

# **THIRD MONITORING REPORT**

Monitoring Period  
24.07.2007 to 21.07.2008  
(Both Days Included)

## **Project 0374: KMS Power 6 MW Renewable Sources Biomass Power project**

**Version: KMS / MR3 / 001**  
**Date : 21.01.2009**

**Project Site:**  
Lakkaraju Garlapadu village,  
Sattenapalli Mandal, Guntur district,  
Andhra Pradesh, India

**KMS POWER PRIVATE LIMITED**  
**1071, Road No 44, Jubilee Hills,**  
**Hyderabad – 500033,**  
**Andhra Pradesh, India.**  
e- Mail: [kms@greenkogroup.com](mailto:kms@greenkogroup.com)

## **A. Project Reference:**

**Title:** KMS Power 6 MW Renewable Sources Biomass Power project

**UNFCCC Reference No:** 0374

**Registration Date:** 04 June 2006

**Methodology:** AMS ID Version 7

## **B. Monitoring Period**

The Monitoring period is chosen from 24.07.2007 to 21.07.2008 (both days included). This Monitoring report prepared based on the revised monitoring plan approved by UNFCCC.

## **C. Location of the Project:**

Project 0374: KMS Power 6 MW Renewable Sources Biomass Power Project Plant at Lakkaraju Garlapadu, Sattenapalli Mandal, Guntur Dist., Andhra Pradesh, India, has been commissioned and is operational since 22.07.2002. The Plant is using renewable Biomass fuels like Rice Husk, Cotton & Chilly Stalks, Prosopis Julie flora etc.

## **D. Brief Description and Current Status of the Project:**

The project was registered with CDM Executive Board on 04 June 2006.

During the first Monitoring Period (23 July 2002 to 24 June 2006) plant exported 143.9 Million units to the grid and issued 89596 CERs.

During the second Monitoring Period (25 June 2006 to 23 July 2007) plant exported 36.5 Million units to the grid and issued 27790 CERs.

The specifications of major equipment and their suppliers are detailed below.

S. No	Equipment	Supplier	Specifications
1	Boiler	Cithar Vessels (P) Ltd	Capacity - 35 TPH Pressure - 67 kg/cm <sup>2</sup> Temperature - 490 °C Type - Water Tube FBC
2	Turbo Generator	Triveni Engineering & Industries Ltd.	Model - NK 32/45/20 Rating - 8000 KW Pressure - 64.7 kg/cm <sup>2</sup> Temperature - 480 °C

The Plant is in operation continuously (with outages – forced & planned) during the monitoring period. The Plant is using renewable Biomass fuels like Rice Husk, Cotton & Chilly Stalks, Prosopis Julie flora etc. Based on the Biomass assessment carried by Bapatla agricultural College it has been observed the excess biomass is available in the region after total usage in the District as detailed.

S.NO	Details	Quantity in MT
1	Industrial Produce (Rice Husk, Saw dust etc)	180754
2	Crop Residue Generation & Other (like Paddy straw, Wheat, Juliflora etc)	1112377
3	Total Generation	1293131
4	Domestic Consumption (usage like fuel, manure, thatching etc)	714284
5	Usage by biomass plants (KMS is one of the plant)	250186
6	Total Consumption (A)	964470
7	Surplus available (B)	328660
	Percentage $\{(B/A)*100\}$	34% Excess

In addition, plant also uses small quantity of diesel very occasionally for power generation using DG set to meet emergency power requirement during complete black out and factory also for internal vehicles for fuel transfer.

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

Month	Running hours	Planned outages	Forced outages	Reason for forced outage
		Hrs	Hrs.	
Aug - 07	570.21	112.5	61.82	33 KV VCB & GT Breaker problem , Monthly Maintenance
Sep - 07	615.9	0	66.01	ID fan Bearing replacement, Grid failure
Oct - 07	665.57	0	77.26	Gear box baring replacement & belt patch work, Grid failure
Nov - 07	599.1	0	141.4	Bed coil puncture, compressor motor winding problem.
Dec - 07	634.91	0	36.92	FD fan bearing replacement , grid failure
Jan - 08	633.92	0	110.08	Boiler inside grooves neck pin hole patch work , yearly maintenance, TG tripped due to HP side high vibration
Feb - 08	589.82	157.59	7.59	Yearly maintenance & wheel casing brain line package damaged.
March - 08	528.49	13.59	146.67	bed coil & bank tube replacement, grid failure
April - 08	663.88	0	108.37	P.A. lines jammed, Air compressor & Grid failure
May - 08	515.13	0	178.87	Boiler maintenance work & feed pump orifice pump damage & drag chain problem air compressor problem and TG Tripped due to Auxiliaries tripped.
June - 08	518.47	0	229.03	Water wall tube coil puncture, 110v -ups problem & A.V.R. problem.
July - 08	633.54	0	110.46	Id fan impeller changing and bed coil joint failure A.V.R protentiometer problem & ID fan motor legs problem.
Total For the Monitoring Period	<b>7168.9</b>	<b>283.68</b>	<b>1274.4</b>	

