

MONITORING REPORT FORM (CDM-MR) *
Version 01 - in effect as of: 28/09/2010

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* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

MONITORING REPORT

Version 01 – 17/03/2011

25.3MW WHR Project for Zhejiang Leomax Group

Reference Number 1874

The 2nd monitoring period: 01/12/2009-31/01/2011

SECTION A. General description of the project activity

A.1. Brief description of the project activity: >>

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The project activity involves installation of 3 sets of WHR systems for the four clinker production lines of Zhejiang Leomax Group Co., Ltd (hereafter referred to the “project entity”). The clinker production lines of the project activity include two 2,500 t/d lines located in Tonglu County, Zhejiang Province, and two 5,000 t/d lines (one in Jiande City, Zhejiang Province, the other in Guangde County, Anhui Province). The total annual power demand of the four clinker production lines amounts to 354GWh, which was imported from East China Power Grid in absence of the project activity.

The project activity includes installation of eight WHR boilers (four AQC boilers and four SP boilers), three steam turbines and three generators. The total power capacity of steam turbine generator is 25.3MW.

The WHR power station in Jiande site started construction on 30/10/2006, and finished it in August 2007. The power station then started commissioning and was put into fully operation in October 2007. The WHR power station in Tonglu site started construction on 26/12/2007, and finished it in October 2008. The power station then started commissioning and was put into fully operation in December 2008. The WHR power station in Guangde site started construction on 13/11/2006, and finished it in July 2007. The power station then started commissioning and was put into fully operation in August 2007. The project activity achieved an emission reduction of 171,860 tCO₂e during this monitoring period.

A.2. Project Participants

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Name of Party involved (*) (host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China (Host Party)	Zhejiang Leomax Group Co. Ltd.	No
The Netherlands	RWE Supply & Trading Netherlands B.V.	No

A.3. Location of the project activity:

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Tonglu WHR power station lies in Yinfangwu, Tonglu Country, Hangzhou City, Zhejiang Province, and the coordinates of the project location are 119°30' east longitude, 29°50' north latitude.

Jiande WHR power station lies in Huang'ao Village, Jiande City, Zhejiang Province, and the coordinates of the project location are 119°27' east longitude, 29°43' north latitude.

Guangde WHR power station lies in Liudong Town, Guangde Country, Anhui Province. It is near the 215 Provincial Road and 318 National Road. The coordinates of the project location are 119°53' east longitude, 31°03' north latitude.

A.4. Technical description of the project

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There are several processes involved in cement production, including raw material preparation, grinding, clinker production, clinker storage and grinding, and clinker silos and dispatch, and so on. Large amount of energy consumption for the production of cement occurs in the clinker production. This involves passing raw materials through a preheater stack containing cyclone heaters to a long rotating kiln to create clinker and then cooling clinker in the clinker cooler.

In clinker production process, a great amount of waste heat is vented to the atmosphere without utilization. This course has wasted natural resources and caused serious heat pollution in the workplace. If the waste heat captured and used for power generation, as proposed in the project activity, it can significantly improve energy efficiency and reduce the amount of power imported from Central China Power Grid.

Waste Heat Recovery (WHR) system is proposed in the project activity for power generation. The project entity adopted WHR system to utilize the waste heat of the exit gases from Suspension Preheater (SP) and Air Quenching Chamber (AQC). The WHR system in the project activity consists of three sets of SP boilers, three sets of AQC boilers, two sets of steam turbines and generators, DCS system, water circulation system and dust-removal system etc. The waste heat from SP and AQC will be led to WHR boilers (SP boilers and AQC boilers) to generate steam for power generation. The steam from SP boiler and AQC boiler will be united and led to steam turbine generator for power generation (see FigureA.4-1). The electricity generated by the project activity is then supplied to the clinker production line by the 10KV line through the general transformer station inside the cement plant. The major equipment will be employed in the project activity refers to table A.4-1.

