

MONITORING REPORT

Monitoring Period

03.04.2008 to 07.03.2009

(Both days included)

Version: 01

Date: 15/06/2009

Project 1257: Power capacity expansion project at Dwarikesh Puram

Site:

Village- Bahadurpar, District - Bijnor, Uttar Pradesh

Latitude: 29° 19'N, Longitude: 78° 31'E

Dwarikesh Sugar Industries Limited

221, Nariman Point

511, Maker Chambers V

Mumbai

Maharashtra - 400021

Email: dsilbom@dwarikesh.com

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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/cm² pressure and steam temperature of 515 +/- 5° 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 getting generated from the project activity is being supplied to the Northern grid which is under severe power shortage. The technical specification of the equipments deployed in the project activity is as listed 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 (°C)	515 ± 5
No.	1

Turbine specifications

Description	Double extraction cum condensing turbine
Capacity (MW)	24
Steam pressure (kg/cm ²)	86
Steam temperature (°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 in 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 second monitoring report associated with Dwarikesh Puram Project activity. The period covered in this monitoring report is from 03.04.2008 to 07.03.2009 (Both days included). This monitoring report does not cover any period of time which was the part of the previous monitoring report.

The first monitoring report covered the 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)..

Parameters monitored

The project proponent has been monitoring the parameters as outlined in the registered PDD. 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
Source of data to be used:	Calculated and recorded hourly
Description of measurement methods and procedures to be applied:	Net quantity of electricity in the project plant generated is 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 would be cross checked with receipt of sales and the quantity of biomass fired.

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
Source of data to be used:	Calculated and recorded hourly
Description of measurement methods and procedures to be applied:	Net quantity of electricity in all the power units at the project site generated is calculated by subtracting aggregated auxiliary consumption from the aggregated gross generation of all the power units at the plant site. Separate energy meters are 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 are calculated and totalized and recorded hourly in log books.
QA/QC procedures to be applied:	The consistency of net electricity generation should be cross-checked with receipts from electricity sales (if available) and the

	quantity of fuels fired (e.g. check whether the electricity generation divided by the quantity of fuels fired results in a reasonable efficiency that is comparable to previous years).
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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
Source of data to be used:	Metering records
Description of measurement methods and procedures to be applied:	Electronic tri-vector meters/power monitoring system of accuracy class 0.5 are 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 off in the logbook at the end of every shift and the daily power generation are signed by the power plant manager. The meters are 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 would be cross checked with receipt of sales and the quantity of biomass fired.

Data / Parameter:	EG _{Aux,project plant, y}
Data unit:	MWh/yr
Description:	Auxiliary electricity consumption by the project plant.
Source of data to be used:	Metering records
Description of measurement methods and procedures to be applied:	Electronic tri-vector meters/power monitoring system of accuracy class 0.5 is 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 is signed off in the logbook at the end of every shift and the daily power generation is also signed by the power plant manager. The meters are 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 will be calibrated annually by an independent third party.

Data / Parameter:	EG _{Total Gross, y}
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Data unit:	MWh/yr
Description:	Total quantity of electricity generated in the power units other than the project power unit 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
Source of data to be used:	Metering records
Description of measurement methods and procedures to be applied:	Electronic tri-vector meters/power monitoring systems of accuracy class 0.5 are installed to permit continuous monitoring and measurement for each individual power generating unit. The total is then calculated by adding the gross generation of all power generating units and recorded hourly . Hourly recordings of data will be taken from energy meters and logged in the daily log books by the Switch Board attendant. The shift in-charge will sign off in the logbook at the end of every shift and the daily power generation would be signed by the power plant manager. The meters will be 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 would be cross checked with receipt of sales and the quantity of biomass fired.
Any comment:	The total power generation of the power unit other than the project plant has been estimated based on the following assumption: Average sugar plant load of 6.5 MW; Plant load factor of 90% for the project activity plant and the existing plant load; Auxiliary consumption of 10%; and 200 days of operation

Data / Parameter:	EG _{Total Aux y}
Data unit:	MWh/yr
Description:	Total quantity of auxiliary electricity consumption in the power units other than the project plant 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
Source of data to be used:	Metering records
Description of measurement methods and procedures to be applied:	Electronic tri-vector meters/power monitoring systems of accuracy class 0.5 are installed to permit continuous monitoring and measurement for each individual power generating unit. The total then is calculated by adding the gross generation of all power generating units and recorded hourly. 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 are then

	signed by the power plant manager. The meters are 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 will be calibrated annually by an independent third party.

