REVISED SECOND MONITORING REPORT

(Reported Period: 25th March 2006 to 24th March 2007)

MY HOME POWER LIMITED

SWITCHING OF FOSSIL FUEL FROM NAPTHA & DIESEL TO BIOMASS (AGRICULTURAL RESIDUE) FOR 9 MW POWER GENERATION UNIT OF M/S. MY HOME POWER LIMITED (MHPL) AND SUPPLY TO APTRANSCO GRID.

CONTENTS

Regd. Office:	Project Location:
My Home Power Ltd. 5th Floor, My Home Jupally Ameerpet, Hyderabad (AP) INDIA Tel: +91-40-23410312 Fax: +91-40-23414217	IDA Phase – I, Industrial Estate, Patancheru, Hyderabad (AP) INDIA

[1] Title of the project activity

Switching of fossil fuel from Naptha & Diesel to Biomass (agricultural residue) for 9 MW Power Generation Unit of M/s. My Home Power limited (MHPL) and Supply to APTRANSCO Grid.

Version: Ver. 03

Date of completion of the Revised Monitoring Report:

June 26, 2007

[2] Introduction

The purpose of this revised monitoring report is to calculate the Greenhouse Gas emission reduction achieved by the MHPL - CDM project for periodic verification.

The revised second monitoring report covers the activity from 25th March 2006 till 24th March 2007.

[3] Reference

The project is categorised in sectoral scope 1: “Energy Industries (renewable / non-renewable sources)”.
Approved Baseline methodology: AMS ID/ Version 8, applied to this project, has its Sectoral Scope 1.

Project Design Document: Switching of fossil fuel from Naptha & Diesel to Biomass (agricultural residue) for 9 MW Power Generation Unit of M/s. My Home Power limited (MHPL) and Supply to APTRANSCO Grid. Version 02 dated March 13, 2006.

UNFCCC site Reference:
http://cdm.unfccc.int/Projects/DB/RWTUV1150729330.78/view.html

Revised 1st Monitoring Report (dated October 2006) covering the period 07th February 2002 to 24th March 2006.

UNFCCC site Reference:
http://cdm.unfccc.int/Projects/DB/RWTUV1150729330.78/view.html

[4] Definitions in the report

PDD: Project Design Document

GHG: Greenhouse Gases

IPCC: Intergovernmental Panel on Climate Change

[5] General description of the project

Project Activity

My Home Power Limited (MHPL), 9 MW biomass based power plant at Patancheru, Hyderabad, Andhra Pradesh, India has been commissioned and is operational since February 2002. The principal aim of the project was to run the power plant on renewable energy source such as agricultural residue (biomass) used in combustion for generation of electricity. My Home Group has taken over the combined cycle plant of Nagarjuna Green Power Limited, which was operating on naphtha and diesel as a primary fuel. In order to ensure sustained viable operation, and use an environment friendly renewable fuel source viz. cyclic agricultural crop residue for power generation, the management during February 2000 decided to carry out feasibility study for such operations.

The project activity comprises of use of biomass for generation of renewable power. This results into an offset in equivalent amount of fossil fuel required during combustion viz. reducing the use of coal a

fossil fuel and a non-renewable energy source. Thus, a GHG reduction in terms of CO2 offset makes the project a CDM Activity.

The project participant is My Home Power Ltd (MHPL).

Technical description of the project

Location of the project activity

The Power plant is located at IDA Phase – I (Industrial Estate), Patancheru in the premises of MHPL. It is approximately 35km from Hyderabad in Andhra Pradesh, India. The plant site is located at Latitude 17º31'40"N and longitude 78º16'57"E. The nearest railway station is Patancheru at 1 km and Lingampally at 5 kms on Hyderabad-Mumbai railway section. The plant is 1 km off Pune-Vijaywada National Highway (NH-9).

