MONITORING REPORT

Version: 08

Date: 06/07/2010

Monitoring Period

30.11.2007 to 02.04.2008

(Both days included)

AS A PART OF THE FIXED CREDITING PERIOD FROM

30 Nov 2007 - 29 Nov 2017

Project 1257: Power capacity expansion project at Dwarikesh Puram

Site:

Village- Bahadurpar, District - Bijnor, Uttar Pradesh

Latitude: 29^0 19'N, Longitude: 78^0 31'E

Dwarikesh Sugar Industries Limited

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Description of the project activity

Project Status

As proposed, Dwarikesh Sugar Industries Limited (DSIL) has increased the power generation capacity at its existing sugar manufacturing facility at Dwarikesh Puram by installation of a new Bi-drum, natural circulation, balanced draft top supported water tube bagasse fired traveling grate, spreader stoker boiler suitable for steam output capacity of 120 tons per hour (tph) at 86 kg/cm^2 pressure and steam temperature of 515 +/- 5^{o}C and a 24 MW double extraction cum condensing turbine for generating power along with all other accessories and equipments. The project activity got fully commissioned on 04th February 2008.

The power being generated from the project activity is being supplied to the Northern grid which is under severe power shortage. The technical specifications of the equipments deployed as part of the project activity are listed as below:

Boiler specifications

Description	Bi-drum, natural circulation, balanced draft, top supported water tube, bagasse fired, traveling grate, spreader stoker
Steam generating capacity (tons per hour)	120
Steam pressure (kg/cm^2)	86
Steam temperature (^{0}C)	515 ± 5
No.	1

Turbine specifications

Description	Double extraction cum condensing turbine
Capacity (MW)	24
Steam pressure (kg/cm^2)	86
Steam temperature (^{0}C)	515 ± 5
No.	1

Electrical Generator

Description	Four pole, 3 phase Air cooled, Brushless excitation with digital automatic voltage type regulation system
Speed (RPM)	1500
Frequency (Hz)	50
Power factor (lagging)	0.8
Voltage (kV)	11
No.	1

Pre project scenario

In the pre project scenario the sugar mill of DSIL at Dwarikesh Puram was meeting its in house steam and power requirements by a set of low pressure boilers and turbo generators respectively , the specifications for which are as given below:

Boiler details

Description	**1**	**2**
Steam generating capacity (tonnes per hour)	60	60
Steam pressure (kg/cm^2)	45	45

Turbine details

Description	**1**	**2**	**3**
Power (MW)	3	3	3

The project activity got registered with the UNFCCC on 30/11/2007. This is the first monitoring report with the monitoring period from the date of start of crediting period as indicated in the PDD i.e. 30/11/2007 to 02/04/2008 (both days included).

The crushing season of sugar mills depends on the availability of sugarcane which is a seasonal crop. Due to less availability of sugarcane in the monitoring period under consideration the plant at Dwarikesh Puram was operational only for 59 days i.e from 04th February 2008 to 02nd April 2008.

The net power generated by the project plant and steam supplied to the process during this period was 22772.95 MWh and 118445.02 tons respectively. The wet bagasse quantity consumed was 48250.35 MT.

Parameters monitored

The project proponent has been monitoring the parameters as outlined in the registered PDD and in concurrence with the subsequent revision in monitoring plan accepted by the Executive Board. The details of the monitoring parameters are as given below:

Data / Parameter:	**$EG_{project\ plant,\ y}$**
Data unit:	MWh/yr
Description:	Net quantity of electricity generated in the project plant during the year y
Data reported in :	Plant log books
Description of measurement methods and procedures to be applied:	Net quantity of electricity in the project plant generated will be calculated by subtracting auxiliary consumption from gross generation of the project plant. Separate energy meters are used for continuous measurement of gross electricity generation and auxiliary consumption. The corresponding values are calculated and totalized and recorded hourly in log books..
QA/QC procedures to be applied:	The consistency of net electricity generation is crosschecked with receipts from electricity sales and the quantity of fuels fired. The power exported to UPPCL for the month of February 2008, March 2008 and April 2008 is 10891.20 MWh, 11305.44 MWh and 390.00 MWh respectively. The net electricity generation from the project plant is compared with power exported and was found comparable. The ratio of net electricity generation divided by the quantity of fuels fired (on energy basis) is in the range 19.9-22.5.