Data / Parameter:	BF_{k, y}
Data unit:	Tonnes
Description:	Quantity of bagasse combusted in the project plant during the year y
Source of data to be used:	On-site measurements
Description of measurement methods and procedures to be applied:	<p>Weight or volume meters are used and adjustment for the moisture content is carried out in order to determine the quantity of dry biomass. The quantity shall be cross-checked with the quantity of electricity (and heat) generated and any fuel purchase receipts (if available).</p> <p>The direct measurement of bagasse would be monitored by monitoring the speed of the rotary feeder. This monitoring instrument would be calibrated to give the amount of bagasse being combusted in the project activity. Also annual mass and energy balance would be carried out to cross check the biomass quantity used in the project activity. The mass balance would be on the basis of the measured quantity of sugarcane crushed, water added, mixed juice and excess bagasse and the energy balance would on the basis of steam quality and quantity generated.</p>
QA/QC procedures to be applied:	Any direct measurement with mass or volume meters at the plant site would be cross checked with an annual energy balance that is based on purchased quantities and stock changes.
Any comment:	This bagasse quantity is on dry basis

Data / Parameter:	NCV_k
Data unit:	GJ/ton
Description:	Net Calorific value of bagasse
Source of data to be used:	Calculations and laboratory reports
Description of measurement methods and procedures to be applied:	<p>The net calorific value of bagasse is fairly constant. Every six months external laboratory tests for NCV at reputed laboratories and according to relevant international standards is carried out taking at least three samples for each measurement. The NCV shall be determined based on dry biomass.</p> <p>The calorific value of bagasse is based on theoretical calculations as per E.HUGOT (Hand Book of Sugar Engg. Acceptable world</p>

	<p>wide by Sugar Industries) based on 2 % pol and 50% moisture and is as under:</p> $\text{NCV (Kcal/kg)} = 4250 - 12 \times \text{Pol\% bagasse} - 48.5 \times \text{Moisture\%}$ $= 4250 - 12 \times 2 - 48.5 \times 0 = 4226 \text{ Kcal/kg of bagasse.}$
QA/QC procedures to be applied:	Consistency of measurements and local / national data would be checked with default values by the IPCC. If the values differ significantly from the IPCC default values, additional information or conducted measurements would be possibly collected. The accredited external laboratories would ensure that proper monitoring of the calorific value is being carried out.
Any comment:	

Data / Parameter:	Moisture content of bagasse
Data unit:	% Water content
Description:	Moisture content of bagasse
Source of data to be used:	On-site laboratory measurements
Description of measurement methods and procedures to be applied:	Measured in laboratories on a monthly basis.
QA/QC procedures to be applied:	Procedure for monitoring is repeated with multiples samples till consecutive readings are obtained.
Any comment:	-

Monitored data

Parameters related to Power generation

Month	Gross Generation T1 (24MW)	Gross Generation T2 (9MW)	Auxiliary consumption (T1)	Auxiliary consumption (T2)	Net Generation (EG _{project plant,y})	EG _{total, y}
21/11/08-30/11/08	5417.70	1500.66	479.95	209.05	4937.75	6229.36
01/12/08-31/12/08	16323.70	4528.28	1425.72	636.2	14897.98	18790.06
01/01/09-31/01/09	7173.40	2700.31	810.85	497.06	6362.55	8565.8
01/02/09-28/02/09	5065.30	2813.90	627.01	506.97	4438.29	6745.22
01/03/09-07/03/09	1535.70	220.53	209.22	48.64	1326.48	1498.37
TOTAL	35515.80	11763.68	3552.75	1897.92	31963.05	41828.81

