The energy exported by MPPL is recorded from independent main meter installed at project site. In the event, the Main meter and Check is in operation, the reading from check meter is used for billing. The Energy exported to the KPTCL was recorded from Main Energy Meter and cross verified by Check meter and same will be calibrated periodically by KPTCL Metering Unit, whereas the KWh Meter located in Control panel is calibrated periodically by MPPL. Electricity export to grid and electricity import is being recorded and the same is being verified by the respective officials. Both meters are of same specifications & frequency and approved by KPTCL.

ROLES & RESPONSIBILITIES

A CDM team has been formed in MPPL for monitoring and verification of all the monitoring parameters as per the guidelines formulated by the management of MPPL. Qualified and trained people monitor the parameters and emission reduction calculations. In the complete implementation and monitoring plan, MPPL is the sole agency responsible for implementation and monitoring. The details of monitoring team are detailed below:

Name	Position
1. Mr. K. Krishan,	Managing Director
2. Mr. G. Narsingh,	Project coordinator
3. Mr. M. A. Sharief,	Plant Manager

Comparison of Actual Emission reduction against estimated in the registered PDD:

The actual emission reductions achieved during the verification period 01 October 2007 to 31 July 2008 is lower than estimated emission reduction reported in the registered PDD is due to:

- Less number of actual operating hours in project scenario in comparison to operating hours considered in the registered PDD.
- MPPL fires 100% Biomass and >70% of the total fuel fired is low density crop residues. During the period under verification, there was a significant number of rainy days during which it was not possible to fire high moisture (>30%) crop residues, notwithstanding huge surplus availability of cane trash. To overcome this in the future, we are commissioning shortly a cane trash dryer utilizing the heat in the boiler flue gases.
- There were inordinate delays in MESCOM (Power Purchaser) releasing payments which led to cash flow problems.
- Also due to Change in Emission Reduction factor

Comparison of Actual Emission reduction against estimated in the registered PDD – Monitoring Period from 01.10.2007 TO 31.07.2008		
S.No.	Emission Reductions as per PDD for the period 01 October 2007 to 31 July 2008	Actual Emission Reduction for the period 01 October 2007 to 31 July 2008
1	17 242.5 tCO₂	8 191