



**Monitoring report form  
(Version 05.1)**

MONITORING REPORT		
<b>Title of the project activity</b>	KSPCL Waste Heat to Power project, India	
<b>UNFCCC reference number of the project activity</b>	1151 <sup>1</sup>	
<b>Version number of the monitoring report</b>	04	
<b>Completion date of the monitoring report</b>	08/12/2016	
<b>Monitoring period number and duration of this monitoring period</b>	Monitoring period number – 06 Duration – 01/01/2013 to 30/09/2016 (both days included)	
<b>Project participant(s)</b>	Kamachi Sponge and Power Corporation Limited Emergent Ventures India (Pvt) Ltd.	
<b>Host Party</b>	India	
<b>Sectoral scope(s)</b>	1 : Energy industries (renewable - / non-renewable sources)	
<b>Selected methodology(ies)</b>	ACM0004 “Consolidated baseline methodology for waste gas and/or heat for power generation” Version 02	
<b>Selected standardized baseline(s)</b>	Not Applicable	
<b>Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD</b>	167,091	
<b>Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period</b>	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	0	153,762

<sup>1</sup> <http://cdm.unfccc.int/Projects/DB/SGS-UKL1180692546.94/view>

## SECTION A. Description of project activity

### A.1. Purpose and general description of project activity

The project activity entails utilisation of waste heat of flue gases generated in DRI kilns of sponge iron plant of Kamachi Sponge & power Corporation Limited (“KSPCL” hereafter) in power generation. The Power produced will be used actively at sponge iron plant of KSPCL. This will displace equivalent amount of power from the Tamil Nadu Electricity Board (TNEB) grid, which is part of Southern Region (SR) grid in India and is primarily fossil fuel based. The project activity would result in reduced emissions by avoiding generation of this power in grid connected power stations. KSPCL has set up 04 nos. DRI kilns of capacity 100 TPD each at its sponge iron production unit. Each of the kilns generates ~25000 Nm<sup>3</sup>/hr of high temperature flue gases. This waste heat of flue gases is being utilised in generation of steam in Waste Heat Recovery Boilers (WHRB), which is further expanded in a single bleed-condensing turbine of 10 MW to generate power. It is successful in displacing equivalent amount of power from the Tamil Nadu Electricity Board (TNEB) grid, which is a part of Southern Region (SR) grid in India that is primarily fossil fuel based.

The proposed project activity started commercial operation on 29<sup>th</sup> December, 2007. Fixed crediting period of 10 years has been selected for the project activity, which lasts from year 31<sup>st</sup> December 2007- 30<sup>th</sup> December 2017.

A technical detail of major equipments is summarized below:

