

Gold Standard Monitoring Report

Version: 02

Date: 21/12/2011

4.5 MW Biomass (low density Crop Residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd.

UNFCCC Reference No: 0298

GS Reference No.: GS343

2nd Periodic Verification of the 2nd Crediting Period)

Monitoring Period: 01/05/2009 – 30/06/2010

Net Emission reductions: 15,036 tCO₂e

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1. Introduction

This Monitoring Report has been developed for the purpose of the Gold Standard verification exercise for greenhouse gas emission reductions achieved by the project activity titled “4.5 MW Biomass (low density Crop Residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd.” and subsequent certification as per requirements of the UNFCCC Methodology Type I.D, for the period 01/05/2009 – 30/06/2010.

The information contained in this Monitoring Report corresponds to the Gold Standard verification criteria that are over and above the CDM verification criteria that are contained in the CDM Monitoring Report, available on the UNFCCC website:

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1141812568.71/CP/XP28IFK2A4B5H2JYG4LUSP8TWLUWHZ/iProcess/DNV-CUK1243486296.43/view>

The verification has been conducted by an accredited Designated Operational Entity: DNV. The verification report is available on the following link:

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1141812568.71/CP/XP28IFK2A4B5H2JYG4LUSP8TWLUWHZ/iProcess/DNV-CUK1243486296.43/view>

The project was registered with CDM Executive Board on 21 July 2006 and was completed as planned and described in the Project Design Document (PDD). The project has been verified in the past and has issued (or in the process of issuing) Gold Standard Certified Emission Reductions (GS CERs) for the following vintages:

1st crediting period:

1. First Monitoring Period – 01 August 2001 to 30 June 2006 – 77, 294 GS CERs
2. Second Monitoring Period – 01 July 2006 to 30 September 2007 – 17,160 GS CERs
3. Third Monitoring Period – 01 October 2007 to 31 July 2008 – issuance process ongoing with UNFCCC (presently at approval of Request for Deviation from Monitoring Plan) 8,191 CERs – GS issuance to be proposed upon issuance of CERs

2nd Crediting period:

4. First Monitoring Period - 01 August 2008 to 30 April 2009 – 9,211 GS CERs issued
5. Second Monitoring Period – 01 May 2009 to 30 June 2010 – 15,036 GS CERs – CERs already issued by the UNFCCC/ CDM – GS issuance currently proposed by means of this Monitoring Report

The project has been promoted by M/s. Malavalli Power Plant (P) Ltd.

VINTAGE OF CER'S

Sl. No.	Month	Electricity exported (kWh)	Electricity exported (GWh)	Baseline Emission - (t CO ₂ e)	Biomass used (MT)	Total Diesel in K Ltrs	Leakages due to Transportation Emission (Emissions from transportation of biomass) (tCO ₂ e/yr)	Certified Emission Reductions (t CO ₂ e)	Certified Emission Reductions (t CO ₂ e) Year Wise	
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4.5 MW PROJECT: MONTH-WISE MONITORING DATA

721.930

2007-08

Year 2007 - 2008

1	October	1334985	1.335	963.766	2,713.891	13.456	37.878	925.888	4,844.190	DEVIATION REQUEST APPROVED BY UNFCCC AND REVISED MR SUBMITTED
2	November	1262100	1.262	911.148	2,835.520	7.529	21.193	889.955		
3	December	1474740	1.475	1,064.659	3,222.680	7.266	20.454	1,044.205		
4	January	1294715	1.295	934.694	2,679.337	5.682	15.995	918.699		
5	February	1451515	1.452	1,047.892	2,805.072	7.430	20.916	1,026.976		
6	March	55760	0.056	40.255	199.540	0.635	1.787	38.468		

Year 2008 - 2009

Year 2000 - 2003										UNFCCC AND REVISED MR SUBMITTED
7	April	1134270	1.134	818.864	2,483.622	11.455	32.245	786.619	3,347.641	
8	May	1131735	1.132	817.033	2,510.502	12.119	34.114	782.919		
9	June	581800	0.582	420.019	1,237.848	5.739	16.155	403.864		
10	July	1971075	1.971	1,422.978	3,846.188	17.314	48.739	1,374.239		
Total		11692695	11.693	8441.307	24,534.200	88.624	249.476	8,191.831	8191.831	

Sl. No.	Month	Electricity generated (kWh)	Electricity exported (kWh)	Electricity exported (GWh)	Baseline Emission (t CO ₂ e)	Biomass used (MT)	Total Diesel in Tons	Project Emission (Emissions from transportation of biomass) (tCO ₂ e/yr)	Certified Emission Reductions (t CO ₂ e)	Certified Emission Reductions (t CO ₂ e) Year Wise
					780			3.185		

