



**Monitoring report form**  
**(Version 05.1)**

*Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.*

**MONITORING REPORT**

<b>Title of the project activity</b>	Shenmu County Hengsheng Coal Chemical Co., Ltd. 30MW Semi-coke Waste Gas Power Generation Project	
<b>UNFCCC reference number of the project activity</b>	4140	
<b>Version number of the monitoring report</b>	Version 1.0	
<b>Completion date of the monitoring report</b>	07/03/2016	
<b>Monitoring period number and duration of this monitoring period</b>	2 <sup>nd</sup> monitoring period from 01/08/2012 to 31/12/2012	
<b>Project participant(s)</b>	Shenmu County Hengsheng Coal Chemical Co., Ltd.	
<b>Host Party</b>	People's Republic of China	
<b>Sectoral scope(s)</b>	Sectoral scope 1: Energy Industries and Scope 4, Manufacture Industry	
<b>Selected methodology(ies)</b>	ACM0012 "Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects (ACM0012 version 03.2)"	
<b>Selected standardized baseline(s)</b>	NA	
<b>Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD</b>	51,430	
<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
	50,344	0

## SECTION A. Description of project activity

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

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The purpose of the project is to recover waste tail gas from the semi-coke plant for electricity generation which will be delivered to Northwest China Power Grid. The project activity involves installation of two 75t/h gas-fired boilers, two 15MW condensing steam turbines and generators. The waste gas from the semi-coke plant is transformed into steam in two gas-fired boilers and generates power by two condensing steam turbines & generators. The electricity generated is supplied to the Yulin power grid, which is connected to the Northwest China Power Grid through Shaanxi power grid, which is dominated by fossil fuel-fired power plants. Thus, the implementation of the project activity helps to reduce the greenhouse gas (CO<sub>2</sub>) Emissions.

The first generator of the project activity was put into commercial operation on March 13<sup>th</sup> 2011 and the second generator was put into operation on March 18<sup>th</sup> 2011. During the second monitoring period (01/08/2012 – 31/12/2012), the total emission reductions achieved is: 50,344 tCO<sub>2</sub>e.

### A.2. Location of project activity

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The project activity is located in the Ningtiaota Industry Zone, Sunjiacha Town, Shenmu County, P. R. China. The latitude is N39°00'12", and the longitude is E110°14'55". The maps below show the location of the project activity.



Figure 1: The location of the Shaanxi Province in China



Figure 2 The proposed project activity in Shenmu County

### 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)
People's Republic of China (host)	Private entity: Shenmu County Hengsheng Coal Chemical Co., Ltd.	No
...	...	

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

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The methodology applied to the Project is ACM0012 “Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects (ACM0012 version 03.2)”

<http://cdm.unfccc.int/UserManagement/FileStorage/0M4N9567GH1J7UAJ89YNQ299K1MYSI>

The grid emission factor is calculated using the “Tool to calculate the emission factor for an electricity system” (Version 02)

<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.pdf>

The “Tool for the demonstration and assessment of additionality (version 05.2)” are also applied to the project as required by the methodology ACM0012 version 03.2).

<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf>

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

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The fixed crediting period is adopted in the project activity. And the crediting period of the project activity is: 09/02/2011—08/02/2021.

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

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Name of persons/entities: Shenmu Jingyuan Clean Development Co., Ltd.

Address: No. 501, Flat 2, Power Bureau, South Area, Dongxing Street, Shenmu County, Shanxi Province, China