Technology employed by the project activity

The project is renewable energy power generation project connected to the grid. The project activity is using biomass (agricultural residues) for generating electricity with a 40 TPH biomass fired travelling grate boiler using a 9 MW turbine. During the current year of 2006-07 the net export of Power from the project is 52.390 GWh to the APTRANSCO grid, which is a part of the southern grid in India. Considering the auxiliary power consumption of 11.31% for the year 2006-07, the plant is operating at an annual average plant load factor of 75.15% running on agricultural residue (biomass). The boiler of 40 TPH was designed particularly to burn 100 % agricultural residue (rice husk, waste wood, agriwaste, bagasse and charcoal) including small proportion of charcoal wastes. The auxiliary equipment were fuel handling & preparation systems, Ash handling system, electrostatic

precipitator, cooling tower, DM plant, power evacuation system etc. The activity also included necessary civil works and site development, fire protection systems and electrical works. The steam conditions at the boiler outlet are 40 TPH of super heated steam at 44 ata pressure and 450^0C.

Technical Description

The plant is designated to generate 9 MW of power. Travelling grate stoker fired boiler is installed to generate about 40 tons of steam at 44 ata pressure and 450^OC temperature. The boiler is provided with Economizer, Evaporator, Super Heater, Air Heater and Electrostatic Precipitator. The steam generated in the boiler is fed to the 9 MW steam turbo generator set. The flue gas from the boiler is let off to atmosphere through concrete chimney. The Steam Turbine is equipped with three extractions. The first extraction is for HP heater for pre-heating feed water, the second extraction for deaeration purpose, and the third extraction for preheating the condensate in the LP heater. The plant is synchronized with the state grid and the power evacuation is at 132 KV through the existing transmission system to the AP Transco Substation at Ramachandrapuram. The Table 1 below gives specifications of equipment for power generation using biomass.

Other auxiliary equipments comprised of compressors, switchgears, fire hydrant systems, air drying plants, AC and ventilation systems, EOT cranes, Civil structures and electrical systems including 25, 10, 5, 2 MVA transformers, and 132 kV transmission line.

Table 1. Plant Equipment		
Items	Make and Features	Specifications
40TPH Travelling Grate fired boiler	Walchandnagar Industries Limited, Pune	MCR Cap: 40 TPH Steam Pressure at -SHO: 43 Kg/Cm^2 g Steam Temp at SHO: 450 ± 5^0C
Material Handling System	Bevcon Wayors Pvt. Ltd, Hyderabad	Material Handled Biomass. 1.Main Conveyor BC1: System Cap: 16 TPH Belt Width: 800 mm Length: 77.665 m C/C Power: 15 HP Speed: 1 m / sec 2.Conveyor BC2 Belt Width: 500 mm Length: 14.35 m C/C Power: 3 HP Speed: 1 m / sec 3.Drag Chain Conveyor: Size of Conveyor: 1050W x 750 HT Length: 7048 mm Power: 7.5 HP Speed: 8 m / min
9 MW Steam Turbine Generator	SKODA	9000 KW 3000 RPM Steam Parameters: 45ata, 460^0C Generator Details: Model: ZK-133858 Rating: 10000 KVA Voltage: 6300V±5% Frequency: 50Hz
Switch Gear System	Siemens Ltd. Secunderabad	11 KV, 630 Amps, 25 KA Indoor type VCB 33 KV, 1250 Amps, 25 KA Indoor type VCB
Misc Pumps and Auxiliaries	KSB Pumps Ltd., Secunderabad	1.Service Water Pump: 2 Nos Q=10 M^3/Hr, H=50 m, RPM=2900, 5.5 KW 2.CT Makeup Pump: 2 Nos Q=50 M^3/Hr, H=15 m, RPM=1440, 5.5 KW 3.DM Raw Water Pump: 2 Nos Make: Lakshmi Hydraulics Q=6 M^3/Hr, H=3.5 m, RPM=2900, 2.2 KW.