4.5 MW PROJECT: MONTH-WISE MONITORING DATA

Year 2008 - 2009

1	August	1341400	1097160	1.097	855.785	2,384.453	7.158	22.799	832.985	7,682.068
2	September	1090100	856750	0.857	668.265	2,186.798	7.101	22.615	645.650	
3	October	257700	212880	0.213	166.046	497.418	1.525	4.858	161.188	
4	November	965000	771850	0.772	602.043	1,739.634	5.825	18.551	583.492	
5	December	1724700	1434745	1.435	1,119.101	3,273.671	10.055	32.026	1,087.075	
6	January	1644900	1415380	1.415	1,103.996	2,831.226	6.767	21.553	1,082.444	
7	February	2400300	2113940	2.114	1,648.873	4,134.233	11.082	35.296	1,613.577	
8	March	2510600	2205945	2.206	1,720.637	4,556.129	14.122	44.979	1,675.658	

Year 2009 - 2010

9	April	2322600	2021295	2.021	1,576.610	4,392.844	14.866	47.349	1,529.261	1,529.261
	Total	14257300	12129945	12.130	9,461.357	25,996.406	78.502	250.028	9,211.329	

Sl. No.	Month	Electricity generated (kWh)	Electricity exported (kWh)	Electricity exported (GWh)	Baseline Emission (t CO ₂ e)	Biomass used (MT)	Total Diesel in Tons	Project Emission (Emissions from transportation of biomass) (tCO ₂ e/yr)	Certified Emission Reductions (t CO ₂ e)	Certified Emission Reductions (t CO ₂ e) Year Wise
					780			3.185		

4.5 MW PROJECT: MONTH-WISE MONITORING DATA

Year 2009 - 2010

1	May	1978900	1695745	1.696	1,322.681	3,521.634	10.672	33.991	1,288.690	11,442.95
2	June	2288700	1984865	1.985	1,548.195	4,175.470	12.762	40.647	1,507.548	
3	July	1853400	1581815	1.582	1,233.816	3,419.690	9.932	31.634	1,202.181	
4	August	1246800	1049810	1.050	818.852	2,227.880	6.203	19.757	799.095	
5	September	1257800	1058265	1.058	825.447	2,542.300	5.601	17.839	807.608	
6	October	1589000	1302790	1.303	1,016.176	3,425.500	7.862	25.041	991.135	
7	November	1356200	1124840	1.125	877.375	2,773.800	6.709	21.368	856.008	
8	December	993500	812520	0.813	633.766	2,038.300	4.609	14.679	619.087	
9	January	1687300	1425975	1.426	1,112.261	3,214.300	7.651	24.368	1,087.893	
10	February	1591200	1392085	1.392	1,085.826	3,017.200	8.191	26.089	1,059.737	
11	March	1887800	1622130	1.622	1,265.261	3,782.400	12.964	41.289	1,223.972	

Year 2010 - 2011

12	April	2058100	1753650	1.754	1,367.847	4,034.110	13.615	43.364	1,324.483	3,594.00
13	May	1789100	1490180	1.490	1,162.340	3,602.200	11.463	36.510	1,125.830	
14	June	1814400	1510900	1.511	1,178.502	3,599.400	10.931	34.815	1,143.687	
	Total	23392200	19805570	19.806	15,448.345	45,374.184	129.165	411.390	15,036.955	

2 .Monitoring Background

The Sustainable Development Matrix for the project activity is provided in the Gold Standard Annex submitted at the time of GS registration.

The Sustainable Development Assessment Matrix shows that there are no indicators, which would be critical for a positive contribution of the project to Sustainable Development or that are particularly sensitive. Further, the initial stakeholder consultation has not demonstrated any concerns, which would require special monitoring.

Upon approval of the project by the Gold Standard for retroactive validation (Gold Standard communication dated 8 December 2006), the Gold Standard recommended to monitor particulate matter emission levels as additional measure to regular CDM monitoring procedures.