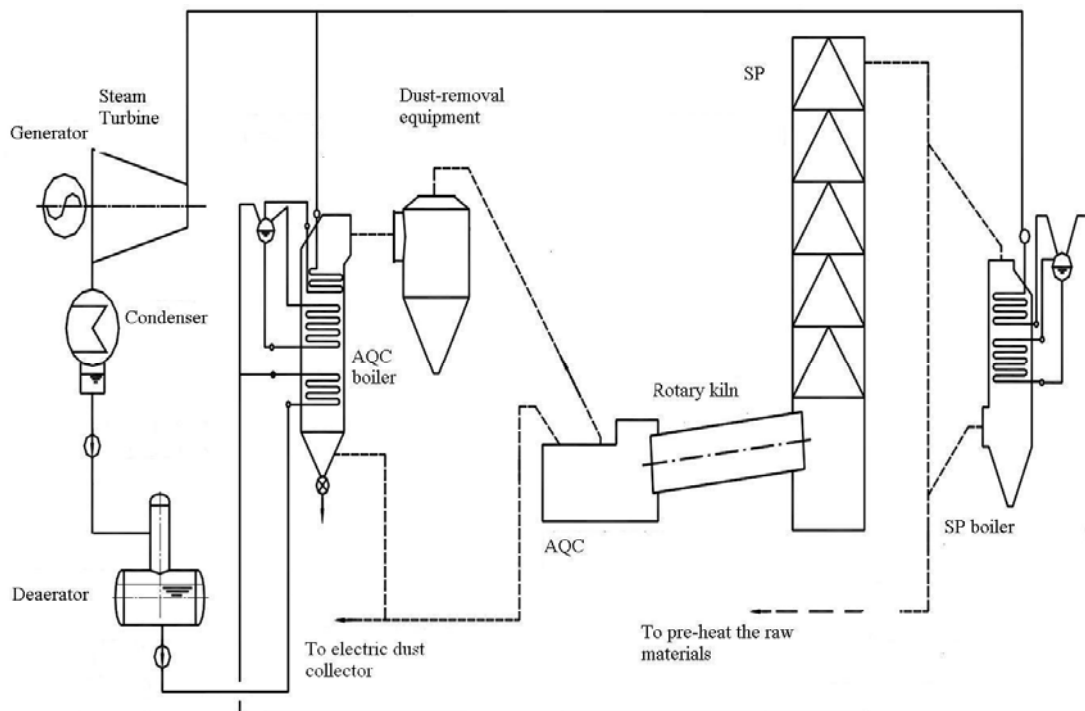


Figure 4.A-1 Schematic of key technology employed by the project activity

Table A.4-1 Parameters of major equipments installed in the WHR power station

Device Name	Technical parameter	Quantity
Tonglu cement clinker line		

9MW Generator	Model: Rated Power: Rated rotate speed:	QF2-J9-2 ¹ 9MW 3000rpm	1
9MW Steam turbine	Model: Rated Power: Rated rotate speed: Main steam pressure: Main steam temperature: Exhaust steam pressure:	N9-1.25/325 9MW 3000rpm 1.25MPa 325℃ 0.008MPa	1
SP boiler	Steam parameter:	6.5t/h-1.35MPa-340℃(1#) 6.8t/h-1.35MPa-340℃(2#)	2
AQC boiler	Steam parameter:	14.3t/h-1.35MPa-340℃(1#) 12.8t/h-1.35MPa-320℃(2#)	2
Jiande cement clinker line			
7.5MW Generator	Model: Rated Power: Rated rotate speed: Output voltage:	N7.5-2 7.5MW 3000rpm 10500V	1
7.5MW Steam turbine	Model: Rated Power: Rated rotate speed: Main steam pressure: Main steam temperature: Exhaust steam pressure:	N7.5-0.98 7.5MW 3000rpm 0.98MPa 325℃ 0.008MPa	1
SP boiler	Steam parameter:	23t/h-1.1MPa-320℃	1
AQC boiler	Steam parameter:	23.5t/h-1.1MPa-340℃	1
Guangde cement clinker line			
9MW Generator	Model: Rated Power: Rated rotate speed: Output voltage:	QFj9-2 9MW 3000rpm 10500V	1
8.8MW Steam turbine	Model: Rated Power: Rated rotate speed: Main steam pressure: Main steam temperature: Exhaust steam pressure: Rated steam rate:	N9-0.88 8.8MW 3000rpm 0.9MPa 310℃ 0.008MPa ≤5.92kg/KWh	1
SP boiler	Steam parameter:	340000Nm ³ /h-350℃ 190℃ 27.6t/h-1.0MPa-32℃(overheat)	1
AQC boiler	Steam parameter:	23.5t/h-1.0MPa-320℃	1