Data / Parameter:	**$EG_{total,\ y}$**
Data unit:	MWh/yr
Description	Net quantity of electricity generated in all power units at the project site, generated from firing the same type(s) of biomass residues as in the project plant, including the new power unit installed as part of the project activity and any previously existing units, during the year y
Data reported in :	Plant log books
Description of measurement methods and procedures to be applied:	Net quantity of electricity in all the power units at the project site generated has been calculated by subtracting aggregated auxiliary consumption from the aggregated gross generation of all the power units at the plant site. Separate energy meters are being used for measurement of gross electricity generations and auxiliary consumptions of all units at the project site and thus subsequently aggregated respectively. The corresponding values have been calculated and totalized and recorded hourly in log books.
QA/QC procedures	The consistency of net electricity generated from all power units is

to be applied:	crosschecked with receipts from electricity sales and the quantity of fuels fired The power exported to UPPCL for the month of February 2008, March 2008 and April 2008 as 10891.20 MWh, 11305.44 MWh and 390.00 MWh respectively. The power exported when compared with net electricity generated from all power units was found lower due to the fact that sugar industry use significant portion of the generated power to meet is captive requirement, only the incremental power is exported to the grid. The ratio of net electricity generation from all power units when divided by the quantity of fuels fired (on energy basis) is in the range 11.2-11.9.

Data / Parameter:	**$EG_{Gross,project\ plant,y}$**
Data unit:	MWh/yr
Description	Total quantity of electricity generated in the project plant during the year y
Data reported in :	Metering records
Description of measurement methods and procedures to be applied:	Electronic tri-vector meters/power monitoring system of accuracy class 0.5 has been installed to permit continuous monitoring and measurement. Hourly recordings of data is taken from energy meters and logged in the daily log books by the Switch Board attendant. The shift in-charge signs off in the logbook at the end of every shift, and the daily power generation is signed off by the power plant manager. The meters are being calibrated annually by an independent third party. The data will be archived on paper and electronically for 2 years beyond the crediting period.
QA/QC procedures to be applied:	The consistency of gross electricity generation is crosschecked with receipts from electricity sales and the quantity of fuels fired The power exported to UPPCL for the month of February 2008, March 2008 and April 2008 as 10891.20 MWh, 11305.44 MWh and 390.00 MWh respectively. The gross electricity generation from project plant is compared with the power exported and was found reasonably comparable. The ratio of gross electricity generation from project plant when divided by the quantity of fuels fired (on energy basis) is in the range 22.3-25.2

Data / Parameter:	**$EG_{Aux,project\ plant,y}$**
Data unit:	MWh/yr
Description	Auxiliary electricity consumption by the plant
Data reported in :	Metering records
Description of measurement methods and procedures to be	Electronic tri-vector meters/power monitoring system of accuracy class 0.5 has been installed to permit continuous monitoring and measurement. Hourly recordings of data are taken from energy meters and logged in the daily log books by the Switch Board attendant. The shift in-charge signs

applied:	off in the logbook at the end of every shift, and the daily auxiliary consumption is signed by the power plant manager. The meters are being calibrated annually by an independent third party. The data will be archived on paper and electronically for 2 years beyond the crediting period.
QA/QC procedures to be applied:	The meter is being calibrated annually by an independent third party.

Data / Parameter:	$EG_{Total\ Gross,y}$
Data unit:	MWh/yr
Description	Total quantity of electricity generated in all the power units at the project site, generated from firing the same type(s) of biomass residues as in the project plant, including the new power unit installed as part of the project activity and any previously existing units, during the year *y*
Data reported in :	Metering records
Description of measurement methods and procedures to be applied:	Electronic tri-vector meters/power monitoring system of accuracy class 0.5 has been installed to permit continuous monitoring and measurement for each individual power generating unit. The total has then been calculated by adding the gross generation of all power generating units and recorded hourly. Hourly recordings of data have been taken from energy meters and logged in the daily log books by the Switch Board attendant. The shift in-charge signs off in the logbook at the end of every shift, and the daily power generation is signed by the power plant manager. The meters are being calibrated annually by an independent third party. The data will be archived on paper and electronically for 2 years beyond the crediting period.
QA/QC procedures to be applied:	The consistency of gross electricity generation in all power units is crosschecked with receipts from electricity sales and the quantity of fuels fired. The power exported to UPPCL for the month of February 2008, March 2008 and April 2008 as 10891.20 MWh, 11305.44 MWh and 390.00 MWh respectively. The power exported when compared with gross electricity generated from all power units was found lower due to the fact that sugar industry use significant portion of the generated power to meet is captive requirement, only the incremental power is exported to the grid. The ratio of gross electricity generation from all power units is in the range 12.9-13.5