### E. Sustainability – Economic and Social well being:

The Company has spent around Rs. 84.77 million (USD 1.8 million @ IUS\$ = Rs 46/-) during the monitoring period towards fuel usage in the Plant. 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 500 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 Sales Tax, water charges to Irrigation Department, and for the local Panchayat.

## **F. Baseline Emission Factor**

The baseline emissions and the emission reductions from project activity are estimated based on the quantum of electricity to be exported by the project activity and the Baseline Emission Factor (BEF) of the chosen Southern Regional grid (India). The baseline emission factor (combined margin) has been calculated as per the guidance provided in ACM0002 (Version 06). The Baseline Emission Factor 0.83 Kg CO<sub>2</sub>/ KWh has been validated and is available in the [registered CDM PDD](#).

## **G. Baseline Emission Factor**

Baseline and project emissions are calculated as per the formulas mentioned in Section B of the PDD.

- Baseline emissions are calculated as per the formula given below:

Baseline emissions = Net Electricity exported to the grid (KWh) x Grid emission factor (tCO<sub>2</sub>/KWh)

Grid emission factor of 0.83 kgCO<sub>2</sub>/kWh is considered based on the data provided in the registered PDD and procedures mentioned in ACM0002 (Version 6).

- Emission Reductions:

The project activity reduces carbon dioxide through displacement of grid electricity generation with fossil fuel based power plants by renewable-wind electricity. The emission reduction ERY due to project activity during a given year y is calculated as the difference between baseline emissions (BE<sub>y</sub>),

project emissions (PEy) and emissions due to leakage (Ly), as per the formulae given below:

$$ERy = BEy - PEy - Ly$$

Where,

BEy = Baseline emissions

PEy = Project emissions;

Ly = Emissions due to Leakage.

PEy(Import) = Net Electricity imported to the grid (KWh) x Grid emission factor (tCO<sub>2</sub>/KWh)

PEy(coal) = (Coal used in MT X (Carbon content in % / 100)) x 44/12

PEy(diesel) = [(Diesel consumed in liters x calorific value (TJ/kg) x density of fuel (kg/l))] x IPCC emission factor (tCO<sub>2</sub>/TJ) x oxidation factor

Where,

CV = Calorific value = 10270 Kcal/Kg (*Ex-Ante*)

EF = Emission Factor = 74.1 tCO<sub>2</sub>/TJ (*Ex-Ante*) IPCC 2006

In the case of this project activity Ly = 0 ([Please refer to the registered PDD](#))

Monitoring Period	Baseline Emissions (tCO <sub>2</sub> )	Project Emissions (tCO <sub>2</sub> )	Net Emission Reduction (tCO <sub>2</sub> )
24.07.2007 to 21.07.2008	28750	66	28684

## H. Parameters being monitored:

For the Project, the following parameters are being monitored on continuous basis:

- 1 **Power Generation (Million KWh):** Power generation from the plant is measured continuously using the generation meter installed in the control room of the plant. The total generated power will also be used to measure the auxiliary consumption of the plant after deducting power exported to the grid.
- 2 **Power Export & Import (Million KWh):** Power exported to the grid and imported from the grid is monitored from energy meters installed at APTransco substation on end of every billing month. From the month of December 2007 APTransco has changed the billing date from 23<sup>rd</sup> to 21<sup>st</sup> in every month. A joint meter reading for the energy exported to the Grid will be recorded by representatives of APTransco and Company 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 KMS POWER PRIVATE LIMITED.
- 3 **Biomass Fuel (MT):** The Biomass fuel (of all kinds) on receipt in the Plant is weighed in the Electronic Weigh Bridge installed at the entry of the Plant and unloaded in the fuel storage yard. The biomass fuel after necessary preparation is fed to the Boiler as per the requirement and consumption will be recorded on daily basis.
- 4 **Calorific value of the Biomass fuel (Kcal/Kg):** The calorific value of the Biomass fuel (of all kinds) used is being measured in the laboratory at regular intervals, as per the arrivals and average value will be considered on monthly basis. 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.
- 5 **Coal (MT):** Coal on receipt in the Plant is weighed in the Electronic Weigh Bridge installed in the Plant and unloaded in the fuel storage yard. Coal is fed to the Boiler as and when required and consumption will be recorded accordingly.