Note: All figures are reported in MWh

Parameters related to bagasse and Steam

Month	Quantity of bagasse combusted in project boiler (tonnes)	Moisture Content (%)	Quantity of dry bagasse combusted in project boiler 1 – $BF_{k,y}$ (tonnes)	Net quantity of steam generated ($S_{\text{project plant, y}}$) (tonnes)
21/11/08-30/11/08	11463.79	49.86	5748.23	25170.91
01/12/08-31/12/08	34222.65	49.79	17183.41	76789.03
01/01/09-31/01/09	15996.73	49.87	8019.52	35578.17
01/02/09-28/02/09	11941.73	49.85	5988.42	26157.90
01/03/09-07/03/09	3674.72	50.02	1836.73	8058.18
Total	77299.62	49.88	38744.93	171754.19

Parameters related to Thermal Energy

Boiler 1

Months	Steam pressure (Kg/cm ² g)	Steam temperature (°C)	Enthalpy of steam (Kcal/Kg)	Enthalpy of feed water (Kcal/Kg)	Net Quantity of heat generated from firing biomass (Kcal/Kg)	GCV of bagasse (Kcal/Kg)	Mass of steam (tonnes)	Mass of fuel (tonnes)	Ratio	Efficiency ($\epsilon_{\text{boiler1}}$)
21/11/2008-30/11/2008	85.54	502.44	812.01	147.73	664.28	4093	25170.91	5767.43	4.38	71.07
01/12/2008-31/12/2008	85.64	504.27	813.07	158.70	654.37	4093	76789.03	17214.00	4.47	71.44
01/01/2009-31/01/2009	85.26	499.16	810.15	148.57	661.58	4093	35578.17	8036.75	4.44	71.71
01/02/2009-28/02/2009	84.88	501.96	811.91	141.33	670.58	4093	26157.90	5997.13	4.37	71.56
01/03/2009-07/03/2009	83.29	487.44	803.77	144.02	659.75	4093	8058.18	1844.34	4.39	70.72

Energy Content of Fuel (Bagasse)

Net Calorific Value (Cal/g) of Bagasse on dry basis– Test conducted on 31/01/2009

Sample 1 – 3800 (15.91GJ/tonne)

Sample 2 – 3760 (15.74 GJ/tonne)

Sample 3 – 3870(16.20GJ/tonne)

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 CO₂,

$ER_{electricity,y}$ are the emission reductions due to displacement of electricity during the year y in tons of CO₂,

$ER_{heat,y}$ are the emission reductions due to displacement of heat during the year y in tons of CO₂,

$BE_{biomass,y}$ are the baseline emissions due to natural decay or burning of anthropogenic sources of biomass during the year y in tons of CO₂ equivalents,

PE_y are the project emissions during the year y in tons of CO₂, and

L_y are the leakage emissions during the year y in tons of CO₂.

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 CO₂,

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 CO₂ emission factor for the electricity displaced due to the project activity in tons CO₂/MWh

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

Emission Factor of the Grid (EF_{Grid})

The emission factor of Northern grid ($EF_{electricity}$) is 0.80 tCO₂/MWh

Determination of electricity generation (EG_y)

EG_y is determined as follows:

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

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.

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

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 $BE_{\text{Biomass}} = 0$

Project emissions (PE_y)

According to the methodology ACM0006, Project emissions include CO₂ emissions from transportation of biomass to the project site (PET_y), CO₂ emissions from on-site consumption of fossil fuels due to the project activity ($PE_{FF,y}$) and CH₄ 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 CO₂, 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

$ER_{\text{heat},y}$	$ER_{\text{electricity},y}$	$BE_{\text{biomass},y}$	PE_y	L_y	ER_y
0	12591	0	0	0	12591

Thus net emission reductions by the project activity during the current monitoring period is $ER_y = 12591 \text{ tCO}_2$