Data / Parameter:	$EG_{Total\ Aux,y}$
Data unit:	MWh/yr
Description	Total quantity of auxiliary electricity consumption in all the power units at the project site, generated from firing the same type(s) of biomass residues

	as in the project plant, including the new power unit installed as part of the project activity and any previously existing units, during the year y
Data reported in :	Metering records
Description of measurement methods and procedures to be applied:	Electronic tri-vector meters/power monitoring system of accuracy class 0.5 has been installed to permit continuous monitoring and measurement for auxiliary consumption at each individual power generating unit. The total then is calculated by adding the auxiliary consumption of all power generating units and recorded hourly. Hourly recordings of data are taken from energy meters and logged in the daily log books by the Switch Board attendant. The shift in-charge signs off in the logbook at the end of every shift, and the daily auxiliary consumption is signed by the power plant manager. The meters are being calibrated annually by an independent third party. The data will be archived on paper and electronically for 2 years beyond the crediting period.
QA/QC procedures to be applied:	The meter is being calibrated annually by an independent third party.

Data / Parameter:	**$BF_{k, y}$**
Data unit:	Tonnes
Data reported in :	Plant log books
Description:	Quantity of bagasse combusted in the project plant during the year y (dry)
Description of measurement methods and procedures to be applied:	Weight and volume meters were used and adjustment of the moisture content was carried out in order to determine the quantity of dry biomass. The direct measurement of bagasse is being monitored by monitoring the speed of the rotary feeder. This monitoring instrument is being calibrated to give the amount of bagasse being combusted in the project activity. Also annual mass and energy balance has been carried out to cross check the biomass quantity used in the project activity. The mass balance has been done on the basis of the measured quantity of sugarcane crushed; water added, mixed juice and excess bagasse. Similarly the energy balance has been done on the basis of steam quality and quantity generated.
QA/QC procedures to be applied:	The direct measurement of bagasse is monitored by monitoring the speed of the rotary feeder.The feeders are calibrated annually to maintain the accuracy of the entire bagasse monitoing system. The actual bagasse consumption (dry basis) in the project activity is 24270.23 MT(calculated through actual wet bagasse consumption and the moisture content). The ratio of net electricity generation divided by the quantity of fuels fired (on energy basis) is in the range 19.9-22.5 The entire bagasse(fuel) consumed in the project activity is generated from the cane crushed in the sugar manufacturing facility at Dwarikesh Puram same can be verified from RT 8C and there is no bagasse purchased from outside. The bagasse is not stored in the sugar manufacturing facility for more than 6-7

months i.e the time period in between the two sugar seasons.

The mass balance (on the basis of the measured quantity of sugarcane crushed, water added, mixed juice and excess bagasse) is conducted for the entire cane crushed in the sugar manufacturing facility. Monthly figures of the same are as given below:

Month	Cane Crushed (Qtls)	Added Water (Qtls)	Sum. (Qtls)	Gross Mixed(Qtls)	Bagasse (Qtls)	Sum. (Qtls)
Feb 08	1692800	772376.99	**2465176.99**	1899471.94	565705.06	**2465177.00**
Mar 08	1478891.25	725606.35	**2204497.60**	1673878.98	530618.62	**2204497.60**

The mass balance confirms that the sum cane crushed and the added water is equal to the quantity of gross mixed and the bagasse produced.

Further,the bagasse combusted in all the boilers in the monitoring period as determined and RT 7c/8c is approximately 58606.62 (dry basis) MT and the consumption in the project boiler is 24270.23 MT on dry basis (calculated through actual wet bagasse consumption and the moisture content).The energy balance is conducted for project boiler for the entire monitoring period taking into account the steam fuel ratio provided by the boiler manufacturer

The energy balance as shown below establishes that 23803 MT of bagasse could be consumed; however the boiler efficiency may vary in actual project scenario. The bagasse consumption thus calculated is comparable to the actual consumption

			Reference
Steam Flow at MS line at MCR	120000	Kg/hr	As per the boilers manufacturers specification
Fuel Flow rate	47940	Kg/hr	As per the boilers manufacturers specification.(On wet bagasse basis)
Steam -Fuel Ratio	=120000/47940 = 2.50		
Steam Produced in the season by the project boiler	118445020	Kg/hr	
Approximate wet bagasse consumption	=118445020/2.50 =47318785.49	kg	On wet basis
Approximate dry bagasse consumption	23803468.34	kg	On dry basis considering 49.70% of moisture content of bagasse
	23803	tonnes	

Data / Parameter:	**NCV_k**
Data unit:	GJ / tone
Description:	Net Calorific value of bagasse
Data reported in :	Test Reports
Description of measurement methods and procedures to be applied:	The net calorific value of bagasse is fairly constant. It is being monitored every six months by an external laboratory, taking at least three samples for each measurement as specified in the monitoring plan of the registered PDD.
QA/QC procedures to be applied:	IPCC Default value for other primary solid biomass is 11.6 GJ/tonne.The range defined for other primary solid biomass in the IPCC is from 5.90 to 23 GJ/tonne. The NCVk obtained for the bagasse in the present monitoring period is 15.277 GJ/tonne is well with the range. Moreover NCV test is conducted every six months by external reputed laboratories and was found consistent.