Tel: 0912-8322320

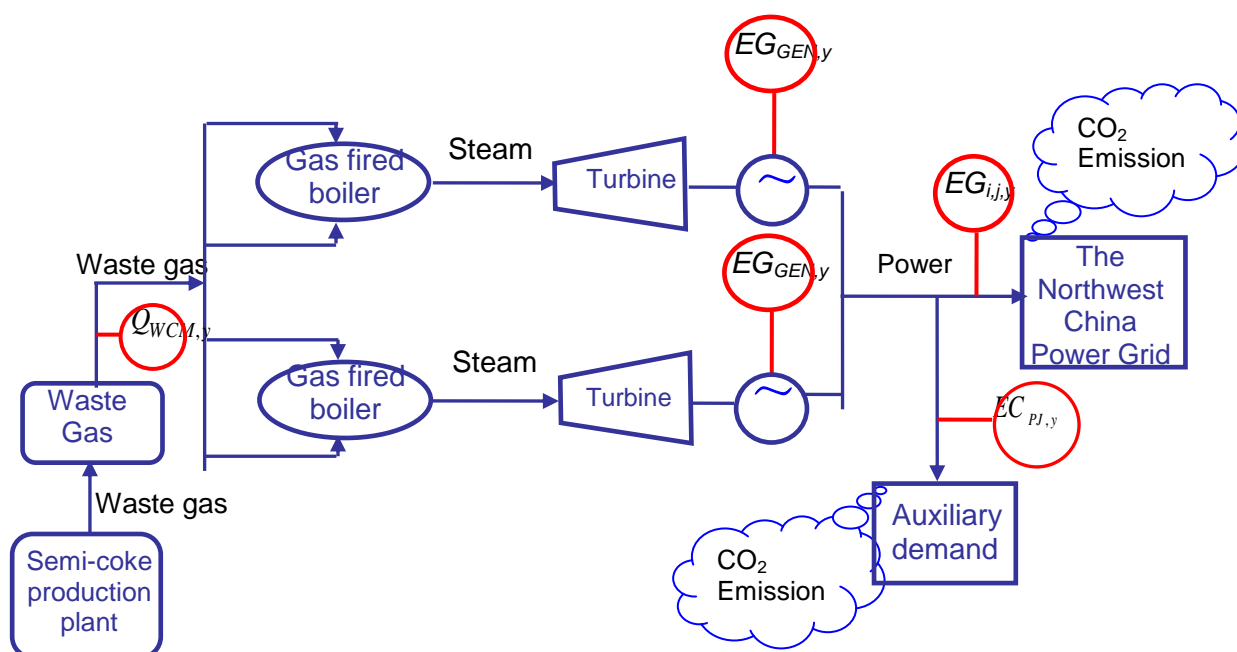
Email: liuzhongqiang8@163.com

**SECTION B. Implementation of project activity****B.1. Description of implemented registered project activity**

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The project activity consists of one site and has been implemented as described in the registered PDD. The start date of the project activity is 30/04/2009, when the boilers purchase contract was signed. The first generator was put into commercial operation on March 13<sup>th</sup> 2011 and the second generator was put into operation on March 18<sup>th</sup> 2011. During this monitoring period, there are no events or situations that occurred which may impact the applicability of the methodology.

The proposed project activity recovers waste gas from semi-coke plant for power generation and the electricity generated will be exported to the Northwest China Power Grid. The waste gas from semi-coke production process is diverted by an overhead pipeline from the tail gas outlet into the main pipe outside the boiler room, and then it is transported into the boiler by the branch pipe as fuel gas. The project activity involves the installation of two 75t/h boilers and two 15MW condensing turbine& generators. The electricity will be supplied to the Yulin Power Grid through the transformer. The Yulin power grid is the sub-grid of the Northwest Power Grid. The main process of the project activity can be seen in following figure (The main monitoring parameters are also indicated in the figure):



The key technical indicators<sup>1</sup> of the boilers, turbines and generators of the Project are listed in the following table.

