

# **MONITORING REPORT**

VERSION 1 DATED 18 September 2007

FOR THE PERIOD

1<sup>st</sup> APRIL 2006 to 31<sup>st</sup> MARCH 2007

## **INDUR GREEN POWER PRIVATE LIMITED**

Indur 7.5 MW Non-Conventional Renewable Sources Biomass Power Project  
Project Registration No. with UNFCCC : 0391

### **Project Site**

Renjal (V&M), Nizambad (Dist)  
Andhra Pradesh, India

## **INDUR GREEN POWER PRIVATE LIMITED**

### **Plant Address**

#### **INDUR GREEN POWER PVT. LIMITED**

Opp. 132/33Kv Sub-Station,  
Renjal (V&M), Nizambad (Dist)  
Andhra Pradesh  
Ph : 08467 – 276515  
Fax : 08467 - 276515

### **Registered Office**

#### **INDUR GREEN POWER PVT. LIMITED**

4th Floor, NSL ICON  
No 8-2-684/2/A  
Plot No. 1 to 4  
Opp. ICICI Bank, Road No. 12  
Banjara Hills  
HYDERABAD - 500 034  
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### **Current Status of the Project**

Indur Green Power Private Limited (IGPPL) 7.5 MW Non-Conventional Renewable Sources Biomass Power Project is located at Renjal (V&M), Bodhan Taluk, Nizamabad (Dist) of Andhra Pradesh, India and is in operation since 15<sup>th</sup> Feb 2003.

During the present monitoring period i.e., from 1<sup>st</sup> April 2006 to 31<sup>st</sup> March 2007 the plant has exported 40.0726 Million kWh of power to APTRANSCO grid and consumed 55,529 MT of biomass fuel and 4594 MT of coal.

**Statement to what extent the Project has been implemented as planned**

The Project has been completed as planned and described in the Project Design Document (PDD).

The Plant is in operation continuously (with outages – forced & planned) during the present monitoring period i.e., from 1<sup>st</sup> April 2006 to 31<sup>st</sup> March 2007.

The Plant is using mainly Biomass fuels like Juliflora, Rice Husk, Groundnut shell, Bagasse and Sugar Cane Trash as permitted by Statutory Authorities. In addition, plant also uses small quantity of diesel very occasionally for operating the D.G set for safety of equipment during Grid Power failure time.

<b>Summary of Panned and Forced Outages (1<sup>st</sup> April 2006 to 31<sup>st</sup> March 2007)</b>	
Planned Shutdown	42 Days 8 Hours 59 Minutes
Forced Shutdown (Grid Failure + Breakdown)	20 Days 17 Hours 01 Minutes

**Monitoring Period**

The present Monitoring period is chosen from 01<sup>st</sup> April 2006 to 31<sup>st</sup> March 2007, both days inclusive.

### **Sustainability – Economic and Social well being**

The Company has spent around INR 69.89 Million INR (US\$ 1.70 Million @ US\$ = 41 INR) during the monitoring period towards fuel usage in the Plant. Procurement of biomass fuel from local farmers and biomass suppliers has generated additional regular income for the farmers and improved economic condition of the farming community.

This has resulted in local employment generation. Plant has generated direct employment opportunities to over 200 people and 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 the local Panchayat etc.,

### **Parameters being monitored according to Monitoring Plan**

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

- 1     **Power Generation:** 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 compare the auxiliary consumption of the plant after deducting power exported to the grid from total generation.
- 2     **Power Export and import:** Power exported to the grid and imported from the grid is monitored from energy meters installed at APTRANSCO sub station on 24<sup>th</sup> day of every month. A joint meter reading for the energy exported to the Grid is recorded by representatives of APTRANSCO and Company and the readings are 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 the Company.
- 3     **Biomass Fuel:** The Biomass fuel (of all kinds) on receipt in the Plant is weighed in the Electronic Weigh Bridge installed in 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:** The calorific value of the Biomass fuel (of all kinds) being used is being measured in the in house laboratory on daily basis as per the arrivals and average value will be considered on monthly basis for energy balance calculations.
- 5     **Diesel:** In addition, Diesel consumption in the DG set will be monitored on regular basis.