Data / Parameter:	**Moisture content of bagasse**
Data unit:	% water content
Data reported in :	On-site laboratory measurements
Description of measurement methods and procedures to be applied:	Measured in in-house laboratories on monthly basis by drying a measured sample of bagasse in an oven and then measuring the dried sample. The same procedure is repeated till relatively consecutive readings are obtained.
QA/QC procedures to be applied:	Procedure for monitoring is repeated with multiple samples of bagasse till consecutive readings are obtained.

Monitored data

Parameters related to Power generation

S.No.	Month	Gross quantity of electricity generated in the 24 MW ($EG_{Gross,project\ plant,y}$)	Auxiliary electricity consumption in the 24 MW ($EG_{Aux,project\ plant,\ y}$)	Total quantity of electricity generated in all the power units at the project site ($EG_{Total\ Gross,\ y}$)	Total quantity of auxiliary electricity consumption in all the power units at the project site ($EG_{Total\ Aux\ y}$)	Net Generation ($EG_{projectplant,y}$)	Net quantity of electricity generated in all power units at the project site ($EG_{total,y}$)
		MWh	**MWh**	**MWh**	**MWh**	**MWh**	**MWh**
1	30/11/2007to 03/02/2008	0	0	0	0	0	0
2	04/02/2008 to 29/02/2008	12278.48	1440.23	16151.61	2132.35	10838.25	14019.26
3	01/03/2008 to 31/03/2008	12843.7	1392.71	16706.28	1996.87	11450.99	14709.41
4	01/04/2008 to 02/04/2008	544.52	60.81	597.03	70.57	483.71	526.46
Total		**25666.7**	**2893.75**	**33454.92**	**4199.79**	**22772.95**	**29255.13**

Note: All figures are reported in MWh

Parameters related to bagasse

Month	Quantity of bagasse combusted in project boiler 1 (tonnes)	Moisture Content (%)	Quantity of dry bagasse combusted in project boiler 1 – $BF_{k,y}$ (tonnes)
30/11/2007 to 03/02/2008	-	-	-
04/02/2008 to 29/02/2008	23251.61	49.69	11694.60
01/03/2008 to 31/03/2008	23857.16	48.70	12001.42
01/04/2008 to 02/04/2008	1141.58	49.70	574.21
Total	**48250.35**	**49.70**	**24270.23**

Energy Content of Fuel (Bagasse)

Net Calorific Value (NCV_k -Cal/g) of Bagasse– Test conducted on 25/02/2008.

Unit	Cal/gm	Cal/gm[1]	GJ/tonne	MWh/t
Sample 1	1821	3642.00	15.25	4.24
Sample 2	1812	3624.00	15.17	4.21
Sample 3	1840	3680.00	15.41	4.28
Average	1824.33	3648.67	15.277	4.24

[1] The test conducted for the NCV of bagasse was conducted on 50% moisture basis; the same has been converted here for getting the results on dry basis.

Calculations of emission reduction

Estimation of emission reductions:

Formula used for estimation of the total net emission reductions due to the project activity during a given year *y* is as under.

$$ER_y = ER_{heat,y} + ER_{electricity,y} + BE_{biomass,y} - PE_y - L_y$$

Where

ER_y	are the emissions reductions of the project activity during the year *y* in tons of CO_2,
$ER_{electricity,y}$	are the emission reductions due to displacement of electricity during the year *y* in tons of CO_2,
$ER_{heat,y}$	are the emission reductions due to displacement of heat during the year *y* in tons of CO_2,
$BE_{biomass,y}$	are the baseline emissions due to natural decay or burning of anthropogenic sources of biomass during the year *y* in tons of CO_2 equivalents,
PE_y	are the project emissions during the year *y* in tons of CO_2, and
L_y	are the leakage emissions during the year *y* in tons of CO_2.