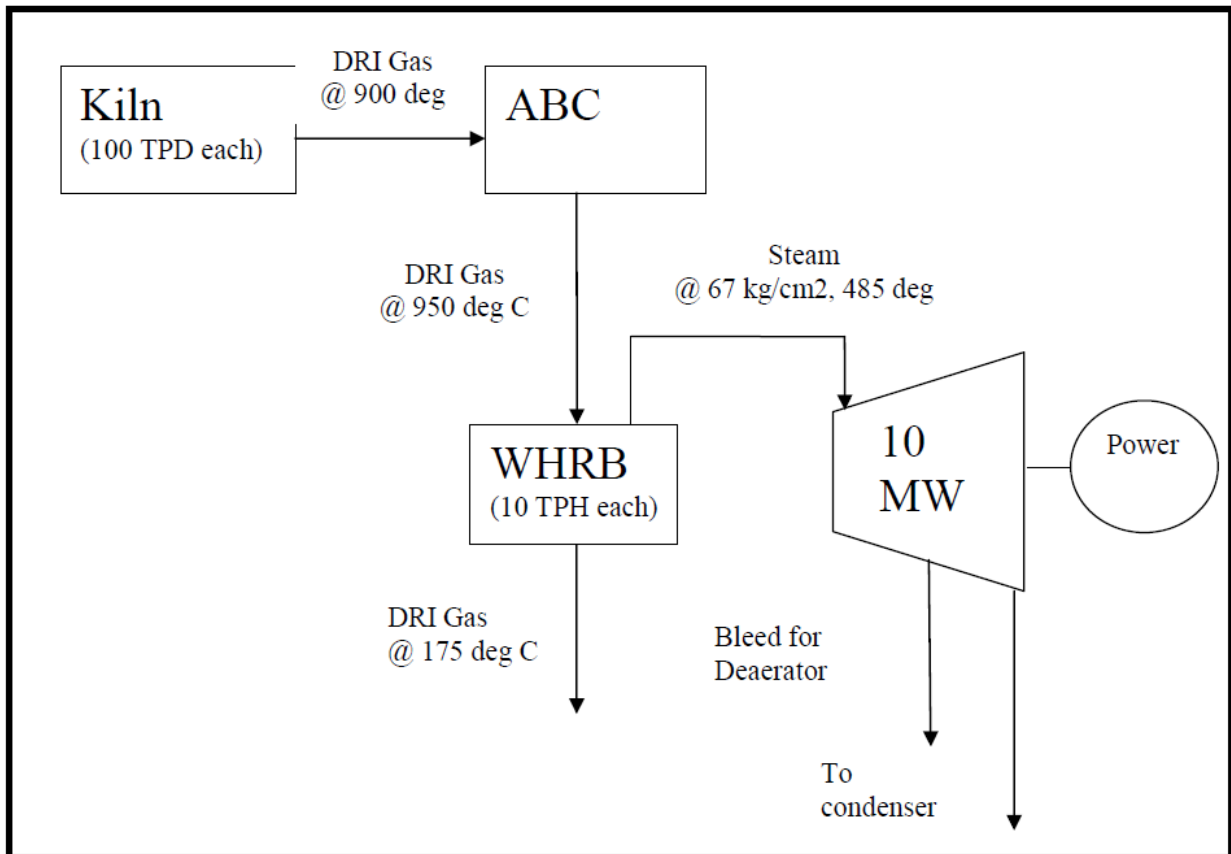
#### Waste Heat Recovery Boiler

Capacity	10 TPH
Steam Pressure	67 Kg/cm <sup>2</sup>
Steam Temperature	485 +/- 5 deg C
Nos.	4 nos.
Flue Gas Inlet Temp.	950 deg C
Flue Inlet Temp. to ESP	170 deg C

#### Turbine

Rated Capacity	10 MW
Steam Inlet Pressure	64 ata
Steam Inlet Temperature	480 deg C
Nos.	1 nos.
Bleed Pressure for dearator	4 ATA

A schematic diagram of the project activity is as follows:

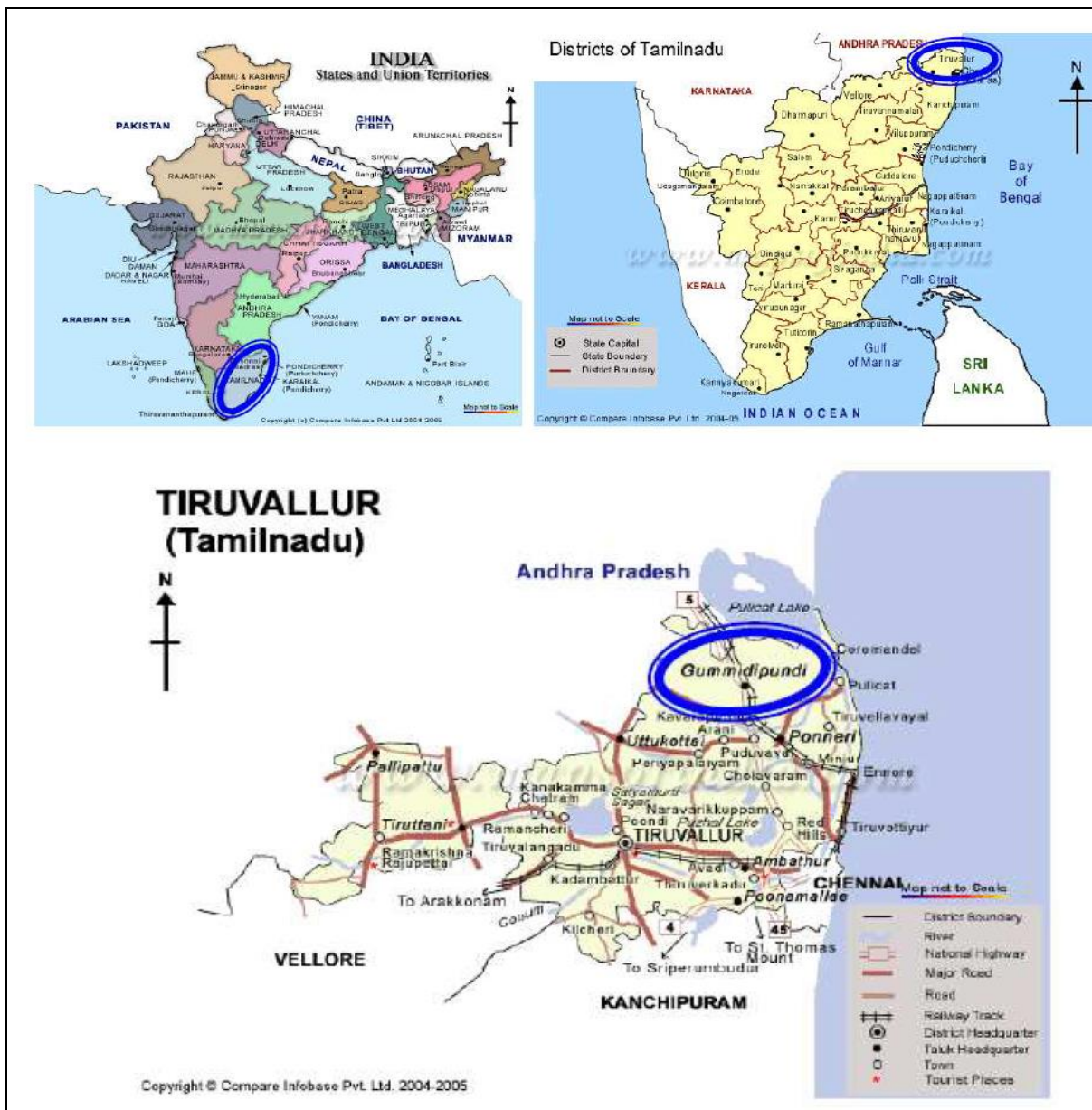


The total emission reductions achieved in this monitoring period is 153,762 tCO<sub>2</sub>e.

## A.2. Location of project activity

The project activity is located in Tiruvallur District in the state of Tamil Nadu. The project site is nearly ~ 50 km from the city of Chennai and nearest highway is NH 5. Tiruvallur is located at 79.57 E Longitude and 13.09 N Latitude. The physical location is depicted in the maps below:

Physical Address of the project site is:  
 Kamachi Sponge and Power Corporation Limited (KSPCL)  
 Plot No- 86, 116-119 & 123-125  
 Pappankuppam Village  
 Gummudipundi Taluk, Tiruvallur district  
 Tamilnadu, India.



**A.3. Parties and project participant(s)**

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
India (host)	Kamachi Sponge & Power Corporation Limited (KSPCL)	NO
Switzerland	Emergent Ventures India (Pvt) Ltd.	NO

**A.4. Reference of applied methodology and standardized baseline**

**Methodology:** ACM0004 “Consolidated baseline methodology for waste gas and/or heat for power generation”

**Reference:** Version 02, Sectoral Scope 01, dated 03/03/2006

**Methodology:** ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”

**Reference:** Version 12.1.0, Sectorial Scope 01, dated 17/09/2010

**Tool:** Tool for the demonstration and assessment of additionality (version 03)

**Reference:** Version 03, EB 29

#### **A.5. Crediting period of project activity**

Type	- Fixed
Monitoring Period	- 06
Start date of crediting period	- 31/12/2007
Length of Crediting period	- 10 Years
Duration of Crediting Period	- 31/12/2007 to 30/12/2017
Current Monitoring Period (Sixth)	- 01/01/2013 to 30/09/2016

#### **A.6. Contact information of responsible persons/entities**

Mr. Bhaskar Dutta  
 Manager- Operations  
 EKI Energy Services Limited  
 Plot 48, Scheme 78, Part- 2, Vijay Nagar, Indore- 452010, Madhya Pradesh (India)  
 Mob: +91 9109916710  
 Ph: +91 731 4289086  
 Fax: +91 731 4289086  
 Email: [bhaskar@enkingint.org](mailto:bhaskar@enkingint.org)

The above entity is not project participant as mentioned in Appendix 1.

### **SECTION B. Implementation of project activity**

#### **B.1. Description of implemented registered project activity**

The project started commercial production from 29/12/2007. The project was operational for entire monitoring period. During this current monitoring period, the project activity was operated and monitored in accordance with the approved monitoring methodology ACM0004, version 02 and approved monitoring plan.

The schematic diagram and technical details of project activity are mentioned in section A.1 of MR.

There are no changes that have happened in project activity which may impact the applicability of the methodology.

#### **B.2. Post-registration changes**

##### **B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

Not Applicable

##### **B.2.2. Corrections**

Not Applicable

##### **B.2.3. Changes to start date of crediting period**

Not Applicable

##### **B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration**

Not Applicable

**B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline**

The monitoring plan has been revised by the PP for improving the accuracy and completeness of the monitoring system. The revised monitoring plan<sup>2</sup> was approved by the CDM EB on 11/09/2010.

For current monitoring period there is no any permanent change from registered monitoring plan.

**B.2.6. Changes to project design of registered project activity**

Not Applicable

**B.2.7. Types of changes specific to afforestation or reforestation project activity**

Not Applicable

**SECTION C. Description of monitoring system**

KSPCL has procedure for monitoring and recording of data on operation & maintenance of the plant/ equipments. The equipments / instruments used for CDM project are also part of the procedures and records on maintenance and rectification done on all the equipments are maintained.

Various departments at KSPCL are headed by respective HOD (Head of Department) supported by shift-in-charges & support staff. Departments are mainly divided into projects, mechanical, electrical & instrumentation, production, QC and administration. Mechanical & electrical department are responsible for the overall upkeep of plant, plant machinery and instruments.

Managing Director is responsible for the overall functioning of the sponge iron plant. KSPCL has adopted following procedures to assure the completeness and correctness of the data needed to be monitored for CDM project activity:

**Formation of CDM Team:**

A CDM project team is constituted with participation from relevant sections. This team is responsible for data collection and archiving. This team will periodically review CDM project activity, check data collected, emissions reduced etc. On a monthly basis, the monitoring reports are checked and discussed with the senior CDM team members. In case of any irregularity observed by any of the CDM team members, it is informed to the concerned person for necessary actions. Further these reports will then be forwarded to the management on monthly basis.