Regular CDM monitoring procedures as specified in the PDD of the project activity account for:

- Determination of project emissions and emission reductions during the crediting period
- Determination of leakage due to transport of biomass and competing uses for biomass resources
- Determination of monitoring method (including data registration, monitoring, measurement and calibration) and the equipment applied
- Quality assurance and control procedures for the monitoring process
- Documentation of all relevant monitoring steps

Renewal of crediting period

Furthermore, the project proponent wishes to inform that as highlighted in the previous section, all GS CERs issued previously correspond to the 1st crediting period of the project activity. There has since been a renewal of the crediting period, as evident from the crediting period renewal from UNFCCC CDM website:

<http://cdm.unfccc.int/UserManagement/FileStorage/YGRS75IJEVWQMZX4C3OP8L2F0B61KN>

There has been no change in the baseline scenario and major monitoring procedures for calculating GHG emission reductions generated by the project. This is evident from the revised PDD available in the UNFCCC CDM website:

<http://cdm.unfccc.int/UserManagement/FileStorage/VRN9IYK32XFOHL8DEUSBZPMG10C457>

The same has been validated by an accredited DOE and explicitly mentioned in their validation opinion:

<http://cdm.unfccc.int/UserManagement/FileStorage/DWAZBYCS076QOHIPXUJMT529R1KEV3>

From the said documents, it can be argued that the renewal in crediting period brings about no impacts that can have any changes in the GHG emission reduction quantum of the project activity.

The GS CERs covered in the monitoring report under consideration correspond to the 2nd crediting period of the project activity. It may be justifiably concluded that as the baseline scenario and GHG emission reduction calculation and monitoring procedures are unchanged, the Gold Standard monitoring parameters shall also be the same for the 2nd crediting period of the project activity. Hence the Gold standard monitoring plan and parameters mentioned in subsequent sections of this Monitoring Report are same as the GS Annex submitted to the GS Registry at the time of renewal of crediting period.

3. Parameters monitored according to the monitoring plan

The Gold Standard Monitoring Plan includes measurements of particulate emission levels in addition to the regular CDM monitoring procedures. It is also in line with the requirements of the Karnataka state's Pollution Control Board

1. Monitoring procedures for particulate emission levels:

Data / Parameter:	<i>EL_{particulateemissions}</i>
Data unit:	Ppm
Description:	Particulate emission levels measured periodically at the stack of the biomass based plant
Source of data to be used:	Periodical measurements carried out according to international standards by qualified professionals with qualified equipment
Measurement procedures (if any):	Particulate emission levels shall be determined based on a stack gas analysis using calibrated analyzers. Measurements shall be carried out according to international standards by qualified professionals with qualified equipment
Monitoring frequency:	Monthly measurements
QA/QC procedures to be applied:	Measurements shall be conducted by qualified institutions, which guarantee for the accuracy of the measurement procedures and equipment.
Any comment:	

2. Monitoring procedures for employment generation

Data / Parameter:	<i>Employment (quantity)</i>
Data unit:	Number
Description:	Number of skilled and unskilled personnel directly employed by the project participants
Source of data to be used:	Plant operational data like payrolls, registers, attendance sheets and relevant third party documents
Measurement procedures (if any):	Relevant plant operational records like payrolls, registers, attendance sheets as well as relevant third party documents shall reflect the number of employees that are a part of the project proponent organization
Monitoring frequency:	Annually
QA/QC procedures to be applied:	Data can be directly obtained from the payrolls, registers, attendance sheets, etc. of employees.
Any comment:	

3. Monitoring procedures for livelihood of the poor

Data / Parameter:	<i>Livelihood of the poor (indicator: biomass usage)</i>
Data unit:	Tonnes
Description:	Direct contribution of the project activity to the local populace can be measured by the amount of biomass usage by the plant, as it is entirely procured from the region
Source of data to be used:	Relevant CDM procedural documents: example biomass usage excel-sheet submitted to the UNFCCC
Measurement procedures (if any):	Relevant procedures as explained in the monitoring plan in the CDM PDD
Monitoring frequency:	Annually
QA/QC procedures to be applied:	Calibration schedule as described in the CDM PDD
Any comment:	

4. Monitoring Results

1. Monitoring results for particulate emission levels:

Procedures and Sources/supportive references: The measurements have been conducted monthly by M/s. Amulya Associates (The instrument used for the monitoring of stack emissions is an handy stack sampler from Envirotech-Model APM 620) and M/s. Ganesh Consultancy & Analytical Services (The instrument used for the monitoring of stack emissions is an handy stack sampler from Envirotech -Model VSS-1 & Sl. No. 297 DTA-2007 & Sl. No. 237 DTF-06) an independent external agency.