- 6 **Carbon content in Coal (%)**: Carbon content in the coal received is being considered as per the analysis reports of laboratory, which are being obtained at regular intervals.
- 7 **Calorific value (CV) of coal (Kcal/Kg)**: CV of coal is being analyzed at government approved outside laboratory at regular intervals. 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 coal being fired in the boiler.
- 8 **Diesel (Litres)**: Diesel will be consumed for emergency operations of the DG set in case total block out situation. Diesel consumption will be monitored on regular basis using level gauge/measurement on store issues.
- 9 **Net Calorific value of Diesel (Kcal/Kg)**: CV of the diesel will be obtained from the documents published by IPCC or supplier data.
- 10 **Density of Diesel (Kg/L)**: Density of the diesel will be obtained from Indian Oil Corporation website.
- 11 **Oxidation Factor of Diesel**: IPCC default value at the time of monitoring will be used.

Month-wise data on Power Generation, export, import, fuel consumption and diesel consumption is given below for the monitoring period:

Billing Month	Year	Electricity Generated, KWH	Electricity Exported KWH	Electricity Imported KWH	Biomass Used, MT	Coal Used, MT	Diesel consumption, lit
Aug (24/07 to 23/08)	2007	3094100	2715300	20100	4667	0	2026
Sep (23/08 to 22/09)	2007	3596300	3146900	17600	5367	0	2046
Oct (22/09 to 23/10)	2007	3636900	3183000	18500	5423	0	2054
Nov (23/10 to 23/11)	2007	3355100	2950300	21900	5385	0	2047
Dec (23/11 to 21/12)	2007	3453200	3033900	9000	5421	0	2016
Jan (21/12 to 21/01)	2008	3747300	3303900	12600	5675	0	749
Feb (21/01 to 21/02)	2008	3289000	2889800	17200	4995	0	2016
Mar (21/02 to 21/03)	2008	2974900	2612100	24900	4792	0	2041
Apr (21/03 to 21/04)	2008	3820400	3360800	16600	5974	0	2860
May (21/04 to 21/05)	2008	3287700	2882500	16000	5453	0	1650
June (21/05 to 21/06)	2008	2360500	2019400	29600	4072	0	2157
July (21/06 to 21/07)	2008	3183600	2765100	20700	5864	0	2406
<b>Total For The Monitoring Period</b>		<b>39799000</b>	<b>34863000</b>	<b>224700</b>	<b>63089</b>	<b>0</b>	<b>24068</b>

Emission reductions are calculated based on the power exported to the grid, power imported from the grid during shut down and start up, coal and diesel consumed in the plant for the monitoring period.

Billing Month	Year	Electricity Exported, KWH	Electricity Imported KWH	Electricity Displaced, KWH	Biomass Used, MT	Coal Used, MT	Diesel consumption, lit	Net Emission Reductions (tCO2e)
Aug (24/07 to 23/08)	2007	2715300	20100	2695200	4667	0	2026	2231
Sep (23/08 to 22/09)	2007	3146900	17600	3129300	5367	0	2046	2592
Oct (22/09 to 23/10)	2007	3183000	18500	3164500	5423	0	2054	2621
Nov (23/10 to 23/11)	2007	2950300	21900	2928400	5385	0	2047	2425
Dec (23/11 to 21/12)	2007	3033900	9000	3024900	5421	0	2016	2505
Jan (21/12 to 21/01)	2008	3303900	12600	3291300	5675	0	749	2730
Feb (21/01 to 21/02)	2008	2889800	17200	2872600	4995	0	2016	2379
Mar (21/02 to 21/03)	2008	2612100	24900	2587200	4792	0	2041	2142
Apr (21/03 to 21/04)	2008	3360800	16600	3344200	5974	0	2860	2768
May (21/04 to 21/05)	2008	2882500	16000	2866500	5453	0	1650	2375
June (21/05 to 21/06)	2008	2019400	29600	1989800	4072	0	2157	1646
July (21/06 to 21/07)	2008	2765100	20700	2744400	5864	0	2406	2271
<b>Total For The Monitoring Period</b>		<b>34863000</b>	<b>224700</b>	<b>34638300</b>	<b>63089</b>	<b>0</b>	<b>24068</b>	<b>28684</b>

## **I. Measures to ensure the Results / uncertainty analysis**

As per the Power Purchase Agreement (PPA), the energy exported to the APSEB Grid is recorded from two independent meters viz., Main Meter and Check Meter and reading of main meter is used for billing. In the event of main meter not in operation / fails, the reading of the check meter shall be used for Billing.