<b>Boiler</b>	<b>Turbine</b>	<b>Generator</b>
Model type: NG-75/3.82-Q Rated steam generation capacity: 75 t/h Rated steam pressure: 3.82 MPa Rated steam temperature: 450°C	Type: Condensing turbine Model type: N15-3.43 Rated power: 15MW Intake steam temperature: 435°C Intake steam pressure: 3.43 MPa	Model type: QF-15-2 Rated power: 15MW Rated Voltage: 10.5KV

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

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

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N/A

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

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N/A

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

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N/A

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

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N/A

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

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N/A

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

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N/A

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

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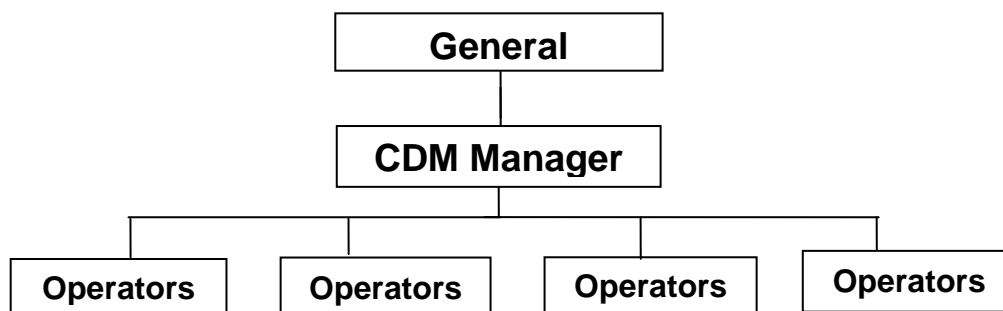
N/A

## **SECTION C. Description of monitoring system**

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<sup>1</sup> Reference to the nameplates and technical agreements of the boilers, turbines and generators.

**Organizational structure, roles and responsibilities of personnel:****(1) Responsibility of General Manager:**

All the affairs related to CDM project monitoring is managed by general manager.

**(2) Responsibility of CDM Manager:**

In charge of Meters calibration and training affairs; Check the daily operation report forms; Archive emergency situation disposal report.

**(3) Responsibility of operators:**

In charge of data supervision, identification, and archiving; Executive emergency plan; Draft operation report forms and emergency situation disposal report.

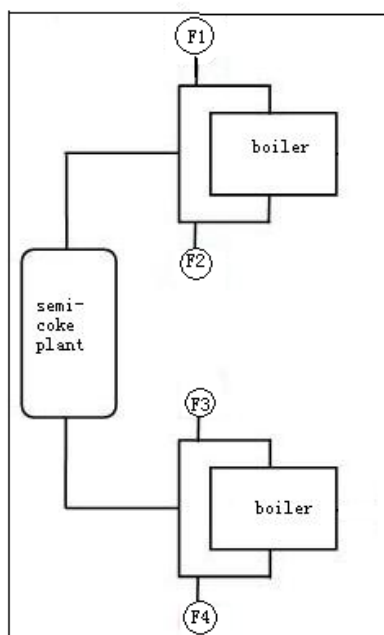
**Monitoring system:****(1) Monitoring of Electricity supply and consumption by the project activity**

Electricity meters are installed to measure the quantity of electricity generation by the proposed project activity and the net quantity of electricity supplied to Northwest China Power Grid. Meter M1 and M2 are installed at the exit of the power generation plant for monitoring the electricity generation; Meters M3 and M4 are installed at the power generation plant for monitoring the auxiliary consumption of the project activity; Meter M5 and M6 are installed at the substation to measure the electricity supplied to the grid by the project activity and the electricity consumption by the proposed project activity from the grid, which are the main electricity meters for emission reduction calculation. The accumulated electricity data are shown on the DCS system. (see the diagram below)

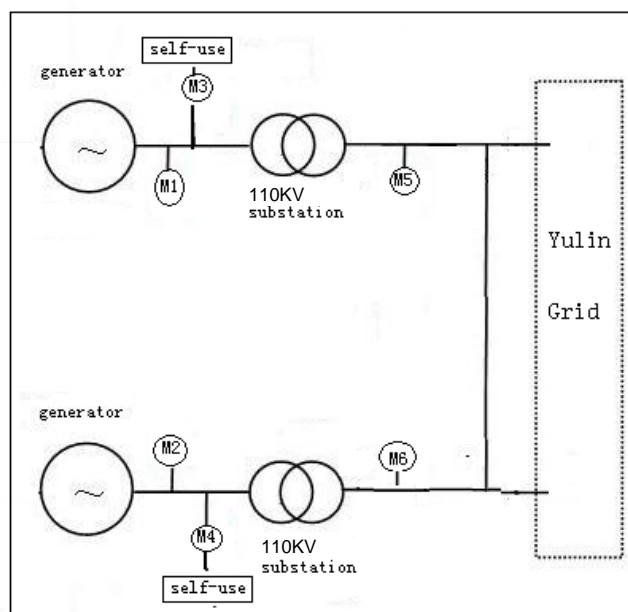
**(2) Monitoring of waste gas for power generation**