¹ The Model No. of the generator in Tonglu Site was recorded by the manufacturer from QF9-2 (the one in the registered PDD) to QF2-J9-2, but the relevant parameters of the two generators (QF9-2 and QF2-J9-2), e.g. install capacity, generation efficiency, price, etc are exactly the same, so this inconsistency has no impact on the implementation and final output of the project activity.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

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The Approved consolidated baseline and monitoring methodology Version 01 of AM0024 “Baseline methodology for greenhouse gas reductions through waste heat recovery and utilization for power generation at cement plants”.

For more information regarding the proposals and their consideration by the Executive Board please refer to <http://cdm.unfccc.int/methodologies/PAMethodologies/approved.html>.

This methodology also refers to the baseline emission factor calculation tool in Approved consolidated methodology ACM0002 (version 06) “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.

A.6. Registration date of the project activity:

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The project activity was registered on 16/03/2009.

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

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The project activity has a fixed 10-year crediting period from 16/03/2009 to 15/03/2019.

A.8. Name of responsible person(s)/entity(ies):

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Name	Mobile	E-mail	Company
Mr. Chen Yourong	+86 137 5813 7898	chenyourong@vip.sina.com	Zhejiang Leomax Group Co., Ltd.

SECTION B. Implementation of the project activity**B.1. Implementation status of the project activity**

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The WHR power station in Jiande site started commissioning and was put into fully operation in October 2007. The WHR power station in Tonglu site started commissioning and was put into fully operation in December 2008. The WHR power station in Guangde site started commissioning and was put into fully operation in August 2007. The monitoring system was applied to the project activity when the WHR power station started commissioning. This monitoring period lasts from 01/12/2009 to 31/01/2011. Although during this monitoring period, the WHR power plant has been running smoothly at the operation level estimated in FSR and registered PDD, during which the WHR power plant was shut down (as listed in table B-1). No exchange of equipment happened, and no abnormality that may impact the applicability of the methodology happened during this monitoring period.

Table B-1 Maintenance of the clinker production line in this monitoring period

Year	Month	Day		
		Tonglu plant	Jiande plant	Guangde plant
2009	December	/	1~3	/
2010	January	/	7	25~31
	February	7~31	9~28	2~18
	March	1~15	1~2, 9~15	6
	April	/	/	/
	May	/	/	/
	June	/	/	/
	July	22~29	2, 22~29	/

	August	17~28	23~28	/
	September	16~25, 29~31	3, 12~17	/
	October	27~30	/	5~9, 20
	November	/	/	9~10
	December	24~28	27~28	/
2011	January	26~31	26~31	/

B.2. Revision of the monitoring plan

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Due to the ambiguity of the registered monitoring plan, the monitoring plan was revised to clarify the ambiguity and to include additional monitoring parameters which were omitted before. The revision to monitoring plan was approved by EB on 24th October 2009. For more information please refer to <http://cdm.unfccc.int/Projects/DB/DNV-CUK1213687702.85/view>.

B.3. Request for deviation applied to this monitoring period

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Not applicable.

B.4. Notification or request of approval of changes

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Not applicable.