Emission reductions due to the displacement of electricity ($ER_{electricity,y}$)

$$ER_{electricity,y} = EG_y \times EF_{electricity}$$

$ER_{electricity,\ y}$	are emission reductions due to displacement of electricity during the year *y* in tons of CO_2,
EG_y	is the net quantity of increased electricity generation as a result of the project activity (incremental to baseline generation) during the year *y* in MWh,
$EF_{electricity}$	is the CO_2 emission factor for the electricity displaced due to the project activity in tons CO_2/MWh

The emission factor for the displacement of electricity corresponds to the grid emission factor ($EF_{electricity} = EF_{grid}$[2]).

Emission Factor of the Grid (EF_{Grid})

The emission factor of Northern grid as fixed ex-ante in the registered PDD ($EF_{electricity}$) is 0.80 tCO_2/MWh

[2] Ex-ante fixed Grid Emission factor value as mentioned in registered PDD(Page 25)

Determination of electricity generation (EG_y)

EG_y is determined as follows:

$$EG_y = MIN\left\{\begin{array}{c} EG_{project\ plant,y} - \varepsilon_{el,other\ plant(s)} \cdot \frac{1}{3.6} \cdot \sum_k BF_{k,y} \cdot NCV_k \\ \\ EG_{total,y} - \frac{EG_{historic,3yr}}{3} \end{array}\right\}$$

where:

EG_y = Net quantity of increased electricity generation as a result of the project activity (incremental to baseline generation) during the year *y* (MWh)

$EG_{project\ plant,y}$ Net quantity of electricity generated in the project plant during the year *y* (MWh)

$\varepsilon_{el,other\ plant(s)}$ Average net energy efficiency of electricity generation in (the) other power plant(s) that would use the biomass residues fired in the project plant in the absence of the project activity ($MWh_{el}/MWh_{biomass}$)

$EG_{total,y}$ Net quantity of electricity generated in all power plants at the project site, generated from firing the same type(s) of biomass residues as in the project plant, including the new power plant installed as part of the project activity and any previously existing plants, during the year *y* (MWh/yr)

$EG_{historic,3yr}$ Net quantity of electricity generated during the most recent three years in all power plants at the project site, generated from firing the same type(s) of biomass residues as in the project plant[14] (MWh)

$BF_{k,y}$ Quantity of biomass residue type *k* combusted in the project plant during the year *y* (tons of dry matter or liter)

NCV_k Net calorific value of the biomass residue type *k* (GJ/ton of dry matter or GJ/litre)

With respect to Scenario 13, $\varepsilon_{el,other\ plant(s)}$ corresponds to the average net efficiency of electricity generation in the "reference plant" ($\varepsilon_{el,reference\ plant}$) that would be installed in the absence of the CDM project activity.

Calculation of EG_y for the present Monitoring period

As per the formula for EG_y given above, EG_y is lower amongst the following options:

1. $EG_{project\ plant,y} - \varepsilon_{el,other\ plant(s)} \cdot \frac{1}{3.6} \cdot \sum_k BF_{k,y}\ NCV_k$

2. $EG_{total,y} - \frac{EG_{historic,3yr}}{3}$

The following table provides the values of the various parameters obtained during the present monitoring period for the calculation of EG_y

Description	Value	Units
$EG_{project\ plant,y}$	22772.95	MWh
$\varepsilon_{el,\ other\ plant}$	9.450	%
$EG_{total,y}$	29255.13	MWh
$EG_{historic}$	(22200*59)/155.55 8420.44[3]	MWh
$BF_{k,y}$	24270.23	Tonnes
NCV_k	15277	kJ/kg
	15.277	GJ/tonne
	4.24	MWh/t
$EG_{project\ plant,y} - \varepsilon_{el,other\ plant(s)} \cdot \frac{1}{3.6} \cdot \sum_k BFk,y\ \ NCVk$	13040.09	MWh
$EG_{total,y} - EG_{historic}$	20834.68	MWh
$EG_y = MIN\left\{ EG_{project\ plant,y} - \varepsilon_{el,other\ plant(s)} \cdot \frac{1}{3.6} \cdot \sum_k BF_{k,y} \cdot NCV_k \right.$ $\left. EG_{total,y} - \frac{EG_{historic,3yr}}{3} \right\}$	13040.09	MWh

Emission reductions or increases due to displacement of heat ($ER_{heat,y}$)

[3] As per the $EG_{historic}$ value defined in the PDD(22200 MWh), the value $EG_{historic}$ for the present monitoring period is established based on the number of operational days during the period of historic generation i.e. 155.55 days and the number of operational days during the present monitoring period i.e 59 days.