Meter F1, F2, F3 and F4 are installed at the entrance to the gas fired boilers to measure the quantity of waste gas that supplies for power generation. (see the diagram below)





1, monitoring of waste gas



2, monitoring of electricity

### Monitoring diagram

#### Data generation, aggregation, recording, calculation and reporting:

The site operators are in charge of reading and recording the meters, and the accumulated data on electricity meters and gas flow meters will be recorded per month and aggregated into monthly report. The monthly report will be checked and the emission reductions will be calculated by CDM project manager. The electricity sales receipts or invoices are used for crosscheck. The records will be kept for two years after the end of the crediting period or the last issuance of CERs.

#### Emergency procedures for the monitoring system:

In case meters for monitoring electricity supplied to the grid are out of work, the difference between the data of electricity generation ( $EG_{GEN,y}$ ) and auxiliary consumption ( $EC_{PJ,y}$ ) will be used for backup data. If the discrepancies between the sale receipts and the meters occur, conservative method will be used and the method will be agreed by the grid company and the project owner.

When main meters are on calibration or out of work, calibrated backup meters are to be used and the data in the calibration or malfunction period measured by backup meters are used to calculate the emission reduction. The starting time and the ending time should be recorded carefully; and the report needs to be archived and provided to DOE.

When the waste gas provision is paused and the starting and ending time should be recorded carefully and the emission reductions during this period will not be included.

## **SECTION D. Data and parameters**

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

(Copy this table for each piece of data and parameter)

Data/parameter:	$Q_{WCM,BL}$
Unit	Nm <sup>3</sup> (It is an appropriate unit for gas.)
Description	Average quantity of waste energy released in atmosphere by WECM in three years prior to the start of the project activity.
Source of data	Independent certified external process experts
Value(s) applied)	$4.35 \times 10^8$ Nm <sup>3</sup> per year

Choice of data or measurement methods and procedures	As three years historical data is not available, the method of estimated based on information provided by the technology supplier on the waste gas generation per unit of product and volume or quantity of production is used.
Purpose of data	The data is used for baseline emission calculation.
Additional comments	<p>Given that this value is monitored only for the purpose of capping the emission reduction, its unit can be in Nm<sup>3</sup> rather than kg, provided that it is compared with values in the similar unit. Given that the flow meters provide measure in Nm<sup>3</sup>, this unit is considered more appropriate, rather than kg, which would require the intermediate estimate/measurement of the gas density. Furthermore, It is noticed that this value is used in the proportion calculation equation of f<sub>cap</sub>,</p> $f_{cap} = \frac{Q_{WCM,BL}}{Q_{WCM,y}} = \frac{Mass_{BL}}{Mass_y} = \frac{Volume_{BL} \times density(at\ NTP)}{Volume_y \times density(at\ NTP)} = \frac{Volume_{BL}}{Volume_y}$ <p>The unit of the numerator and denominator should be kept the same and it can reduce a fraction to the lowest terms if the same parts exist. In this case, mass unit of gas equals to volume multiplies with density at NTP<sup>2</sup>. If the temperature and pressure are the same, the density of the gas is the same. Then reduction of a fraction upon the density can be done. In the proposed project activity, the data showed in the flow meters are the value under the normal temperature and pressure condition, which is the same as the situation where the quantity of waste gas estimated in the baseline scenario. Hence in this case, monitoring mass unit is equivalent to monitoring volume at normal temperature and pressure. And the volume at NTP will be monitored and Nm<sup>3</sup> is appropriate unit.<sup>3</sup></p>