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 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 informed 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
Make	Secure Meters Ltd.
Model	SWIFT ELITE
Type	HT4,1A
Voltage	3X63.5 Vp-n (3 Phase 4 Wire)
Current	1 A
Voltage Ratio	11000/rt3/110/rt3
Current Ratio	2000/1A
Class	0.5s
Date of Calibration	10/11/2008

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

Description	
S. No.	ELI09053
Make	Secure Meters Ltd.
Model	SWIFT ELITE
Type	HT4, 1A
Voltage	3 X 63.5 V p-n (3 Phase 4 wire)
Current	1A
Voltage Ratio	11000/rt3/110/rt3
Current Ratio	200/1A
Class	0.5s
Date of Calibration	10/11/2008

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

Description	
S. No.	ELI10812
Make	Secure Meters Ltd.
Model	SWIFT ELITE
Type	HT4, 1A
Voltage	63.5 V

Current	1A
Voltage Ratio	11000/rt3/110/rt3
Current Ratio	200/1A
Class	0.5s
Date of Calibration	11/11/2008

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

Description	
S. No.	ELI11869
Make	Secure Meters Ltd.
Model	SWIFT ELITE
Type	LT, 5A
Voltage	240 V
Current	5 A
Current Ratio	5200/5A
Class	0.5s
Date of Calibration	10/11/2007.

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

Description	
S. No.	ELI10857
Make	Secure Meters Ltd.
Model	SWIFT ELITE
Type	HT4, 5A
Voltage	240 V
Current	5 A
Current Ratio	5200/5
Class	0.5s
Date of Calibration	10/11/2008

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

Description	
S. No.	ELI10856
Make	Secure Meters Ltd
Model	SWIFT ELITE
Type	LT
Voltage	240 V
Current	5 A
Current Ratio	5200/5A
Class	0.5s
Date of Calibration	10/11/2008

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

Description	
S. No.	ELI11872
Make	Secure Meters Ltd
Model	SWIFT ELITE
Type	LT, 5 A
Voltage	240 V
Current	5 A
Current Ratio	1600/5
Class	0.5s
Date of Calibration	10/11/2008

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

Description	
S. No.	ELI10858
Make	Secure Meters Ltd.
Model	SWIFT ELITE
Type	LT, 5A
Voltage	240 V

Current	5 A
Current Ratio	1600/5 A
Class	0.5s
Date of Calibration	10/11/2008

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

Description	
S. No.	ELI11868
Make	Secure Meters Ltd.
Model	SWIFT ELITE
Type	LT, 5A
Voltage	240 V
Current	5 A
Current Ratio	2500/5A
Class	0.5s
Date of Calibration	10/11/2008

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

Description	
S. No.	ELI11870
Make	Secure Meters Ltd.
Model	SWIFT ELITE
Type	LT, 5 A
Voltage	240 V
Current	5 A
Current Ratio	1600/ 5A
Class	0.5s
Date of Calibration	10/11/2008

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

Description	
S. No.	ELI11871

Make	Secure Meters Ltd.
Model	SWIFT ELITE
Type	LT
Voltage	240 V
Current	5 A
Current Ratio	1600/5
Class	0.5s
Date of Calibration	10/11/2008

12. Feed water flow

Name	FlowTransmitter
Make	Rosemount
Sr. No.	286123
Range	0-2500 mm wc
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Feed water flow Transmitter

13. Boiler Steam flow

Name	Flow Transmitter
Make	Rosemount
Sr. No.	286124
Range	0-8000 mm wc
Date of Calibration	01-10-2007
Next Calibration Proposed on	30-09-2009
Location	Boiler Steam flow Transmitter

14. Attemp. Spray Water Flow

Name	Flow Transmitter

Make	Rosemount
Sr. No.	286125
Range	0-1000 mm wc
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Attemp. Spray Water Flow Transmitter

15. Feed water Temp Eco Inlet

Name	RTD Sensor
Make	Tempsens Instrument
Sr. No.	-----
Range	0-300 ⁰ C
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Feed water Temp Eco Inlet

16. Feed water Temp Eco Outlet

Name	Thermocouple
Make	Pyro electric Instrument
Sr. No.	-----
Range	0-800 ⁰ C
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Feed water Temp Eco Outlet