- *Unit Head:* Overall responsibility of compliance with the CDM monitoring plan.
- *Power plant In-charge:* Responsibility for completeness of data, reliability of data (calibration of meters), and monthly report generation
- *Shift In-charge:* Responsibility of data monitoring & recording

**Day to day data collection and record keeping:**

Plant data is collected on operation under the supervision of the respective Shift-in-charge and record is kept in daily logs.

*Reliability of data collected-*

The reliability of the meters is checked by testing the meters on yearly basis. Documents pertaining to testing of meters are maintained.

*Frequency-*


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<sup>2</sup> <http://cdm.unfccc.int/Projects/DB/SGS-UKL1180692546.94/view>

The frequency for data monitoring is as per the monitoring details in Section B.7.1 of the document.

*Archiving of data-*

Data shall be kept for two years after the crediting period (total 12 years)

**Checking data for its correctness and completeness:**

The CDM team is overall responsible for checking data for its completeness and correctness. The data collected from daily logs is recorded after verification from respective departments.

**Calibration of instruments:**

KSPCL has procedures defined for the calibration of instruments. A log of calibration records is maintained. Electrical & Instrumentation department in the company is responsible for the upkeep of instruments in the plant.

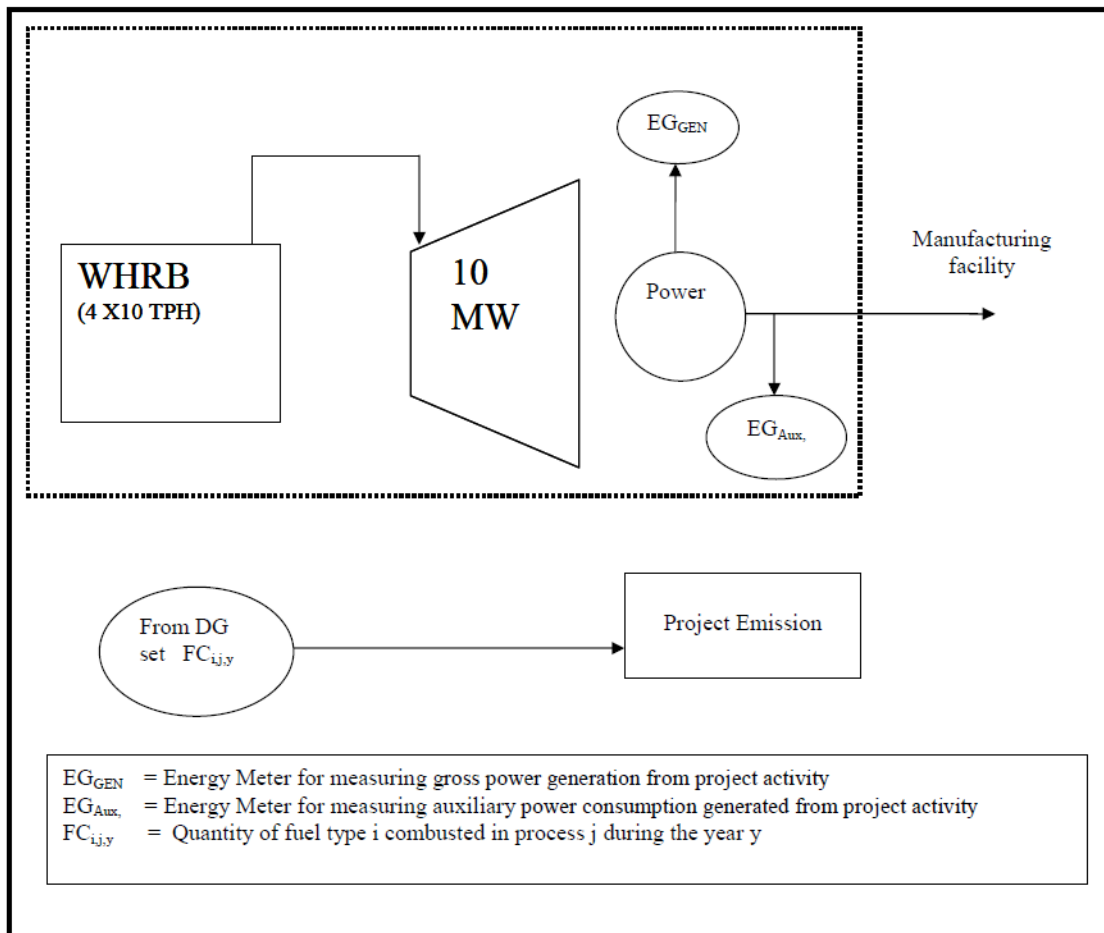
**Maintenance of instruments and equipments used in data monitoring:**

The process department is responsible for the proper functioning of the equipments/ instruments and informs the concerned department for corrective action if found not operating as required. Corrective action is taken by the concerned department and a report on corrective action taken is maintained as done time to time along with the details of problems rectified.