		4. Auxillary Cooling Water Pump: 2 Nos. Q=120 M^3Hr, H=45 m, RPM=1475, 30 KW
Air Compressor	SEW Engineering Systems Ltd, Calcutta	Make: Ingersoll-Rand (I) Ltd Model: 9x7 ESV-1 NL-2 Capacity: 5 Nm^3/min Discharge Pressure: 7.7 Kg/Cm^2 Number: 2
Air Drying Plant	Mellcon Engineers Pvt. Ltd, New Delhi	Type: HOC Flow Rate: 300 NM^3/HR Pressure: 7 Kg/Cm^2
DM Plant	Ion Exchange India Ltd, Hyderabad	Normal Flow: 2 M^3/Hr Design Pressure: 3.5 Kg/Cm^2 No of Streams: 2
A/C and Ventilation system	Voltas	Air Conditioning System: 2nos Normal Cooling Cap: 15T/Hr Ventilation System: 1.27000 CMH Air Washing System, 11 KW: 2 Nos. 2.6500 CMH Air Washing System, 3.7 KW: 1 No. 3.10000 CMH Battery Room Exhaust Fan, 1.5 KW: 2 Nos. 4.9000 CMH Roof Extractor Fan, 0.55 KW: 4 Nos 5.10000 CMH Toilet exhaust Fan: 1 No.
Cooling Water Pumps	Voltas	Type: H300L1, Numbers: 2 Q=1000 M^3/Hr, H=30 m, RPM=1488 Motor Rating=125 KW
EOT Cranes	Grip Engineers Pvt. Ltd	Span: 11.25 m, Height of Lift: 12.65 m, Run away length: 30 m, Main Hoist Cap: 20 MT Auxiliary Hoist Cap: 5 MT
Cooling Tower	Hamon Thermopack Pvt. Ltd	No of Cells: 6 Cooling Cap: 2130 M^3/Hr Inlet water Temp: 42^0C Cooled water Temp: 30^0C
Transformer	Crompton Greaves	25 MVA, 132 KV/33 KV, ONAN/ONAF 10 MVA, 33 KV/6.3 KV, ONAN 5 MVA, 33 KV/11 KV, ONAN 2 MVA, 11 KV/400 V, ONAN

Fuel

The fuel for the plant is the Bio-mass available in the adjoining districts. The Fuel Handling System and the Boiler is designed to effectively handle a variety of Bio-mass like Rice Husk, waste wood, Bagasse, Agri waste, and charcoal. About 2-3 days storage of Bio-mass is maintained at site to take care of any failure in supply system.

For sustained supply of waste wood agreement has been entered into with private suppliers. These suppliers are submitting since last three years.

In case of charcoal, charcoal is manufactured from the waste wood in the neighbouring districts of Nalgonda, Miryalaguda and Kurnool. Apart from procuring from these units, the project also procures waste charcoal fines from M/s. VBC Ferro alloys, which is one of the major consumer of charcoal for their process of requirements. MHPL has already made a long term supply agreement with transporters for supply of charcoal fines from M/s. VBC Ferro Alloys for supply of charcoal fines.