17 Main Steam Temp (Element)

Name	Thermocouple
Make	Pyro electric Instrument
Sr. No.	-----
Range	0-800 ⁰ C
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009

Location	Main Steam Temp. Element
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18. Main Steam Temp (Transmitter)

Name	Temperature Transmitter
Make	Rosemount
Sr. No.	286155
Range	0-800°C
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Main Steam

19. Boiler Drum Pressure

Name	Pressure Transmitter
Make	Rosemount
Sr. No.	286144
Range	0-160 kg/cm ²
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Drum Pressure

20. Steam Pressure

Name	Pressure Transmitter
Make	Rosemount
Sr. No.	286145
Range	0-160 kg/cm ²
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Steam Pressure Transmitter

21. Feed Pump Discharge Pressure

Name	Pressure Transmitter
Make	Rosemount
Sr. No.	286146
Range	0-160 kg/cm ²
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Feed Pump Discharge Press Transmitter

22. 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	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Bagasse Rotary Feeder No.5

23. 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	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Bagasse Rotary Feeder No.4

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24. 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	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Bagasse Rotary Feeder No.3

25. 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	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Bagasse Rotary Feeder No.2.

26. Bagasse Rotary Feeder No.1 Speed.

Name	Speed Transmitter
Make	P & F
Sr. No.	10565

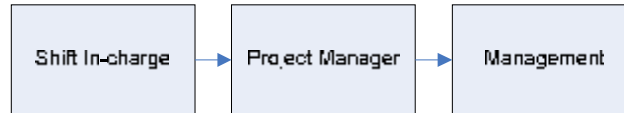
Model No.	KFU8-FSSP-1D
Range	0-3 RPM
Date of Calibration	01-10-2008
Next Calibration Proposed on	30-09-2009
Location	Bagasse Rotary Feeder No1

27. Weigh Bridge Calibration details

Serial No.	Capacity of Weigh bridge	Date Of Calibration
1	80000 kg	02/10/08
2	10000 kg	10/10/08
3	10000 kg	05/10/08
4	10000 kg	10/10/08
5	50000 kg	10/10/07
6	50000 kg	10/10/08

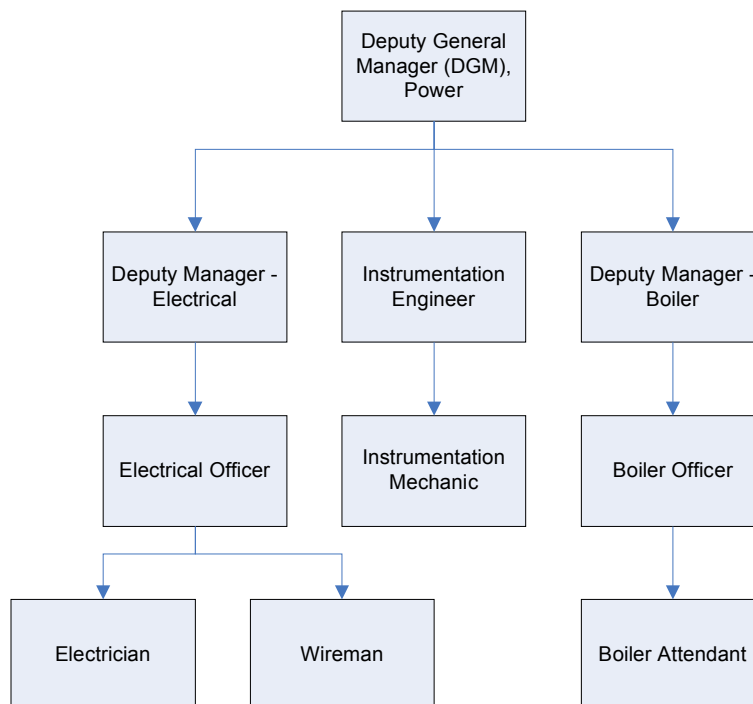
Roles and responsibilities

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 CO₂ 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.