Data/parameter:	$Q_{BL,product}$
Unit	Tons/yr
Description	Production associated with the relevant waste energy generation as it occurs in the baseline scenario. The minimum of the following two figures should be used: (1) historical production data from start-up, if plant operational history is less than three years, of the plant or (2) the most relevant manufacture's data for normal operating conditions. In case of new facilities or where data is not available the manufacture's data for normal operating conditions shall be used.
Source of data	Manufacture's data
Value(s) applied)	900,000
Choice of data or measurement methods and procedures	The production statistics from Hengsheng Company during the latest 12 months is higher than the amount of 900 kt/yr designed for normal operating condition by the design institute of semi-coke facilities. So the production of 900kt/yr can be determined as $Q_{BL,product}$ for Hengsheng Company.
Purpose of data	The data is used for baseline emission calculation.
Additional comments	For this project activity, the manufacture's data for normal operating conditions is used.

<sup>2</sup> NTP means Normal Temperature and Pressure

<sup>3</sup> [http://www.chinaflow.com.cn/basic/jiliang\\_11.HTM](http://www.chinaflow.com.cn/basic/jiliang_11.HTM)



<b>Data/parameter:</b>	$q_{wcm, product}$
Unit	Nm <sup>3</sup> /Ton
Description	Specific waste gas production per unit of product (departmental or plant product which most logically relates to waste gas generation) generated as per manufacturer's or external expert's data. This parameter should be analyzed for each modification in process which can potentially impact the waste gas quantity.
Source of data	Manufacture's data
Value(s) applied)	483.3
Choice of data or measurement methods and procedures	As the method 2 is used in this case, the source of data and calculation are in line with the method 2 in the methodology.
Purpose of data	The data is used for baseline emission calculation.
Additional comments	For this project activity, the manufacturer's data is used.

<b>Data/parameter:</b>	$EF_{ELec,i,j,y}$
Unit	tCO <sub>2</sub> /MWh
Description	CO <sub>2</sub> emission factor of the Northwest China Power Grid, displaced due to the project activity, during the year <i>y</i> .
Source of data	Data issued by China's DNA
Value(s) applied)	0.83395
Choice of data or measurement methods and procedures	Official Data
Purpose of data	The data is used for baseline emission calculation.
Additional comments	Official Data

## D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter)

<b>Data/parameter:</b>	$Q_{WCM,y}$
Unit	Nm <sup>3</sup>
Description	Quantity of waste gas used for energy generation during year <i>y</i>
Measured/calculated/default	Measured
Source of data	Meter records
Value(s) of monitored parameter	1.622817 *10 <sup>8</sup>

Monitoring equipment	Flow meter								
	Meter	F1	F2	F3	F4				
	Type	PDS443H-1DS0-B1DA/G61	PDS443H-1DS0-B1DA/G61	PDS443H-1DS0-B1DA/G61	PDS443H-1DS0-B1DA/G61				
	Accuracy	1.0	1.0	1.0	1.0				
	Serial number	4410103847	4410103849	4410103848	4410103850				
	Calibration frequency	annual	annual	annual	annual				
	Calibration date and validity	Calibration:26/01/2012 validity: to 25/01/2013							
	Calibrated by Qualified.Entity								
Measuring/reading/recording frequency:	Continuous measurement, monthly recording.								
Calculation method (if applicable):	The quantity of waste gas used in the power generation equals to sum of F1, F2, F3 and F4.								
QA/QC procedures:	Flow Meter will be calibrated periodically according to relative national standards and regulations. And the accuracy level of the flow meters shall also meet the requirement of the relevant national standards or regulations.								
Purpose of data:	The data is used for baseline emission calculation.								
Additional comments:	<p>Given that this value is monitored only for the purpose of capping the emission reduction, its unit can be in Nm<sup>3</sup> rather than kg, provided that it is compared with values in the similar unit. Given that the flow meters provide measure in Nm<sup>3</sup>, this unit is considered more appropriate, rather than kg, which would require the intermediate estimate/measurement of the gas density. Furthermore, It is noticed that this value is used in the proportion calculation equation of fcap,</p> $f_{cap} = \frac{Q_{WCM,BL}}{Q_{WCM,y}} = \frac{Mass_{BL}}{Mass_y} = \frac{Volume_{BL} \times density(at NTP)}{Volume_y \times density(at NTP)} = \frac{Volume_{BL}}{Volume_y}$ <p>The unit of the numerator and denominator should be kept the same and it can reduce a fraction to the lowest terms if the same parts exist. In this case, mass unit of gas equals to volume multiplies with density at NTP<sup>4</sup>. If the temperature and pressure are the same, the density of the gas is the same. Then reduction of a fraction upon the density can be done. In the proposed project activity, the data showed in the flow meters are the value under the normal temperature and pressure condition, which is the same as the situation where the quantity of waste gas estimated in the baseline scenario. Hence in this case, monitoring mass unit is equivalent to monitoring volume at normal temperature and pressure. And the volume at NTP will be monitored and Nm<sup>3</sup> is appropriate unit<sup>5</sup>)</p>								