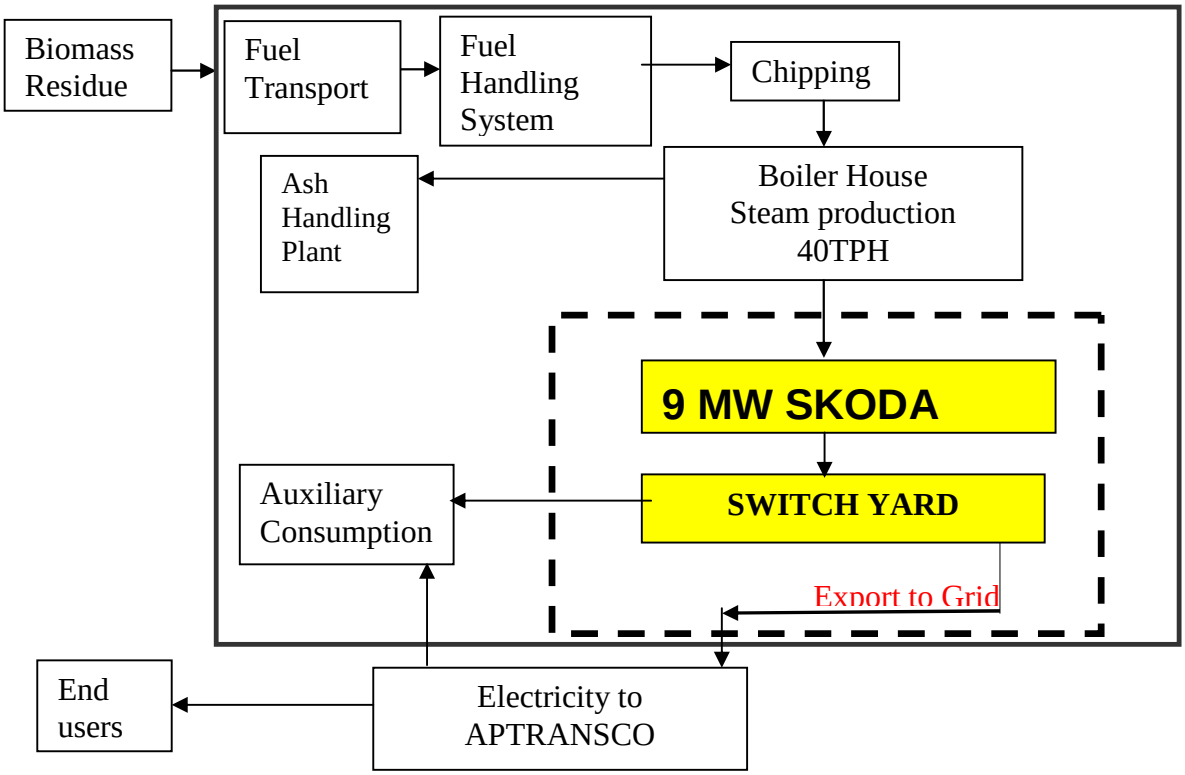
Type wise Biomass related data summary within 2nd monitoring period.

Biomass types combusted	Quantity (MT)	Moisture (%)	Gross Calorific Value (Kcal / Kg)
Rice Husk	51410	10 - 26 %	2200 - 3000
Waste Wood	7071	35 - 45 %	2200 - 3200
Bagasse	8143	45 - 55 %	1800 - 2100
Char Coal	3860	10 - 20 %	2100 - 2500
Agri waste*	27181	15 - 25 %	1600 - 3000
TOTAL	97665		

* *Agri waste = Corn Cob, G N Shell, B G Husk, Jawar Husk, Coffee Waste, Chilli Waste, Cashew Waste, Discard Seed.*

No other fossil fuel except above mentioned biomass is fired in the power plant.

The technology applied for the project activity is shown in Figure 1.



[6] Monitoring methodology and plan:

The monitoring methodology proposed is as per indicative simplified baseline and monitoring methodologies for selected small scale CDM project category ID Renewable Energy generation for a grid as per the Appendix B. The monitoring methodology is in accordance with accordance with the baseline methodology followed for this project activity.

In keeping with the Monitoring Methodology, the following parameters are monitored in this period:

a) Total quantity of biomass consumed for running the unit
b) Calorific value of biomass used
c) Heat rate
d) Power generation
e) Power exported to APTRANSCO
f) Power Consumed for Auxiliary purpose
g) Status of monitoring equipment for emergency preparedness

Data being collected in order to monitor the GHG reduction is given in the Table below:

ID No	Data Type	Data variable	Data unit	Measured (m), Calculated (c) or Estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived	For how long is archived data to be kept
RM.01	Fuel quantity	Biomass consumed	MT	Calculated & measured	Daily	100 %	Electronic and paper	Crediting period and two years
RM.02	Moisture	Biomass Moisture	%	Measured	Per truck	100 %	Electronic and paper	Crediting period and two years
RM.03	Fuel Quality	Calorific value of biomass	Kcal/kg	Estimated	Fortnights	Representative samples and old records	Electronic and paper	Crediting period and two years
P.01	Main Power meter readings	Total electricity generated	kWh	Measured	Continuous -Monthly	100 %	Electronic and paper	Crediting period and two years
P.02	Main Power meter readings	Power evacuated to grid: AP-TRANSCO	kWh	Measured	Continuous - Monthly	100 %	Electronic and paper	Crediting period and two years
Aux.01	Power meter readings on panel at MHPL	Auxiliary power at MHPL	kWh	Measured	- Monthly	100%	Electronic and paper	Crediting period and two years
OP.01	Operation Specific	Plant Heat Rate	Kcal/kwh	Measured	Continuous Monthly	100 %	Electronic and paper	Crediting period and two years
Eff.01	Equipment related	Efficiency of power generation	%	Calculated	Continuous Annually	100 %	Electronic and paper	Crediting period and two years
In order to meet emergency situations of failure of presently metering and recording systems measures are taken for ensure monitoring. These systems need to be checked for their functioning on regular basis in order to ensure emergency preparedness and management of critical situations.								

[7] Quality Control (QC) and Quality Assurance (QA)

Quality Management System

The Power plant is operated by Company's operating personnel. The Senior General Manager (operations) has assigned the responsibility of the project management as also for monitoring, measurement and assign the work to the senior managers (O & M).

The operation, data transfer and reporting procedures are being followed in a systematic manner.

The personnel are adequately trained and highly competent enough to carry out the necessary work.

Quality control (QC) and quality assurance (QA) procedures that are being undertaken for data monitored

In MHPL, the QA & QC procedures are being practised while undertaking analysis of parameters as are International Standard procedures. The QA & QC procedures are set and implemented in order to:

- Secure a good consistency through planning to implementation of this CDM project and,
- Stipulate who has responsibility for what and,
- Avoid any misunderstanding between people and organization involved.
- Calibration of the export energy meter

Qualitative explanation of how quality control (QC) and quality assurance (QA) procedures are undertaken:			
ID No	Uncertainty level of data (high/medium/low	Are QA/QC procedures planned for these data	Outline explanation of why QA/QC procedures are/are not being planned
RM.01	Low	Yes	QA/QC procedures are planned since the emission reduction calculation is critically dependent on these parameters The weigh bridge records and actual boiler feed records would be taken in consideration. Opening / closing stock are estimated daily based on weigh bridge reading for inflow and consumption pattern. Procedures for quality control of data generated shall be instituted by using specific formats. Already instituted old data records would be transferred to new formats conducive to usage in M & V. The calibration of the weighbridge is as per AP Standards of Weights and Measurements (E) Act 1985. Certification of verification is done through the office of Andhra Pradesh Legal Metrology Controller.
RM.02	Low	Yes	The testing is being carried out in accordance with established standards (BIS /ASTM) standard method for moisture determination of solid fuel and sampling done by appropriate BIS /ASTM standards. The laboratory analysis is through accredited laboratories by NABL. Instrumental reliability shall be assured through appropriate procedures for periodic calibration and validation in accordance to quality standards requirements Data shall be recorded in appropriate logbook and datasheets duly signed, reviewed and controlled.
RM.03	Medium	Yes	The testing is being carried out in accordance with established standards (BIS /ASTM) standard method for calorific value determination of solid fuel and sampling done by appropriate BIS /ASTM standards. Instrumental reliability shall be assured through appropriate procedures for periodic calibration and validation in accordance to quality standards requirements Data shall be recorded in appropriate logbook and datasheets duly signed, reviewed and controlled.
P.01	Low	Yes	The instruments are calibrated as per Electronic Testing Development Centre (ETDC) Hyderabad. Procedures for quality control of data generated shall be instituted including data formats and logbooks. Also mechanisms to check any deviations would be documented.