SECTION C. Description of the monitoring system

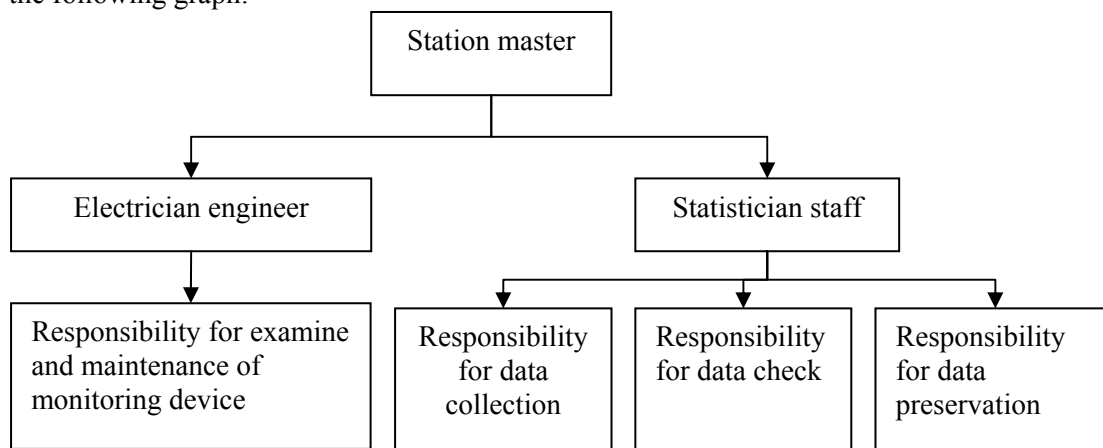
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(1) Guideline

Monitoring plan is a guide on the arrangement of monitoring tasks and schedules. Monitoring personnel should carry out monitoring activities in accordance with the monitoring plan and ensure effective monitoring. The monitoring plan should ensure that monitoring information is real and measurable so as to provide DOE with real, reliable and transparent emission reduction calculation data. The monitoring planning should also ensure that the emission reductions are real and solid to CERs buyers.

(2) Management Structure:

The power station has set up a complete data management system, and the structure is demonstrated in the following graph:



(3) Information flow

Monitoring device and installation

The meter(s) used to measure $EG_{CP,y}$ of the project are in accordance with the National Guidelines (DL/T448-2000 version) for accuracy and reliability. The meters' accuracy rate is Class 1.0 at least.

The meters were maintained by the project entity according the National Guidelines (DL/T448-2000 version) .

The quantity of fuel consumption and clinker production were measured by weighbridge and rotor balance; the data of fuel's calorific Value was measured by the heat measuring equipments; the Emission factor of fuel was measured according the National Guidelines (GB483-87). The electric balance and heat measuring equipment were installed and maintained according the Operation Explanation.

Data collection and calculation

- The calculation of expected emission reductions accords to quantity of electricity supplied to cement plant.
- The quantity of fuel consumption and clinker production from the monitoring record of project entity was used for calculation.
- The data of fuel's calorific Value and emission factor from the record of lab were used for calculation
- The monitoring records of project entity have been verified by DOE.

Calibration

Calibration of relevant monitoring devices was carried out according the National/industry standard by independent and authoritative organizations during this monitoring period the frequency of the calibration is once a year at least.

Monitoring Devices used in the project activities and their calibration information please refers to Annex 1.

Recording and preservation of relevant data

The monitoring data was daily recorded, and then saved in the video disc. The writing of monitoring data is standard and can not be optionally altered. When the monitoring data assuredly need be corrected, it was modified after being approved by the vice power station master. The person who modified the monitoring data made a signature in the place where monitoring data was modified. In reference column, the reason why the monitoring data are modified and modifying data has been written, and also did the signature.