Data/parameter:	$EG_{i,j,y}$
Unit	MWh

<sup>4</sup> NTP means Normal Temperature and Pressure

<sup>5</sup> [http://www.chinaflow.com.cn/basic/jiliang\\_11.HTM](http://www.chinaflow.com.cn/basic/jiliang_11.HTM)

Description	Quantity of net electricity supplied by the project activity during the year y in MWh																								
Measured/calculated/default	Measured																								
Source of data	Meter records																								
Value(s) of monitored parameter	60,368.20																								
Monitoring equipment	<table border="1"> <tr> <td colspan="3">Gateway meter</td></tr> <tr> <td>Meter</td><td>M5</td><td>M6</td></tr> <tr> <td>Type</td><td>DTSD2818-BR</td><td>DTSD2818-BR</td></tr> <tr> <td>Accuracy</td><td>0.2s</td><td>0.2s</td></tr> <tr> <td>Serial number</td><td>4141510295</td><td>4141510298</td></tr> <tr> <td>Calibration frequency</td><td>Annual</td><td>Annual</td></tr> <tr> <td>Calibration date and validity</td><td colspan="2">Calibration: 01/02/2012 Validity: to 31/01/2017</td></tr> <tr> <td colspan="3">Calibrated by Qualified Entity.</td></tr> </table>	Gateway meter			Meter	M5	M6	Type	DTSD2818-BR	DTSD2818-BR	Accuracy	0.2s	0.2s	Serial number	4141510295	4141510298	Calibration frequency	Annual	Annual	Calibration date and validity	Calibration: 01/02/2012 Validity: to 31/01/2017		Calibrated by Qualified Entity.		
Gateway meter																									
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Serial number	4141510295	4141510298																							
Calibration frequency	Annual	Annual																							
Calibration date and validity	Calibration: 01/02/2012 Validity: to 31/01/2017																								
Calibrated by Qualified Entity.																									
Measuring/reading/recording frequency:	Measured continuously, aggregated monthly																								
Calculation method (if applicable):	The value is the sum of electricity supplied to the grid minus the sum of electricity imported from the grid on the meter M5 and M6.																								
QA/QC procedures:	<p>QA/QC for Monitoring Equipment: Calibration procedure: all the electricity meters are calibrated by qualified institution or entity once a year. A calibration report will be provided by the qualified institution or entity and kept by the project owner. CDM manager is responsible for regular calibration of the meter.</p> <p>QA/QC for Data: (1) The project owner cannot unseal electricity meters in the absence of the qualified institution or entity(or its authorized delegates) (2) The project owner will arrange operators recording the data monthly. (3) The running parameters of generators can be used to verify (4) Sales records or purchase receipts are used to ensure the consistency.</p>																								
Purpose of data:	The data is used for baseline emission calculation.																								
Additional comments:																									