			Irrespective of the fact that uncertainty of power measurements is low, the reliability of accurate data recording has to be ensured. The periodic calibration, and validation of instruments in accordance to ISO standards 17025 as may be practiced be undertaken. Details and feedback on handling on errors in data recording and instruments /meters be undertaken.
P.02	Low	Yes	There are two meters: main meter and check meter, which are sealed by and are under the custody of APTRANSCO. Main Meter and Check Meter are of class 0.2 which corresponds to accuracy level of ± 0.2 %. Meters are calibrated periodically by Meter Relays and Transformers (MRT) division of State Electricity Board by means of test meter (calibrated as per IEC 60687) with accuracy level of ± 0.02 %.
Aux.01	Low	Yes	Calculated based on difference of gross meter reading and export meter. The auxiliary power required for the plant operations would be both measured and calculated which determines the output of the unit. The quality of auxiliary consumption is again a function of the plant. The quality of input data. The procedures for maintenance of records and quality standards to be practiced are as per that given in P.01
OP.01	Medium	Yes	The parameters both for inputs and outputs would determine the plant heat ratio. The record and maintenance of these records would ensure the quality of calculated plant heat ratios. Again these are the functions of other data types. The quality of maintenance of data records would follow the standard procedures using data formats and logbooks. The error of data recording can be an indicator to ensure QA and QC.
Eff.01	Low	Yes	The parameters both for inputs and outputs would determine the efficiency. The record and maintenance of these records would ensure the quality of calculated plant efficiency. Again these are the functions of other data types. The quality of maintenance of data records would follow the standard procedures using data formats and logbooks. The error of data recording can be an indicator to ensure QA and QC.

Calibration/Maintenance of Measuring and Analytical Instruments

All measuring and analytical instruments are being calibrated as per the methodology AMS ID and created as a protocol in MHPL's Quality management system procedures.

Environmental Impact

The project activity is small in size and does not have any significant impacts. Internal Environmental Audit Reports are available at the project site. The power generation activity uses biomass as fuel, which is a carbon neutral fuel.

There are no transboundary impacts.

The host party does not consider the environmental impacts of such activities as significant and hence excluded such activities from the Environmental Impact Assessment Notification (1991) under Environment Protection Act (1984)

However, the MHPL diligently identified the possible environmental impacts and mitigated these to the extent feasible in an environmental impact assessment of the project activity.

MHPL has obtained an environmental clearance from the state government in addition to consent to establish and operate from the Andhra Pradesh State Pollution Control Board. The periodic (annual) audits would take care of any undesirable environmental impacts.

- The project has benefited local villagers from the plant in the form of employment opportunities, more value for agricultural waste and income in non cropping season.

- The plant has provided employment opportunities to local people. The equipment suppliers are of the opinion that the project has developed their internal skills while working for MHPL during fuel

conversion. They have benefited by getting more clients for such projects and easily can transfer and replicate the technology. They also mentioned the benefit to more than 200 people during this process.

- The local ancillary development of workshops has continuous job work from MHPL plant. This has benefited several families.
- More than 40 transporters are benefited and 800 people benefited from the project directly or indirectly.
- By purchase of fly ash not only transporters are benefited even the brick manufacturers are having income opportunities

[8] GHG Calculations

Statement of GHG emission reduction in 2nd monitoring period.

Since the project emissions come from renewable energy source, the emissions reductions are equal to baseline emission which is calculated as.

The emission base line is the KWh Produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO_2 equ/ kWh) calculated in a transparent and conservative manner as.

[9c] Weighted average emissions (in kg CO_2equ/kWh) of the current generation mix.

As per

[9d] the weighted average emission factor can be calculated using either of the two following data vintages for year (s) y:

Option 1:

- A 3-year average, based on the most recent statistics available at the time of PDD submission.

Option 2:

- The year in which the project generation occurs, if emission factor is updated based on ex post monitoring.

While determining the GHG emission we are following option 1 as above to determine the grid emission factor.

Central Electricity Authority has Published the database of Grid Emission Factor for years 2000-01, 2001-02, 2002-03, 2003-04, and 2004-05.

The weighted average emissions as per version 1.0 of database published on October 04, 2006 are as given below for the Southern Grid of the electricity distribution system in India.