**Report generation on monitoring:**

After verification of the data and due diligence on accuracy if required an annual report on monitoring and estimations shall be maintained by the CDM team and record to this effect is maintained for verification.

All relevant monitoring points for the proposed project are depicted in the diagram below:



**SECTION D. Data and parameters**

**D.1. Data and parameters fixed ex ante or at renewal of crediting period**

<b>Data/parameter:</b>	-
Unit	-
Description	-
Source of data	-
Value(s) applied)	-
Choice of data or measurement methods and procedures	-
Purpose of data	-
Additional comments	-

In the proposed project all the parameters, required for Emission reduction calculation, have to be monitored since no parameter was fixed ex-ante

**D.2. Data and parameters monitored**

<b>Data/parameter:</b>	EG <sub>y</sub>
Unit	MWh
Description	Net power supplied to manufacturing facility due to waste heat recovery



Measured/calculated/default	Calculated
Source of data	Plant operation data on gross power generation and auxiliary consumption by project activity
Value(s) of monitored parameter	159,473.85 Please refer excel sheet for monthly data
Monitoring equipment	Not Applicable
Measuring/reading/recording frequency:	Recording frequency: Monthly
Calculation method (if applicable):	Calculated based on daily gross power generation and auxiliary power consumption in the power generation plant. The calculation formula is as follows: $EG_{Y} = EG_{GEN} - EG_{AUX}$ Where, $EG_{Y}$ = Net power generation from turbine $EG_{GEN}$ = Gross power generation from turbine $EG_{AUX}$ = Auxiliary power consumption in power generation plant
QA/QC procedures:	Not Applicable
Purpose of data:	For baseline emission calculations
Additional comments:	-

<b>Data/parameter:</b>	EG <sub>GEN</sub>													
Unit	MWh													
Description	Gross power generation from project activity													
Measured/calculated/default	Measured													
Source of data	Plant operation data on power generation in project activity taken from energy meters installed at project site													
Value(s) of monitored parameter	175237.36 Please refer excel sheet for monthly data													
Monitoring equipment	Type of Meter: Energy Meter Accuracy Class: 0.2s Calibration Frequency: Yearly													
	<table border="1"> <thead> <tr> <th colspan="2">Calibration Dates</th> <th>Validity</th> </tr> </thead> <tbody> <tr> <td>9142129</td> <td>10/04/2012, 09/05/2013,06/05/2014,15/05/2015 and 19/09/2016</td> <td>18/09/2017</td> </tr> <tr> <td>7022891</td> <td>11/06/2012, 19/06/2013,24/06/2014 and 19/09/2016</td> <td>18/09/2017</td> </tr> <tr> <td>7022878</td> <td>23/10/2015</td> <td>22/10/2016</td> </tr> </tbody> </table>		Calibration Dates		Validity	9142129	10/04/2012, 09/05/2013,06/05/2014,15/05/2015 and 19/09/2016	18/09/2017	7022891	11/06/2012, 19/06/2013,24/06/2014 and 19/09/2016	18/09/2017	7022878	23/10/2015	22/10/2016
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Measuring/reading/recording frequency:	Measuring frequency: Continuous Recording frequency: Hourly													
Calculation method (if applicable):	Not Applicable													
QA/QC procedures:	Energy meter is calibrated as per schedule.													
Purpose of data:	For baseline emission calculations													
Additional comments:	The data will be archived for crediting period + 2 years.													