<b>Data/parameter:</b>	$EC_{PJ,y}$
Unit	MWh
Description	Additional electricity consumed in year y as a result of the implementation of the project activity. As per the registered PDD, in this case, this parameter represents the auxiliary consumption of the power plant.
Measured/calculated/default	Measured
Source of data	Meter records

Value(s) of monitored parameter	10,395.85																					
Monitoring equipment	<table border="1"> <tr> <td>Meter</td><td>M3</td><td>M4</td></tr> <tr> <td>Type</td><td>DTSD2818-BR</td><td>DTSD2818-BR</td></tr> <tr> <td>Accuracy</td><td>0.2s</td><td>0.2s</td></tr> <tr> <td>Serial number</td><td>4141350743</td><td>4141350741</td></tr> <tr> <td>Calibration frequency</td><td>Annual</td><td>Annual</td></tr> <tr> <td>Calibration date and validity</td><td colspan="2" rowspan="2">Calibration: 02/02/2012 Validity: to 01/02/2017</td></tr> <tr> <td colspan="3">Calibrated by Qualified Entity.</td></tr> </table>	Meter	M3	M4	Type	DTSD2818-BR	DTSD2818-BR	Accuracy	0.2s	0.2s	Serial number	4141350743	4141350741	Calibration frequency	Annual	Annual	Calibration date and validity	Calibration: 02/02/2012 Validity: to 01/02/2017		Calibrated by Qualified Entity.		
Meter	M3	M4																				
Type	DTSD2818-BR	DTSD2818-BR																				
Accuracy	0.2s	0.2s																				
Serial number	4141350743	4141350741																				
Calibration frequency	Annual	Annual																				
Calibration date and validity	Calibration: 02/02/2012 Validity: to 01/02/2017																					
Calibrated by Qualified Entity.																						
Measuring/reading/recording frequency:	Measured continuously, aggregated monthly																					
Calculation method (if applicable):	The value is the sum of data on the meter M3 and M4.																					
QA/QC procedures:	<p>QA/QC for Monitoring Equipment: Calibration procedure: Meters are calibrated by qualified institution or entity once a year. A calibration report will be provided by the qualified institution or entity and kept by Hengsheng Company. CDM manager is responsible for regular calibration of the meter.</p> <p>QA/QC for Data: (1) Hengsheng Company cannot unseal electricity meters in the absence of the qualified institution or entity(or its authorized delegates) (2) Hengsheng Company will arrange operators recording the data monthly.</p>																					
Purpose of data:	The data is used for baseline emission calculation.																					
Additional comments:																						

<b>Data/parameter:</b>	$EG_{GEN,y}$
Unit	MWh
Description	Quantity of electricity generation by the project activity during the year y in MWh
Measured/calculated/default	Measured
Source of data	Meter records
Value(s) of monitored parameter	72,077.52

Monitoring equipment	Gateway meter		
	Meter	M1	M2
	Type	DTSD2818-BR	DTSD2818-BR
	Accuracy	0.2s	0.2s
	Serial number	4141510293	4141510294
	Calibration frequency	Annual	Annual
	Calibration date and validity	Calibration: 01/02/2012 Validity: to 31/01/2017	
	Calibrated by Qualified Entity		
Measuring/reading/recording frequency:	Measured continuously, aggregated monthly		
Calculation method (if applicable):	The value is the sum of electricity data on the meter M1 and M2.		
QA/QC procedures:	The electricity meters will undergo maintenance/calibration to the national relative power industry standards. Electricity meters will be calibrated by Qualified institution or entity once two years and calibration documents will be kept by Hengsheng company.		
Purpose of data:	The data is used for baseline emission calculation.		
Additional comments:			

### D.3. Implementation of sampling plan

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N/A

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

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

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According to the methodology and registered PDD, the baseline emissions calculation is:

$$BE_y = BE_{En,y} = BE_{Elec,y} = f_{cap} * f_{wcm} * \sum_j \sum_i (EG_{i,j,y} * EF_{Elec,i,j,y})$$

Where:

$BE_{Elec,y}$	Are baseline emissions due to displacement of electricity during the year y in tons of CO <sub>2</sub> .
$EG_{i,j,y}$	Is the quantity of electricity supplied to the recipient j by generator, which in the absence of the project activity would have been sourced from ith source (i can be either grid or identified source) during the year y in MWh,
$EF_{Elec,i,j,y}$	Is the CO <sub>2</sub> emission factor for the electricity source i (i=gr (grid) or i=is (identified source)), displaced due to the project activity, during the year y in tons CO <sub>2</sub> /MWh
$f_{wcm}$	Fraction of total electricity generated by the project activity using waste gas. This fraction is 1 if the electricity generation is purely from use of waste gas. If the boiler providing steam for electricity generation uses both waste and fossil fuels, this factor is estimated using equation (1d). If the steam used for generation of the electricity is produced in dedicated boilers but supplied through common header, this factor is estimated using equation (1d/1e). NOTE: For project activity using waste pressure to

	generate electricity, electricity generated from waste pressure use should be measurable and this fraction is 1.
$f_{cap}$	Energy that would have been produced in project year y using waste gas/heat generated in base year expressed as a fraction of total energy produced using waste gas in year y. The ratio is 1 if the waste gas/heat/pressure generated in project year y is same or less than that generated in base year. The value is estimated using equation (1f) or (1g) and (1g-1).

**Calculation of  $f_{WCM}$** 

Since the fuel used in the project activity is purely waste gas and there is no fossil fuels involved,  $f_{WCM}$  equals to 1.

**Calculation of  $f_{cap}$** 

As described in the registered PDD, method 2 is used in the project activity. During this monitoring period,  $1.622817 \times 10^8 \text{ Nm}^3$  waste gas was consumed within 153 days. Hence  $f_{cap}$  is calculated as below:

$$f_{cap} = \frac{Q_{WCM,BL}}{Q_{WCM,y}} = \frac{4.35 \times 10^8 / 365 \times 153}{1.622817 \times 10^8} = \frac{1.823424}{1.622817} = 1.1236 > 1, \text{ according to methodology, } f_{cap} = 1.$$

**Electricity supplied to the Grid**

$$EG_{i,j,y} = M5(+) + M6(+) - M5(-) - M6(-)$$

Where:

M5(+) and M6(+) mean the electricity exported to the grid on the meters M5 and M6.

M5(-) and M6(-) mean the electricity imported from the grid on the meters M5 and M6.

Since there is no malfunction on the Meters M5 and M6 during the monitoring period, the main method in the registered PDD is adopted in the emission reductions calculation. Thus the sum of monthly value of net electricity supply 60,368.20 MWh is used in the baseline emissions calculation.

$$BE_y = BE_{En,y} = BE_{Elec,y} = f_{cap} * f_{wcm} * \sum_j \sum_i (EG_{i,j,y} * EF_{Elec,i,j,y}) = 1 * 1 * 60,368.20 * 0.83395 = 50,344 \text{ tCO}_2\text{e}$$

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

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According to the registered PDD and methodology, project emissions involved in the project boundary are caused by the electricity imported from the grid. Since the electricity imported from the grid has been considered and subtracted in the baseline emissions calculation, the project emissions due to electricity consumption as a result of the project activity needn't to be taken into account in this step. And no other project emissions are involved in the project boundary; therefore, project emissions are zero.

**E.3. Calculation of leakage**

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In accordance with ACM0012, no leakage is considered. The leakage from the project is zero.

$$L_y = 0$$

**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>	50,344	0	0	50,344	0	50,344

**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)	51,430 <sup>6</sup>	50,344

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

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Since the actual value reached during the monitoring period is less than the ex-ante calculation of the registered PDD, no explanation is need according to the monitoring report guideline.

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<sup>6</sup> The annual emission reductions in the registered PDD is 122,694 tCO<sub>2</sub>e, hence emission reductions during this monitoring period is calculated as  $122,694/365 \times 153 = 51,430$  tCO<sub>2</sub>e.



## 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
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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.
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