### **Power Generation Export & Import , Fuel Consumption and Fuel Analysis**

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

#### **Fuel Consumption and Analysis:**

Billing Month	Period		Biomass consumption, MT	Coal consumption, MT	Diesel consumption, lit
	From	To			
April	01-Apr-06	24-Apr-06	2,043	799	50
May	24-Apr-06	24-May-06	2,720	1748	50
June	24-May-06	24-Jun-06	4,371	1462	10
July	24-Jun-06	24-Jul- 06	4,446	585	0
August	24-Jul- 06	24-Aug-06	5,158	0	50
Sept	24-Aug-06	24-Sep-06	3,819	0	110
October	24-Sep-06	24-Oct-06	5,038	0	0
November	24-Oct-06	24-Nov-06	5,969	0	55
December	24-Nov-06	24-Dec-06	4,543	0	165
January	24-Dec-06	24-Jan-07	5,799	0	130
February	24-Jan-07	24-Feb-07	5,038	0	10
March	24-Feb-07	24-Mar-07	4,902	0	0
March	24-Mar-07	31-Mar-07	1,683	0	55
TOTAL			<b>55,529</b>	<b>4594</b>	<b>685</b>

**Note:** 1) The above values are taken from 24<sup>th</sup> to 24<sup>th</sup> of Every Month (Billing Month Basis).

### **Power Generation, Export, Import & Emission Reductions**

The emission reductions for the monitoring period are as given below:

As mentioned in the Project Design Document, Emission reductions are calculated based on the power exported to the grid, power imported from the grid during shut down and start up, and diesel consumed in the plant -.

Month	Period		Electricity Generated, kWh	Electricity Exported, kWh	Electricity Imported, kWh	Auxiliary Power Consump tion, kWh	Coal consump tion, MT	Diesel consump tion , lit	NETT EMISSION REDUCTIO NS, tCO <sub>2</sub> e
	From	To							
April	01-Apr-06	24-Apr-06	2002700	1756500	23800	246200	799	50	533
May	24-Apr-06	24-May-06	3371847	3011400	14200	360447	1748	50	507
June	24-May-06	24-Jun-06	4184400	3745900	14300	438500	1462	10	1441
July	24-Jun-06	24-Jul-06	3727800	3359100	15600	368700	585	0	2112
August	24-Jul-06	24-Aug-06	3705200	3283500	18900	421700	0	50	2709
Sept	24-Aug-06	24-Sep-06	2593500	2282800	39300	310700	0	110	1862
October	24-Sep-06	24-Oct-06	3472300	3015600	8900	456700	0	0	2496
November	24-Oct-06	24-Nov-06	4443900	3886900	3700	557000	0	55	3223
December	24-Nov-06	24-Dec-06	3651700	3208800	10800	442900	0	165	2654
January	24-Dec-06	24-Jan-07	4562400	4032400	5700	530000	0	130	3342
February	24-Jan-07	24-Feb-07	4170700	3703300	16800	467400	0	10	3060
March	24-Feb-07	24-Mar-07	4127600	3674700	12300	452900	0	0	3040
March	24-Mar-07	31-Mar-07	1249200	1111700	2400	137500	0	55	921
TOTAL			45263247	40072600	186700	5190647	4594	685	27898



Baseline and project emissions are calculated as per the formulas mentioned in Section E of the PDD. The same is given below;

Emissions	Formula used
<b>Baseline emissions</b>	= Electricity exported to the grid (kWh) x grid emission factor (tCO <sub>2</sub> /kWh)
<b>Project emissions</b>	
Due to coal consumption	= Actual Coal consumed in MT x % carbon in coal x (44/12)
Due to diesel consumption	= [(Diesel consumed in liters x calorific value (TJ/kg) x density (kg/l))] x IPCC emission factor (tCO <sub>2</sub> /TJ) x oxidation factor
Due to import of power from Grid	= Electricity imported from grid (kWh) x grid emission factor (tCO <sub>2</sub> /kWh)

***Note: A detailed excel sheet showing step by step calculations for arriving Net emission reductions is given as Annexure - I.***

**Monthly Summary of Emission Reductions:**

S.No.	Billing Month	Period		Grid Emission factor as per PDD, kgCo <sub>2</sub> /kWh	Electricity Exported, kWh	Base line emissions, tCo <sub>2</sub>	Project emissions, tCo <sub>2</sub>	NETT EMISSION REDUCTIONS, tCO <sub>2</sub> e
		From	To					
1	April	01-Apr-06	24-Apr-06	0.830	1756500	1458	925.2	533
2	May	24-Apr-06	24-May-06	0.830	3011400	2499	1992.4	507
3	June	24-May-06	24-Jun-06	0.830	3745900	3109	1668.3	1441
4	July	24-Jun-06	24-Jul-06	0.830	3359100	2788	675.8	2112
5	August	24-Jul-06	24-Aug-06	0.830	3283500	2725	15.8	2709
6	Sept	24-Aug-06	24-Sep-06	0.830	2282800	1895	32.9	1862
7	October	24-Sep-06	24-Oct-06	0.830	3015600	2503	7.4	2496
8	November	24-Oct-06	24-Nov-06	0.830	3886900	3226	3.2	3223
9	December	24-Nov-06	24-Dec-06	0.830	3208800	2663	9.4	2654
10	January	24-Dec-06	24-Jan-07	0.830	4032400	3347	5.1	3342
11	February	24-Jan-07	24-Feb-07	0.830	3703300	3074	14.0	3060
12	March	24-Feb-07	24-Mar-07	0.830	3674700	3050	10.2	3040
13	March	24-Mar-07	31-Mar-07	0.830	1111700	923	2.1	921
TOTAL					40072600	33260	5362	27898

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

Export meters:

As per the Power Purchase Agreement (PPA), the energy exported to the AP 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.