As demonstrated in the PDD, $ER_{heat, y} = 0$.

Baseline emissions due to natural decay or uncontrolled burning of anthropogenic sources of biomass

As per ACM0006 (version 05), for scenario 13, baseline emissions due to uncontrolled burning or decay of the biomass residues are zero i.e $BE_{Biomass} = 0$

Project emissions (PE_y)

According to the methodology ACM0006, Project emissions include CO_2 emissions from transportation of biomass to the project site (PET_y), CO_2 emissions from on-site consumption of fossil fuels due to the project activity ($PE_{FF,y}$) and CH_4 emissions from the storage of biomass.

In the project scenario, since the project activity uses bagasse as the fuel, the project leads to no GHG on-site emissions. The GHG emission of the combustion process, mainly CO_2, is sequestered during the growth of sugarcane.

[a] Project Emissions associated with fossil fuel combustion
As there is no fossil fuel combustion associated with the project activity, hence there are no project emissions associated to fossil fuel combustion due to project activity implementation.

[b] Project Emissions associated with transport of bagasse fuel
The bagasse to be used as the feedstock for project activity is supplied by the sugar mill itself; no transportation of bagasse is involved. Hence there are no emissions due to transportation of bagasse.

[c] Project Emissions associated with the storage of bagasse fuel
The net increase of methane emissions associated with the storage of bagasse fuel is regarded as negligible if the bagasse is not stored for more than one year. The bagasse utilized for the project activity is stored in open piles for not more than one year. Therefore there would be no project emissions associated with the storage of bagasse fuel.

Thus $PE_y = 0$.

Leakage (L_y)

In case of scenario 13, according to ACM0006 (version 05), the diversion of biomass residues to the project activity is already considered in the calculation of baseline

reductions. Thus, the leakage effects do not need to be addressed i.e. $L_y = 0$.

Emission reductions

EG_y	13040.09	MWh
EF_y	0.8	tCO_2/MWh
ER_y = EG_y X EF_y	**10432**	**tCO_2**

$ER_{heat,y}$	$ER_{electricity,y}$	$BE_{biomass,y}$	PE_y	L_y	**ER_y**
0	10432	0	0	0	**10,432**

Thus net emission reductions by the project activity during the current monitoring period is ER_y = 10432 tCO_2

Comparison of ER claimed in the present monitoring period with that in the PDD:

Calculation of Estimated Emission reductions

The estimated ER's for the present Monitoring period i.e. 30.11.2007 to 02.04.2008 based on the PDD assumptions are as given below

Emission reductions as estimated in the PDD	41207 tCO_2
Number of operational days as per the PDD	200
Number of operational days in the monitoring period	59
Estimated emission reduction for the present monitoring period	= 41207*59/200 = 12156 tCO_2

The table below compares the information about the estimated emissions reductions for the present monitoring period based on the PDD assumptions as well as what has been reported during the present monitoring period 30.11.2007 to 02.04.2008

Emission Reductions (ER's)	Estimated ER's for the present monitoring period based on the PDD assumptions	Actual ER's claimed for the present monitoring period.
	12156 tCO_2	10432 tCO_2

With regard to comparison of CER claimed in the monitoring period and that estimated for the present monitoring period the explanation has been cited as under

- The ERs for the present monitoring period consist of only 59 operational days in contrast to the quantum claimed in the PDD which is representative of 200 operational days.

Measures to ensure the Results / uncertainty analysis

The project-monitoring plan consists of metering the electricity generated by the project activity, total electricity generated by all the units at site, quantity of bagasse fired in project activity, calorific value of bagasse, net quantity of heat generated by project plant and average net energy efficiency of heat generation in the boilers operated next to the project plant.

Energy meters are being used for monitoring the energy generated and auxiliary consumption by all the units. All energy meters used are electronic tri-vector meters of accuracy class 0.5 %. The energy meters are maintained in accordance with electricity standards in India. Each meter is inspected and sealed ensuring no interference by anyone. All the energy meters are tested for accuracy annually by an independent agency, which is accredited with National Accreditation Board for Testing & Calibration Laboratories (NABL), Department of Science & Technology, Government of India. If during the yearly test check, any meter is found to be beyond permissible limits of error, it would be calibrated immediately. Net Calorific Value of bagasse is established every six months based on the test conducted by an independent agency taking at least three samples for each measurement.

Total quantity of bagasse fired in the project plant is measured as per the procedure documented in the PDD and the related equipments such as the weigh bridge and rotary feeder are calibrated annually by an independent agency.