Year	tCO_2/Mwh	tCO_2/Gwh
2000-01	0.74	740
2001-02	0.74	740
2002-03	0.81	810
2003-04	0.84	840
2004-05	0.78	780

While determining the Grid emission factor for current generation mix while considering the average of past three latest years the Grid Emission factor comes to be as below.

GEF = [GEF(2004-05) + GEF (2003-04) + GEF (2002-03)] 3

= [780 + 840 + 810] / 3

= 810 t CO_2 / GWh.

The GEF thus determined is used for estimating GHG Emission Reductions for second monitoring period. (March 25th 2006 – March 24th 2007)

(A) POWER GENERATION AND EXPORT

The power generation and export is as given below:

Month	Year	Electricity Generated, (GWh)	Electricity Exported, (GWh)				Auxiliary Consumption (GWh)	Total Biomass used, MT
			Initial Reading	Final Reading	Import from Grid	Net Export		
			(1)	(2)	(3)	4 =[(2-1)-(3)]		
April	2006	4.445	215.924	219.801	0.009	3.868	0.568	7,993
May	2006	3.863	219.801	223.222	0.020	3.401	0.442	6,058
June	2006	5.908	223.222	228.512	0.004	5.297*	0.607	8,622
July	2006	5.601	228.512	233.527	0.008	5.007	0.586	8,674
August	2006	4.856	233.527	237.831	0.018	4.286	0.552	8,089
September	2006	4.973	237.831	242.221	0.009	4.381	0.583	8,675
October	2006	2.843	242.221	244.700	0.031	2.448	0.364	5,636
November	2006	5.176	244.700	249.300	0.019	4.581	0.576	8,513
December	2006	5.336	249.300	254.037	0.011	4.742**	0.583	8,110
January	2007	5.881	254.037	259.272	0.006	5.229	0.646	9,306

February	2007	5.493	259.272	264.137	0.012	4.853	0.628	9,202
March	2007	4.878	264.137	268.443	0.009	4.297	0.572	8,787
Total		59.253			0.156	52.390	6.707	97,665

* - Export meter calibration was done during the month of June 2006 and corrected units of 11392 are added to the monthly net export (same is clarified in the meter reading reports).

** - Export meter calibration was done during the month of December 2006 and corrected units of 15866 are added to the monthly net export (same is clarified in the meter reading reports)

Note: a) April accounts the period from 25th March 2006 to 24th April 2006 (including both the days).
b) March accounts the period upto 24th March 2007.

(B) HEAT RATE CALCULATIONS

MONTH	GROSS STATION HEAT RATE (kCal / KWHr)
Apr-06	4355.72
May-06	4103.05
Jun-06	4040.40
Jul-06	4106.74
Aug-06	4337.108
Sep-06	4365.49
Oct-06	4436.931
Nov-06	4161.37
Dec-06	4126.46
Jan-07	4189.93
Feb-07	4307.04
Mar-07	4186.018

The Heat required is obtained from Gross Calorific Value (GCV) of the fuel or fuels used in combustion and gross power generation is measured at Generator output terminals.

(C) "The Arithmetic average of the Efficiency of Power Generation as calculated for the 2nd Monitoring period is 20.43%".

(D) Thus, average gross calorific value and gross power generation are considered as a basis for determination of the Station Heat rate and Efficiency.

(E) Calculation of CERs to be allotted to MHPL

No	Year	Net Export (GWh)	Emission factor t CO_2 / GWh	CERs to be allotted to MHPL
1	2006-07	52.390	810	42435.9 (rounded off to 42436)

[9] Measures for ensure the results/ Uncertainty analysis

As per the power purchase agreement (PPA), the energy exports to APTRANSCO grid is recorded from two independent meters – Main Meter & Back Up Meter (also called Check Meter). Reading of main meter is used for billing. In the event of main meter not operation, the reading of the back up meter is to be used for billing.

Till date the main meter only has been used for billing purposes.

[10] Roles & Responsibilities

In the complete implementation and monitoring plan referred above, MHPL is the sole agency responsible for implementation and monitoring.