Results: The results of the suspended particulate matter (SPM) for the monitoring period under consideration, i.e., 01 May 2009 to 30 June 2010 are provided below:

Sl. No.	Measurement Month	Measurement Date	SPM Amount (PPM)
1	May 2009	25/05/2009	140.00
2	June 2009	11/06/2009	118.00
3	July 2009	17/07/2009	116.60
4	August 2009	28/08/2009	109.20
5	September 2009	21/09/2009	110.20
6	October 2009	21/10/2009	115.10
7	November 2009	30/11/2009	95.40
8	December 2009	21/12/2009	90.60
9	January 2010	08/01/2010	112.40
10	February 2010	03/02/2010	126.60
11	March 2010	05/03/2010	82.70
12	April 2010	26/04/2010	87.40
13	May 2010	06/05/2010	90.80
14	June 2010	10/06/2010	86.30
<u>Reference:</u> Monthly measurement reports issued by an independent external agency on the basis of tests conducted.			

Conclusion: The measured values of SPM from stack emissions are well within the maximum limits prescribed by the Karnataka state's Pollution Control Board of 150.00 PPM.

2. Monitoring results for employment generation

Procedures and Sources/supportive references: The quantitative values for this parameter have been sourced from the records maintained and submitted by the project proponent in the form of employee attendance registers and relevant explanations.

Results: The results of the number of personnel directly and indirectly employed by the project activity from the records maintained by the project proponent are summarized below:

ATTACHMENT TO GOLD STANDARD MONITORING REPORT

STATEMENT OF ATTENDANCE MONTHWISE :- (WORKERS / LABOURS ATTENDED)														
Month	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10
Direct Benifitted Workers / Staff from MPPL														
Operation and Maintenance Staff	45	44	43	44	43	43	41	42	43	43	42	42	41	41
Operation and Maintenance Contract Staff	38	39	39	38	39	38	38	37	38	38	40	38	36	36
Biomass Feeding Contract Labours	57	58	56	47	46	42	42	35	36	35	31	30	31	31
Biomass Feeding Contract Labours (Punjab)	19	28	28	28	28	25	23	25	30	19	24	25	31	31
Plant Security	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Haggur Security	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Fertilizer Production Labours	10	7	7	3	3	3	3	5	6	12	8	6	7	6
	181	188	185	172	171	163	159	156	165	159	157	153	158	157
Indirect Labours Benifitted from MPPL	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10
Biomass Supply Contractors	27	27	27	27	27	27	27	27	27	27	27	27	27	27
Gang Leaders (for Locating availability of fuel in field)	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Labours Under Gang Leaders (8 persons) for Bundling and Loading to Tractors- Village wise)	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Tractor / Lorry Drivers	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	351	351	351	351	351	351	351	351	351	351	351	351	351	351

- No. of direct employees: 166 – breakup as under
 - Operation and maintenance staff
 - Operation and maintenance contract Labours
 - Biomass feeding contract labours
 - Biomass feeding Contract labours (Punjab)
 - Security
 - Fertilizer production labour
- No. of indirect employees: 351 – breakup as under
 - Biomass Supply Contractors: 27
 - Gang Leaders (for Locating Availability of Fuel in field): 30
 - Labours under each gang leaders (8) for bundling and loading to tractors: 240
 - Tractor / lorry drivers: 54

Note: As the indirect employment from the project is not under the direct supervision and control of the project proponent, it has been estimated based on the number of suppliers as well as the biomass fuel procurement quantum and hence not possible to be directly verified. It is also noteworthy here that the data for biomass fuel procurement has also been verified by the DOE conducting the verification process under UNFCCC/ CDM this parameter features in the regular CDM monitoring plan, thus establishing the worthiness of the data.

Source: summary of project proponent records submitted separately.

Conclusion: The project activity contributes to employment generation in the region by employing a huge number of human workforces as evident above. It is hence contributing to the economic upliftment of the area on a local scale and the country on a national scale.

3. Monitoring results for livelihood of the poor

Procedures and Sources/supportive references: The biomass usage data for the plant submitted to the UNFCCC based on the CDM verification.

Results: The plant biomass usage data obtained from the excel-sheet submitted to the UNFCCC for issuance is reproduced below:

Table A:
MPPL-FUEL CONSUMPTION DATA FROM MAY 2009 TO JUNE 2010

YEAR 2009-2010	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	TOTAL FUEL MAY09-JUN10
Cane Trash Total MT	11.000	5.000	15.000	7.000	240.200	749.100	548.300	432.300	360.400	246.800	106.200	126.900	75.300	3.000	2,926.500
Coconut fronds Total MT	2,187.412	2,715.960	2,025.990	1,241.200	920.000	1,232.000	1,119.300	647.300	1,080.300	1,437.000	2,882.200	2,981.860	2,419.540	2,315.500	25,205.562
Corn Cob (Sandu) Total MT	224.404	225.400	106.200	14.000	54.500	264.700	122.000	394.600	780.700	441.800	131.300	63.950	42.940	-	2,866.494
Plantation Tree Toppings + Chips Total MT	719.699	600.710	676.800	475.080	501.200	686.100	627.600	390.700	791.000	727.100	662.700	861.400	871.680	723.900	9,315.669
Husk Total MT	379.119	628.400	595.700	490.600	826.400	493.600	356.600	173.400	201.900	164.500	-	-	192.740	557.000	5,059.959
Total fuel consumption month MT	3,521.634	4,175.470	3,419.690	2,227.880	2,542.300	3,425.500	2,773.800	2,038.300	3,214.300	3,017.200	3,782.400	4,034.110	3,602.200	3,599.400	45,374.184

As all of this biomass has been procured locally, the contribution of the project activity towards livelihood of the poor in the region can be suitably established.