Any observations (like inconsistencies in reported parameters) and/or discrepancies in the operation of the power plant observed by any of the team member are communicated promptly to the concerned personnel for necessary action. These measures are undertaken in order to detect and minimize the uncertainty levels in data monitoring. Furthermore, as a safety measure, the total power generating system is equipped with an 'Automatic Alarming System' which gives a prior indication of any fluctuations in the operating

parameters of the power plant thereby enabling the operators to take necessary preventive measures.

The following tables indicate the details of various meters including their accuracy levels and calibration dates:

1. Gross Generation – 24 MW.-(M1)

Description	
S. No.	ELI 10810
Voltage	-/110V_/3
CT Ratio	-/1A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

2. Cogen Convertor Transformer (Auxiliary Consumption-24 MW)-(M3)

Description	
S. No.	ELI09053
Voltage	-/110V_/3
CT Ratio	-/1A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	04/12/2007
Due Date	03/12/2008
Calibration Agency	Secure Meters Limited

3. Cogen Distribution Transformer Auxiliary Consumption-24 MW)-(M4)

Description	
S. No.	ELI10812
Voltage	110V_/3
CT Ratio	-/1A

Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

4. Gross Generation Turbine No.01-03 MW-(M12)

Description	
S. No.	ELI11869
Voltage	240 Volts (Phase to Neutral)
CT Ratio	-/5A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007.
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

5. Gross Generation Turbine No.02-03 MW-(M13)

Description	
S. No.	ELI10857
Voltage	240 Volts (Phase to Neutral)
CT Ratio	-/5A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

6. Gross Generation Turbine No.03-03 MW-(M14)

Description	
S. No.	ELI10856
Voltage	240 Volts (Phase to Neutral)

CT Ratio	-/5A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

7. Bolier No. 01 MCC – Auxiliary of 09 MW-(M10)

Description	
S. No.	ELI11872
Voltage	240 Volts (Phase to Neutral)
CT Ratio	-/5A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

8. Bolier No. 02 MCC – Auxiliary of 09 MW-(M11)

Description	
S. No.	ELI10858
Voltage	240 Volts (Phase to Neutral)
CT Ratio	-/5A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

9. MCC for Feed Pump 1&2 – Auxiliary of 09 MW-(M8)

Description	
S. No.	ELI11868
Voltage	240 Volts (Phase to Neutral)
CT Ratio	-/5A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

10. MCC for Feed Pump No.03- Auxiliary of 09 MW-(M09)

Description	
S. No.	ELI11870
Voltage	240 Volts (Phase to Neutral)
CT Ratio	-/5A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

11. Bagasse Handling MCC-Auxiliary of 09 MW-(M07)

Description	
S. No.	ELI11871
Voltage	240 Volts (Phase to Neutral)
CT Ratio	-/5A
Accuracy Class	0.5s
Reference Standard	IEC:62053-22
Date of Calibration	24/11/2007
Due Date	23/11/2008
Calibration Agency	Secure Meters Limited

12. Bagasse Rotary Feeder No.5 Speed.

Name	Speed Transmitter
Make	P & F
Sr. No.	10569
Model No.	KFU8-FSSP-1D
Range	0-3 RPM
Date of Calibration	17-11-2007
Next Calibration Proposed on	17-11-2008
Location	Bagasse Rotary Feeder No.5
Calibration Agency	Precision Calibration & Testing Centre

13. Bagasse Rotary Feeder No.4 Speed.

Name	Speed Transmitter
Make	P & F
Sr. No.	10568
Model No.	KFU8-FSSP-1D
Range	0-3 RPM
Date of Calibration	17-11-2007
Next Calibration Proposed on	17-11-2008
Location	Bagasse Rotary Feeder No.4
Calibration Agency	Precision Calibration & Testing Centre

14. Bagasse Rotary Feeder No3 Speed.

Name	Speed Transmitter
Make	P & F
Sr. No.	10567
Model No.	KFU8-FSSP-1D

Range	0-3 RPM
Date of Calibration	17-11-2007
Next Calibration Proposed on	17-11-2008
Location	Bagasse Rotary Feeder No.3
Calibration Agency	Precision Calibration & Testing Centre

15. Bagasse Rotary Feeder No. 2 Speed.

Name	Speed Transmitter
Make	P & F
Sr. No.	10566
Model No.	KFU8-FSSP-1D
Range	0-3 RPM
Date of Calibration	17-11-2007
Next Calibration Proposed on	17-11-2008
Location	Bagasse Rotary Feeder No.2.
Calibration Agency	Precision Calibration & Testing Centre