<b>Data/parameter:</b>	EG <sub>AUX</sub>																							
Unit	MWh																							
Description	Auxiliary power consumption in project activity																							
Measured/calculated/default	Measured																							
Source of data	Plant operation data on power consumption by project activity taken from energy meters installed at project site.																							
Value(s) of monitored parameter	15,763.51 Please refer excel sheet for monthly data																							
Monitoring equipment	Type of Meter: Energy Meter Accuracy Class: 0.2s Calibration Frequency: Yearly  <table border="1"> <thead> <tr> <th colspan="2">Calibration Dates</th> <th>Validity</th> </tr> </thead> <tbody> <tr> <td>9141998</td> <td>02/04/2012, 30/04/2013, 07/05/2014, 14/05/2015 and 22/04/2016</td> <td>21/04/2017</td> </tr> <tr> <td>7022884</td> <td>12/06/2012, 17/06/2013, 24/06/2014 and 19/09/2016</td> <td>18/09/2017</td> </tr> <tr> <td>7022875</td> <td>23/10/2015</td> <td>22/10/2016</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Operational Schedule</th> <th>Reason for removal</th> </tr> </thead> <tbody> <tr> <td>9141998</td> <td>01/01/2013 to 04/04/2013 03/06/2013 to 19/04/2014 30/05/2014 to 28/04/2015 07/06/2015 to 20/04/2016 25/04/2016 to 19/09/2016</td> <td rowspan="3">Scheduled calibration or maintenance</td> </tr> <tr> <td>7022884</td> <td>04/04/2013 to 03/06/2013 19/04/2014 to 30/05/2014 28/04/2015 to 07/06/2015 19/09/2016 to 30/09/2016</td> </tr> <tr> <td>7022875</td> <td>20/04/2016 to 25/04/2016</td> </tr> </tbody> </table>		Calibration Dates		Validity	9141998	02/04/2012, 30/04/2013, 07/05/2014, 14/05/2015 and 22/04/2016	21/04/2017	7022884	12/06/2012, 17/06/2013, 24/06/2014 and 19/09/2016	18/09/2017	7022875	23/10/2015	22/10/2016	Operational Schedule		Reason for removal	9141998	01/01/2013 to 04/04/2013 03/06/2013 to 19/04/2014 30/05/2014 to 28/04/2015 07/06/2015 to 20/04/2016 25/04/2016 to 19/09/2016	Scheduled calibration or maintenance	7022884	04/04/2013 to 03/06/2013 19/04/2014 to 30/05/2014 28/04/2015 to 07/06/2015 19/09/2016 to 30/09/2016	7022875	20/04/2016 to 25/04/2016
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7022875	20/04/2016 to 25/04/2016																							
Measuring/reading/recording frequency:	Measuring frequency: Continuous Recording frequency: Monthly																							
Calculation method (if applicable):	Not Applicable																							
QA/QC procedures:	Energy meter is calibrated as per schedule. There is delay in calibration frequency observed and conservatively PP applied error factor in auxiliary power for the delayed calibration period for the entire month to retain conservativeness.																							
Purpose of data:	For baseline emission calculations																							
Additional comments:	The data will be archived for crediting period + 2 years.																							

<b>Data/parameter:</b>	EF <sub>electricity,y</sub>
Unit	tCO <sub>2</sub> / MWh
Description	CO <sub>2</sub> baseline emission factor for the electricity displaced due to the project activity in year y
Measured/calculated/default	Calculated
Source of data	CEA Baseline Carbon Dioxide Emission Database/ Version 11.

Value(s) of monitored parameter	2012-13 - 0.9729 2013-14 – 0.9720 2014-15 and 2015-16 and 2016-17 (till Sept 2016) - 0.9613  The parameter “EF <sub>electricity,y</sub> ” is being taken as per CEA Database Version 11 for the respective years and for year 2015-16 and year 2016-17 (till Sept 2016), the latest available EF (0.9613) has been used for baseline emission calculations. The year wise EF calculations has been shown transparently in the ER Sheet
Monitoring equipment	Not Applicable
Measuring/reading/recording frequency:	Frequency of monitoring: Yearly
Calculation method (if applicable):	Not Applicable
QA/QC procedures:	This is reliable data as it has been estimated by Central Electricity Authority, which has access to data on power generation from all the power plants in a grid and is therefore reliable
Purpose of data:	For baseline emission calculations
Additional comments:	The data will be archived for crediting period + 2 years.

<b>Data/parameter:</b>	EF <sub>OM,y</sub>
Unit	tCO <sub>2</sub> / MWh
Description	CO <sub>2</sub> Operating Margin emission factor for the grid
Measured/calculated/default	Calculated
Source of data	CEA Baseline Carbon Dioxide Emission Database/ Version 11.
Value(s) of monitored parameter	2012-13 - 0.9767 2013-14 – 0.9891 2014-15 and 2015-16 and 2016-17 (till Sept 2016) - 0.9941 The parameter “EF <sub>OM,y</sub> ” is being taken as per CEA Database Version 11 for the respective years and for year 2015-16 and year 2016-17 (till Sept 2016), the latest available OM (0.9941) has been used for baseline emission calculations. The year wise EF calculations has been shown transparently in the ER Sheet
Monitoring equipment	Not Applicable
Measuring/reading/recording frequency:	Frequency of monitoring: Yearly
Calculation method (if applicable):	Not Applicable
QA/QC procedures:	This is reliable data as it has been estimated by Central Electricity Authority, which has access to data on power generation from all the power plants in a grid and is therefore reliable
Purpose of data:	For baseline emission calculations
Additional comments:	The data will be archived for crediting period + 2 years

<b>Data/parameter:</b>	EF <sub>BM,y</sub>
Unit	tCO <sub>2</sub> / MWh
Description	CO <sub>2</sub> Build Margin emission factor for the grid
Measured/calculated/default	Calculated
Source of data	Baseline Carbon Dioxide Emission Database/ Version 11.