As per the requirements of APSEB the plant will undertake the calibration of meters once in a year to make sure the accurateness of readings. Power Generation, Export & Auxiliary Consumption, fuel consumption are being recorded and measured daily and the same is being verified by Manager (O&M) and approved by General Manager (Operation).

Weight Bridge will be calibrated once in year to assure the quantity of biomass used during the plant operation.

## **J. Roles & Responsibilities**

A CDM team has been formed in KMS POWER PRIVATE LIMITED for monitoring and verification of all the monitoring parameters as per the guidelines formulated by the management of KMS POWER PRIVATE LIMITED. Qualified and trained people monitor the parameters and emission reduction calculations. In the complete implementation and monitoring Plan, KMS POWER PRIVATE LIMITED is the sole agency responsible for implementation and monitoring.

### **CDM team member names:**

1. Mr. Venugopal
2. Mr. Raju M
3. Mr. BMK Murthy

## Annexure I

### Emission Reduction Calculations

Month	Year	Electricity Generated, KWH	Electricity Exported KWH	Electricity Imported KWH	Nett Electricity Exported, KWH	Auxiliary Consumption		Biomass Used, MT				Coal Used, MT	Grand Total, MT	% Carbon in Coal	Emission Factor, kgCO <sub>2</sub> /kWh	Emission reduction, Tons	GHG Emissions due to consumption of diesel for emergency DG sets and fuel handling vehicles			NETT EMISSION REDUCTIONS, Tons
						(Export - Import)	Meter Reading	(Gross - Nett export) KWH	Juliflora	Rice Husk	Others						Total Biomass	Diesel consumption, lit	Emissions due to consumption of Diesel, Tons	
					Aug (24/07 to 23/08)	2007	3094100	2715300	20100	2695200	382500	398900	189	3685	793	4667	0	4667	0.00	0.83
Sep (23/08 to 22/09)	2007	3596300	3146900	17600	3129300	440200	467000	259	4482	626	5367	0	5367	0.00	0.83	2597	2046	74.1	5.60	2592
Oct (22/09 to 23/10)	2007	3636900	3183000	18500	3164500	442500	472400	313	4766	344	5423	0	5423	0.00	0.83	2627	2054	74.1	5.62	2621
Nov (23/10 to 23/11)	2007	3355100	2950300	21900	2928400	397400	426700	228	4759	399	5385	0	5385	0.00	0.83	2431	2047	74.1	5.60	2425
Dec (23/11 to 21/12)	2007	3453200	3033900	9000	3024900	404600	428300	98	4343	981	5421	0	5421	0.00	0.83	2511	2016	74.1	5.51	2505
Jan (21/12 to 21/01)	2008	3747300	3303900	12600	3291300	414000	456000	54	5205	417	5675	0	5675	0.00	0.83	2732	749	74.1	2.05	2730
Feb (21/01 to 21/02)	2008	3289000	2889800	17200	2872600	369600	416400	74	3885	1036	4995	0	4995	0.00	0.83	2384	2016	74.1	5.51	2379
Mar (21/02 to 21/03)	2008	2974900	2612100	24900	2587200	333400	387700	2	3755	1035	4792	0	4792	0.00	0.83	2147	2041	74.1	5.58	2142
Apr (21/03 to 21/04)	2008	3820400	3360800	16600	3344200	427600	476200	13	5271	690	5974	0	5974	0.00	0.83	2776	2860	74.1	7.82	2768
May (21/04 to 21/05)	2008	3287700	2882500	16000	2866500	375700	421200	0	4412	1041	5453	0	5453	0.00	0.83	2379	1650	74.1	4.51	2375
June (21/05 to 21/06)	2008	2360500	2019400	29600	1989800	329200	370700	28	3196	848	4072	0	4072	0.00	0.83	1652	2157	74.1	5.90	1646
July (21/06 to 21/07)	2008	3183600	2765100	20700	2744400	398300	439200	57	5622	185	5864	0	5864	0.00	0.83	2278	2406	74.1	6.58	2271
		<b>3979900</b>	<b>3486300</b>	<b>22470</b>	<b>3463830</b>	<b>4715000</b>	<b>5160700</b>	<b>1315</b>	<b>53380</b>	<b>8394</b>	<b>63089</b>	<b>0</b>	<b>63089</b>			<b>28750</b>	<b>24068</b>		<b>66</b>	<b>28684</b>

Other include chili stalks, cotton stalks etc