The authenticity, veracity, timeliness and standardization of the monitoring data were checked by the vice power station master. If something wrong is found, it was corrected immediately. Based on daily monitoring report, the menstrual monitoring report was formed, and was submitted to the power station master, who verifies this menstrual monitoring report.

All monitoring data will be preserved at least two years after the whole crediting period. Necessary back-up of monitoring data will be done at regular intervals.

Quality control system for monitoring data

Once the reading error of instruments exceeds the permitted error range or the instrument is found to be malfunctioning, the project entity should inform the related bureau of quality and technical supervision, and the following action should be taken under the local bureau of quality and technical supervision: (1) the measurement data of the meter that need be repaired, calibrated or replaced should be copied; (2) the project entity was responsible for examining for the meters, and the local bureau of quality and technical supervision was responsible for detection, calibration and lead sealing of the meters.

Under normal condition, the project entity was responsible for operation and maintenance of the meters in the WHR captive power stations.

During the crediting period of this monitoring report, the WHR power stations and all monitoring devices worked well, and no abnormality happened.

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO ₂ e/MWh
Description:	The baseline emission factor
Source of data used:	Annex 3 of the registered PDD
Value(s) :	0.9044
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculations
Additional comment:	-

D.2. Data and parameters monitored

Data / Parameter:	$EG_{CP,y}$						
Data unit:	MWh						
Description:	Quantity of electricity supplied to cement plant						
Monitored /Calculated /Default:	Monitored						
Source of data:	Monitoring record						
Value (s) of monitored parameter:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Tonglu County</td> <td style="text-align: center;">Jiande City</td> <td style="text-align: center;">Guangde County</td> </tr> <tr> <td style="text-align: center;">60,213 MWh</td> <td style="text-align: center;">68,865 MWh</td> <td style="text-align: center;">60,948 MWh</td> </tr> </table>	Tonglu County	Jiande City	Guangde County	60,213 MWh	68,865 MWh	60,948 MWh
Tonglu County	Jiande City	Guangde County					
60,213 MWh	68,865 MWh	60,948 MWh					
Indicate what the data are used for (Baseline/ Project/Leakage emission calculations)	Baseline emission calculations						
Monitoring equipment (type, accuracy class, calibration frequency, date of last calibration, validity)	Refer to Annex 1						
Measuring/Recording frequency:	Continuously measuring and daily recording						
Calculation method (if applicable):							
QA/QC procedures applied:	Please refer to Section C						

Data / Parameter:	$NCV_{fuel,y}$
Data unit:	TJ/ton
Description:	Calorific Value of fuel used in Clinker Production lines
Monitored /Calculated /Default:	Monitored
Source of data:	Monitoring record
Value (s) of monitored parameter:	Refer to section of E2
Indicate what the data are used for (Baseline/ Project/Leakage emission calculations)	Baseline emission calculations
Monitoring equipment (type, accuracy class, calibration frequency, date of last calibration, validity)	Refer to Annex 1
Measuring/Recording frequency:	Measuring and recording daily

Calculation method (if applicable):	
QA/QC procedures applied:	Please refer to Section C

Data / Parameter:	$F_{P,y}$
Data unit:	TJ
Description:	Average annual energy (fuel) consumption of clinker making process after project implementation
Monitored /Calculated /Default:	Calculated
Source of data:	Monitoring record
Value (s) of monitored parameter:	Refer to section of E2
Indicate what the data are used for (Baseline/ Project/Leakage emission calculations)	Baseline emission calculations
Monitoring equipment (type, accuracy class, calibration frequency, date of last calibration, validity)	Refer to Annex 1
Measuring/Recording frequency:	Measuring and recording daily
Calculation method (if applicable):	
QA/QC procedures applied:	Please refer to Section C