Value(s) of monitored parameter	2012-13 - 0.9692 2013-14 – 0.9550 2014-15 and 2015-16 and 2016-17 (till Sept 2016) - 0.9285  The parameter “EF <sub>BM,y</sub> ” is being taken as per CEA Database Version 11 for the respective years and for year 2015-16 and year 2016-17 (till Sept 2016), the latest available BM (0.9285) has been used for baseline emission calculations. The year wise EF calculations has been shown transparently in the ER Sheet
Monitoring equipment	Not Applicable
Measuring/reading/recording frequency:	Frequency of monitoring: Yearly
Calculation method (if applicable):	Not Applicable
QA/QC procedures:	This is reliable data as it has been estimated by Central Electricity Authority, which has access to data on power generation from all the power plants in a grid and is therefore reliable
Purpose of data:	For baseline emission calculations
Additional comments:	The data will be archived for crediting period + 2 years

<b>Data/parameter:</b>	FC <sub>i,j,y</sub>
Unit	litre
Description	Quantity of diesel combusted in process j during the year y
Measured/calculated/default	Measured
Source of data	Onsite measurements
Value(s) of monitored parameter	3,893.75 Please refer excel sheet for monthly data
Monitoring equipment	Type of Meter: Flow Meter Make and Serial Number- Kent Oil Meter, 10-096 Accuracy Class: ±0.5% Calibration Frequency: Yearly Date of Calibration: 21/07/2012, 31/08/2013, 25/08/2014, 26/09/2015 & 17/10/2016 Validity: 16/10/2017
Measuring/reading/recording frequency:	Frequency of Monitoring: Continuously (as and when consumed) Frequency of recording : Daily (as and when consumed)
Calculation method (if applicable):	The volume of diesel consumed at plant site has monitored using flow meter reading. However in the absence of flow meter the volume of diesel consumed at plant site was measured via volumetric graduated container. The container used for storing diesel has volumetric graduations hence, the level difference before and after the usage provides quantity of diesel consumed in litres.
QA/QC procedures:	The diesel consumption data can be cross checked with store slips provided against issuance of diesel. Both volumetric container and flow meter are calibrated at regular interval. There is delay in calibration frequency observed and conservatively PP applied error factor as per accuracy class of the meter for the delayed calibration period for the entire month to retain conservativeness.
Purpose of data:	For Project emission calculations
Additional comments:	The data will be archived for crediting period + 2 years

<b>Data/parameter:</b>	NCV <sub>i,y</sub>
Unit	TJ/ l
Description	Weighted average net calorific value of diesel in year y

Measured/calculated/default	Measured
Source of data	The value would be measured as per the option (b) mentioned in the “Tool to calculate project or leakage CO <sub>2</sub> emissions from fossil fuel combustion” version: 02, EB: 41 since, the values for NCV are not provided by the supplier in invoices as required by the preferred option (a) of the tool. The NCV of the diesel has been measured by Laboratory tests. The test reports of the same would be made available during the verification
Value(s) of monitored parameter	0.0000372 Please refer excel sheet for monthly data
Monitoring equipment	Not Applicable, since the value is measured via third party (Laboratory) tests
Measuring/reading/recording frequency:	Frequency of monitoring: The NCV would be obtained for each fuel delivery, from which weighted average annual values would be calculated
Calculation method (if applicable):	The measurement for Net Calorific Value of the diesel would be in line with national or international fuel standard. The parameter would be monitored in the unit of kcal/l which would be converted to kJ/l by multiplying it with the conversion factor of calories to joule i.e. 4.1868
QA/QC procedures:	This parameter would be measured via third party (Laboratory) tests and the test report for the same would be made available during the verification process
Purpose of data:	For baseline emission calculations
Additional comments:	The data will be archived for crediting period + 2 years

<b>Data/parameter:</b>	EF <sub>CO<sub>2</sub>,i,y</sub>
Unit	tCO <sub>2</sub> / TJ
Description	Weighted average CO <sub>2</sub> emission factor of the diesel in year y.
Measured/calculated/default	Default
Source of data	The option (d) of “Tool to calculate project or leakage CO <sub>2</sub> emissions from fossil fuel combustion” version: 02, EB: 41 i.e IPCC default values at the upper limit of the uncertainty at a 95 % confidence interval as provided in table 1.4 of chapter 1 of Vol.2 (Energy) of the 2006 IPCC Guidelines on Nation GHG Inventories since, the fuel supplier does not provide the CO <sub>2</sub> emission factor on the invoices as required by the preferred option (a) of the tool.
Value(s) of monitored parameter	74.80
Monitoring equipment	Not Applicable since, the parameter is taken from IPCC default values as local data is not available
Measuring/reading/recording frequency:	Frequency of monitoring – Data would be reviewed annually and any future revision of the IPCC Guidelines would be taken into account
Calculation method (if applicable):	IPCC default value
QA/QC procedures:	No QA/QC necessary for this data item.
Purpose of data:	For project emission calculations
Additional comments:	-

### D.3. Implementation of sampling plan

Not Applicable

## SECTION E. Calculation of emission reductions or GHG removals by sinks

**E.1. Calculation of baseline emissions or baseline net GHG removals by sinks**

The baseline emissions are calculated as per below mentioned formula:

$$BE_{electricity,y} = EG_y \cdot EF_{electricity,y}$$

Where,

$EG_y$  = Net quantity of electricity supplied to the manufacturing facility by the project during the year  $y$ ; (MWh)

$EF_y$  = CO<sub>2</sub> baseline emission factor for the electricity displaced due to the project activity during the year  $y$ ; (tCO<sub>2</sub>/MWh)

CO<sub>2</sub> baseline emission factor in the baseline scenario is determined to be grid power supply; the Emissions Factor for displaced electricity is calculated as described in methodology ACM0002.