16. Bagasse Rotary Feeder No.1 Speed.

Name	Speed Transmitter
Make	P & F
Sr. No.	10565
Model No.	KFU8-FSSP-1D
Range	0-3 RPM
Date of Calibration	17-11-2007
Next Calibration Proposed on	17-11-2008
Location	Bagasse Rotary Feeder No1
Calibration Agency	Precision Calibration & Testing Centre

17. Weigh Bridge Calibration details

Serial No.	Capacity of Weigh bridge	Date Of Calibration	Due Date	Calibration Agency
1	80000 kg	24/10/07	23/10/08	Controller of Weights and Measures Department- Dhampur,Bijnor
2	10000 kg	23/10/07	22/10/08	
3	10000 kg	23/10/07	22/10/08	
4	10000 kg	23/10/07	22/10/08	
5	50000 kg	23/10/07	22/10/08	
6	50000 kg	23/10/07	22/10/08	

18. Analytical balance used to determine %moisture in bagasse

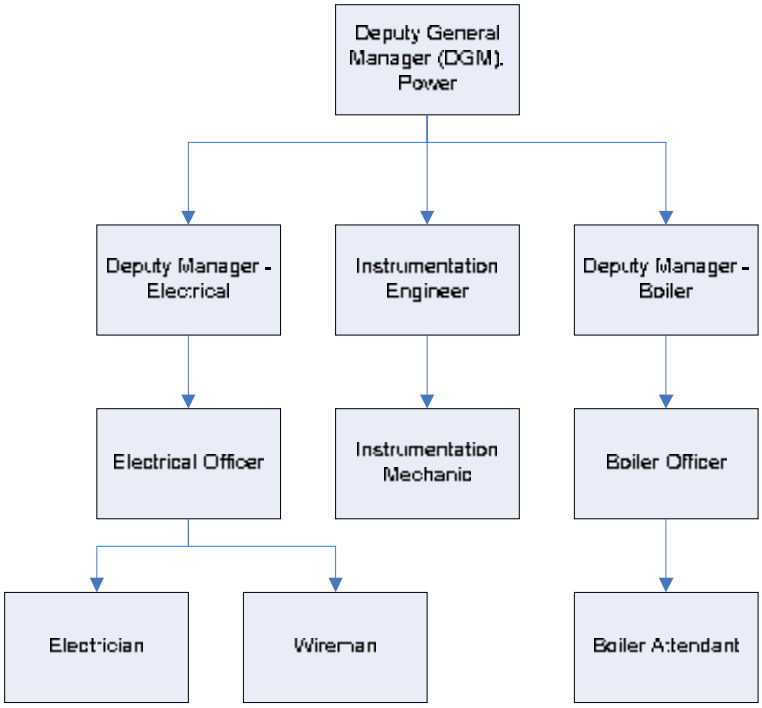
Name	Digital Infrared moisture Balance
Sr. No.	1128280318
Model No.	MB-45
Date of Calibration	31-10-2007
Next Calibration Proposed on	30-10-2008
Location	In-house Laboratory
Calibration Agency	Advance Research Instruments Company

Roles and responsibilities

In accordance with the monitoring plan of the PDD, The following operational and management structure has been implemented for the project activity:

- The shift in-charge is assigned with the responsibility of monitoring and recording of parameters as per the monitoring plan.
- On a monthly basis, the monitoring records are checked and discussed with project manager.
- In case of any irregularity observed, necessary action is taken immediately.
- On monthly basis, the reports are prepared and forwarded to the management.

The following organisation structure is present to operate the project activity:



Sustainability – Economic and Social Well-being

Socio-economic well being

The project activity helps the Indian national policy on promotion of clean power. Generation of direct and indirect employment has occurred due to the project activity. This employment generation has been during the construction stage and subsequently during operational stage i.e., after project commissioning. In the absence of the project activity, no such employment generation would have occurred either during the retrofitting phase or during the operational phase.

Environmental well being

The project activity has replaced the grid based power generation thereby resulting in reduction of Greenhouse Gas (GHG) emissions associated with the fossil fuel dominated grid power. The project apart from reducing the CO_2 emissions has also helped in conservation of the conventional non renewable fuels. Therefore, the project activity has good environment benefits in terms of reduction in GHG emissions and also conservation of fossil fuels.

Technological well being

The project activity is a shift of the sugar industry from the existing practice of low efficiency, medium pressure, dumping grate boilers to high efficiency, high pressure and temperature, traveling grate boiler leading to technological up-gradation and well being.