Data / Parameter:	$O_{clinker,y}$
Data unit:	ton
Description:	Average annual production of clinker after project implementation
Monitored /Calculated /Default:	Monitored
Source of data:	Monitoring record
Value (s) of monitored parameter:	Refer to section of E2
Indicate what the data are used for (Baseline/ Project/Leakage emission calculations)	Baseline emission calculations
Monitoring equipment (type, accuracy class, calibration frequency, date of last calibration, validity)	Refer to Annex 1
Measuring/Recording frequency:	Measuring and recording daily
Calculation method (if applicable):	
QA/QC procedures applied:	Please refer to Section C

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

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Baseline emission can be calculated as follows:

$$BE_y = EF_y \times EG_y$$

Where

BE_y is the baseline emission due to displacement of electricity during the year y in tons of CO₂e,

EG_y is the net quantity of electricity generated by the project activity during the year y in MWh,

EF_y is the CO₂ baseline emission factor for the electricity displaced due to the project activity in during the year y in tCO₂e/MWh.

Electricity supply EGy:

Baseline emissions (BE_y)

Unit:MWh	Tonglu Site	Jiande Site	Guangde Site
01/12/2009-31/12/2009	5,351.00	5,498.71	5,844.00
01/01/2010-31/01/2010	6,128.40	5,801.57	4,074.60
01/02/2010-28/02/2010	659.40	1,469.10	1,485.60
01/03/2010-31/03/2010	2,828.51	2,343.16	4,432.80
01/04/2010-30/04/2010	5,727.80	6,017.25	4,887.40
01/05/2010-31/05/2010	6,533.00	6,341.46	5,033.80
01/06/2010-30/06/2010	6,826.40	6,342.60	4,520.20
01/07/2010-31/07/2010	4,695.60	3,990.65	4,482.20
01/08/2010-31/08/2010	2,787.37	4,756.13	4,757.80
01/09/2010-30/09/2010	2,727.17	3,949.66	4,496.00
01/10/2010-31/10/2010	3,301.76	6,098.86	3,569.00
01/11/2010-30/11/2010	5,136.98	5,977.20	4,410.80
01/12/2010-31/12/2010	4,109.60	5,355.40	4,725.40
01/01/2011-31/01/2011	3,702.60	4,923.41	4,229.00
Total EG_{CP,y}	60,213.02²	68,865.16	60,948.60
Emission Factor [tCO ₂ /MWh]	0.9044 ³	0.9044	0.9044
Emission reduction [tCO ₂]	54,456.65	62,281.65	55,121.91
Total BE_y [tCO₂]	171,860		

E.2. Project emissions calculation

² Due to the accuracy issue of the electric meters' calibration reports in 2008 and 2009 in Tonglu Site, an adjustment was made to EG_{CP,y} calculation, which means adjusting the measured value by deducting the maximum uncertainty, 0.5% in this case, from EG_{CP,y} of Tonglu Site. Please refer to CL #5 of verification report and ER calculation spreadsheet.

³ The grid emission factor 0.9047tCO₂/MWh used in monitoring report version 01 is the correct one which has been clearly indicated in Annex 3 Table 3-13 in the registered PDD (page 56). However an uncorrected typo of 0.9044tCO₂/MWh was left in the PDD and this incorrect value was also quoted in the validation. In order to be conservative and consistent with the validation report, the smaller value of 0.9044tCO₂/MWh was chosen as the grid emission factor in this revised monitoring report version 02.

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Project emissions can be calculated as follows:

$$PE_y = (EI_{p,y} - EI_B) * O_{clinker,y} * COEF_{fuel,y}$$

Where:

EI_B is the pre-project energy consumption per unit output of clinker in TJ/ton of clinker produced (i.e. measured before the Project activity goes into operation).

$EI_{p,y}$ is the ex-post energy consumption per unit output of clinker for given year, y, in TJ/ton of clinker produced.

$COEF_{clinker,y}$ is the carbon coefficient (tCO₂ / TJ of input fuel) of the fuel used in the cement works in

year y to raise the necessary heat for clinker production.