Furthermore, it may also be noted that the project proponent has organized several monthly meetings in the local areas for capacity building of the local villagers. They have been educated on avoiding practices of burning biomass wastes in the open fields and instead accumulate the same and sell it to the biomass suppliers for subsequent use as biomass fuel in the power plant. Hence not only has the project proponent contributed to the improvement of ambient air and soil quality, at the same time the local villagers have been educated on practices to help them realize the economic value of waste.

MONTH	BIOMASS	BIOMASS COLLECTION AREA				DATE OF MEETING
		VILLAGE	HOBLI	TALUK	DISTRICT	
May-09	Cane Trash	Kagalipura	Bannur	T.Narasipur	Mysore	12/5/2009
Jun-09	Coconut Fronds	Maruvanahalli	Babbur	C R Patna	Hassan	8/6/2009
Jul-09	Cane Trash	Hittavalli	Rangasamudra	T.Narasipur	Mysore	16/07/2009

MONTH	BIOMASS	BIOMASS COLLECTION AREA				DATE OF MEETING
		VILLAGE	HOBBI	TALUK	DISTRICT	
Aug-09	Coconut Fronds	Hanagola	Kekkeri	K R Pet	Mandya	15/08/2009
Sep-09	Cane Trash	Manigere	C A Kere	Maddur	Mandya	16/09/2009
Oct-09	Coconut Fronds	Annekere	Dandiganahalli	C R Patna	Hassan	13/10/2009
Nov-09	Cane Trash	Megalakoppalu	Bannur	T.Narasipur	Mysore	8/11/2009
Dec-09	Coconut Fronds	Mattanavalli	Heerisave	C R Patna	Hassan	10/12/2009
Jan-10	Cane Trash	Nennur	Kirugavalu	Malavalli	Mandya	14/01/2010
Feb-10	Coconut Fronds	Doddakunchehalli	Agrahara	H N pura	Hassan	13/02/2010
Mar-10	Cane Trash	Chikkaboowalli	Sosale	T.Narasipur	Mysore	9/3/2010
Apr-10	Coconut Fronds	Akkanahalli	Nuggehalli	C R Patna	Hassan	12/4/2010
May-10	Cane Trash	Beedanahalli	Bannur	T.Narasipur	Mysore	14/05/2010
Jun-10	Coconut Fronds	Silinare	Sabhalli	K.R. Pet	Mandya	16/06/2010

Additional information: Biomass Availability Assessment – Further to the above monitored parameters, the biomass residues availability assessment results from a study conducted by an independent third party in the region within 100 km radius of the project activity for the monitoring period under consideration are provided below:

Table B:						
Sl. No.	Type of Fuel	Total Residue Generation (MT)	Usage of Biomass from Others (MT)	Available Biomass Before consumption from MPPL (MT)		Usage of Biomass by MPPL (MT)
1	Cane Trash	486,150.00	00.00	486,150.00	>	2,927.00
2	Coconut Fronds	150,517.00	26,428.00	124,089.00	>	25,206.00
3	Corn Cobs	40,786.00	33,319.00	7,467.00	>	2,866.00
4	Plantation Tree Toppings + Chips	74,583.00	49,198.00	25,385.00	>	9,316.00
5	Rice Husk	26,732.00	12,587.00	14,145.00	>	5,060.00

Source: Biomass Availability Assessment Reports and fuel consumption data (Table A)

Hence, it has been established that the biomass availability in the region is much in excess of the usage by the project activity.

Overall Conclusion:

It can suitably be established that the project has complied with the Monitoring Plan laid out in the Gold Standard Annex and hence the **15,036 CERs** under for the monitoring period under consideration, as per the following year-wise vintage break-up are eligible for issuance under Gold Standard:

Year 2009	01/05/2009 to 31/12/2009	8,071 tCO ₂ e
Year 2010	01/01/2010 to 30/06/2010	6,965 tCO ₂ e
Total		15,036 tCO₂e