The calibration of monitoring equipment is being maintained as per the requirement of APTRANSCO and the same is being done regularly. Power Generation, Export, Auxiliary Consumption & fuel consumption are being recorded daily and the same is being verified by General Manager (O&M) and approved by Plant Manager.

### **Roles & Responsibilities**

A CDM team has already been formed in the plant for monitoring and verification of all the monitoring parameters as per the guidelines formulated by the management of the Company. Qualified and trained people are monitoring the parameters and emission reduction calculations.

In the complete implementation and monitoring Plan, the Company is the sole agency responsible for implementation and monitoring.

### **Members of CDM Team**

- a) K. Krishna Mohan Rao, Plant Manager
- b) G. Rajivi, Sr.Manager ( A/cs)
- c) J. Bhavani Shankar, Electrical Engineer.
- d) H. Ravi Kumar, Accounts Officer.
- e) Bhoom Reddy, Chemist (O&M)

**Annexure – I**  
**INDUR GREEN POWR PRIVATE LIMITED**

**EMISSION REDUCTION CALCULATIONS - 1.04.2006 TO 31.03.2007.**

Period From	Period To	Electricity Generated, kWh	Electricity Exported, kWh	Electricity Imported, kWh	Auxiliary Consumption, kWh	Total Biomass - MTs.	Coal Used, MT	Raw Material Total, MT	% Carbon in Coal	Emission Factor, kgCO <sub>2</sub> / kWh	Baseline Emissions, tCO <sub>2</sub> e	Diesel consumption , lit	CO <sub>2</sub> emissions from diesel considering IPCC's oxidation factor of diesel as 1.0 tCO <sub>2</sub> /TJ	Project Emissions, tCO <sub>2</sub> e				NETT EMISSION REDUCTIONS, tCO <sub>2</sub> e
														Due to consumption of Diesel	Due to consumption of Coal	Due to import of Power	Total	
4/1/2006	4/24/2006	2002700	1756500	23800	246200	2043	799	2842	30.90	0.83	1458	50	74.1	0.14	905.27	19.75	925.2	533
4/24/2006	5/24/2006	3371847	3011400	14200	360447	2720	1748	4468	30.90	0.83	2499	50	74.1	0.14	1980.48	11.79	1992.4	507
5/24/2006	6/24/2006	4184400	3745900	14300	438500	4371	1462	5833	30.90	0.83	3109	10	74.1	0.03	1656.45	11.87	1668.3	1441
6/24/2006	7/24/2006	3727800	3359100	15600	368700	4446	585	5031	30.90	0.83	2788	0	74.1	0.00	662.81	12.95	675.8	2112
7/24/2006	8/24/2006	3705200	3283500	18900	421700	5158	0	5158		0.83	2725	50	74.1	0.14	0.00	15.69	15.8	2709
8/24/2006	9/24/2006	2593500	2282800	39300	310700	3819	0	3819		0.83	1895	110	74.1	0.31	0.00	32.62	32.9	1862
9/24/2006	10/24/2006	3472300	3015600	8900	456700	5038	0	5038		0.83	2503	0	74.1	0.00	0.00	7.39	7.4	2496
10/24/2006	11/24/2006	4443900	3886900	3700	557000	5969	0	5969		0.83	3226	55	74.1	0.15	0.00	3.07	3.2	3223
11/24/2006	12/24/2006	3651700	3208800	10800	442900	4543	0	4543		0.83	2663	165	74.1	0.46	0.00	8.96	9.4	2654
12/24/2006	1/24/2007	4562400	4032400	5700	530000	5799	0	5799		0.83	3347	130	74.1	0.36	0.00	4.73	5.1	3342
1/24/2007	2/24/2007	4170700	3703300	16800	467400	5038	0	5038		0.83	3074	10	74.1	0.03	0.00	13.94	14.0	3060
2/24/2007	3/24/2007	4127600	3674700	12300	452900	4902	0	4902		0.83	3050	0	74.1	0.00	0.00	10.21	10.2	3040
3/24/2007	3/31/2007	1249200	1111700	2400	137500	1683	0	1683		0.83	923	55	74.1	0.15	0.00	1.99	2.1	921
TOTAL		45263247	40072600	186700	5190647	55529	4594	60123			33260	685		1.9	5205.0	155	5362	27898