Sample baseline emission calculation for the month of Jan-2013 is being shown below:

$$\begin{aligned} \text{Baseline Emissions (Jan-2013)} &= 3914.96 \cdot 0.9729 \\ &= 3,809 \text{ tCO}_2 \end{aligned}$$

Please note, as  $EF_y$  being not fixed for the entire monitoring period, there is variation in baseline emissions for every month. For detailed calculations for the entire monitoring period, please refer ER Sheet.

**E.2. Calculation of project emissions or actual net GHG removals by sinks**

The project emissions are calculated as per below mentioned formula:

$$PE_{FC,i,j,y} = \sum_i FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}$$

Where,

$PE_y$  = Project emissions in year  $y$  (tCO<sub>2</sub>)

$FC_{i,j,y}$  = Mass or volume unit of fuel  $i$  consumed (t or m<sup>3</sup> or kL)

$NCV_{i,y}$  = Net calorific value per mass or volume unit of fuel  $i$  (TJ/t or m<sup>3</sup> or kL)

$EF_{CO_2,i,y}$  = Carbon emissions factor per unit of energy of the fuel  $i$  (tC/TJ)

$$\begin{aligned} \text{Project Emissions (for Jan-2013)} &= 31 \cdot 0.0000369 \cdot 1 \cdot 74.8 \\ &= 0.09 \text{ tCO}_2 \end{aligned}$$

For detailed calculations for the entire monitoring period, please refer ER Sheet.

**E.3. Calculation of leakage**

Not Applicable

**E.4. Summary of calculation of emission reductions or net GHG removals by sinks**

Item	Baseline emissions or baseline net GHG removals by sinks (t CO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (t CO <sub>2</sub> e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
<b>Total</b>	153,772	11	0	0	153,762	153,762

**E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD**

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	167,091	153,762

**E.6. Remarks on difference from estimated value in registered PDD**

CER's generated are on lower as compared due to registered PDD because, in actual case the PLF is on lower side and also plant suffered maintenance breakdown due to which there is decrease in the electricity generation and not in control of PP. The actual ER are 8% less than estimated ERs for current monitoring period. Thus no any further explanation is required.

## Appendix 1. Contact information of project participants and responsible persons/entities

<b>Project participant and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	Kamachi Sponge & Power Corporation Limited
<b>Street/P.O. Box</b>	Old No. 50, New No. 39, Anna Salai
<b>Building</b>	ABC Trade Centre, IIIrd Floor
<b>City</b>	Chennai
<b>State/region</b>	Tamilnadu
<b>Postcode</b>	600 002
<b>Country</b>	India
<b>Telephone</b>	044-42961100/42961108
<b>Fax</b>	044-42961122
<b>E-mail</b>	
<b>Website</b>	
<b>Contact person</b>	
<b>Title</b>	Director
<b>Salutation</b>	Mr.
<b>Last name</b>	Kothari
<b>Middle name</b>	
<b>First name</b>	Vinod
<b>Department</b>	
<b>Mobile</b>	
<b>Direct fax</b>	
<b>Direct tel.</b>	
<b>Personal e-mail</b>	



<b>Project participant and/or responsible person/ entity</b>	<input type="checkbox"/> Project participant <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	EKI Energy Services Limited
<b>Street/P.O. Box</b>	Plot 48, Scheme 78, Part- 2, Vijay Nagar
<b>Building</b>	Enking Embassy
<b>City</b>	Indore
<b>State/region</b>	Madhya Pradesh
<b>Postcode</b>	452010
<b>Country</b>	India
<b>Telephone</b>	+91 731 4289086
<b>Fax</b>	+91 731 4289086
<b>E-mail</b>	<a href="mailto:bhaskar@enkingint.org">bhaskar@enkingint.org</a>
<b>Website</b>	<a href="http://www.enkingint.org">www.enkingint.org</a>
<b>Contact person</b>	Bhaskar Dutta
<b>Title</b>	Manager
<b>Salutation</b>	Mr.
<b>Last name</b>	Dutta
<b>Middle name</b>	
<b>First name</b>	Bhaskar
<b>Department</b>	CDM Services
<b>Mobile</b>	+91 9109916710
<b>Direct fax</b>	+91 731 4289086
<b>Direct tel.</b>	+91 731 4289086
<b>Personal e-mail</b>	<a href="mailto:bhaskar@enkingint.org">bhaskar@enkingint.org</a>

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### Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		