$O_{clinker,y}$ Is the clinker output of the cement works in a given year y.

$$EI_B = \frac{F_B}{O_{clinker,B}}$$

Where:

F_B is the average annual energy consumption, expressed in TJ, of clinker making process prior to the start of operation of the project activity. At least one full year of data should be used.

If a year's worth of pre-Project Activity data is not available, then the Project

Developer

should outline the plan for ensuring conservativeness based on a combination of the ex-ante design estimate of energy consumption plus available measured data.

$O_{clinker,B}$ is the average annual output, expressed in tonnes, of clinker prior to the start of operation of the project activity. At least one full year of data should be used.

$$EI_{p,y} = \frac{F_{p,y}}{O_{clinker,y}}$$

where:

$F_{p,y}$ is monitored annual energy consumption in a year y, expressed in TJ, of clinker making process;

$O_{clinker,y}$ is monitored annual output, expressed in a year y, in tonnes of clinker.

$$COEF_{fuel,y} = (EF_{CO2,fuel,y} * OXID_{fuel,y}) / NCV_{fuel,y}$$

Where:

$NCV_{fuel,y}$ is the net calorific value (energy content) per mass or volume unit of a fuel used in clinker making process in year y;

$OXID_{fuel,y}$ is the oxidation factor of the fuel, expressed as percentage;

$EF_{CO2,fuel,y}$ is the CO₂ emission factor per unit of energy of the fuel used in year y, expressed as tCO₂ per unit mass or volume unit.

$O_{clinker}$, $Q_{fuel,y}$, $NCV_{fuel,y}$ of Tonglu Site from 12/2009 to 01/2011

Clinker production and coal consumption	Total $O_{clinker}$ of the two 2500t/d lines	Total $Q_{fuel,y}$ of the two 2500t/d lines	$NCV_{fuel,y}$	$F_{p,y}$
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	tonne	tonne	TJ/t	TJ
01/12/2009-31/12/2009	169,853	25,517.354	0.023	581.107
01/01/2010-31/01/2010	175,598	27,270.838	0.023	625.129
01/02/2010-28/02/2010	19,767	3,344.293	0.024	80.156
01/03/2010-31/03/2010	80,114	11,798.549	0.024	283.625
01/04/2010-30/04/2010	160,541	23,730.098	0.023	554.501
01/05/2010-31/05/2010	168,577	24,652.869	0.024	579.983
01/06/2010-30/06/2010	170,416	24,651.879	0.023	569.335
01/07/2010-31/07/2010	123,257	19,056.040	0.024	449.665
01/08/2010-31/08/2010	87,122	12,740.800	0.024	301.498
01/09/2010-30/09/2010	83,753	12,131.446	0.023	282.032
01/10/2010-31/10/2010	116,019	16,508.543	0.024	389.866
01/11/2010-30/11/2010	178,000	25,720.515	0.023	600.240
01/12/2010-31/12/2010	143,531	21,034.434	0.023	487.347
01/01/2011-31/01/2011	135,900	20,485.494	0.023	478.930
Total	1,812,448	268,643.153	/	6,263.415

O_{clinker} , $Q_{\text{fuel,y}}$, $NCV_{\text{fuel,y}}$ of Jiande Site from 12/2009 to 01/2011

Clinker production and coal consumption	5000 t/d Line	5000 t/d Line Coal	$NCV_{\text{fuel,y}}$	$F_{P,y}$
	O_{clinker}	Consumption $Q_{\text{fuel,y}}$		
	tonne	tonne	TJ/t	TJ
Beginning Storage	/	1,609.740	0.023	37.212
01/12/2009-31/12/2009	166,284.720	25,455.400	0.023	590.947
01/01/2010-31/01/2010	168,309.990	26,804.420	0.022	590.163
01/02/2010-28/02/2010	40,084.630	7,938.400	0.021	169.608
01/03/2010-31/03/2010	82,264.450	24,078.400	0.023	548.335
01/04/2010-30/04/2010	173,867.140	19,755.420	0.023	461.667
01/05/2010-31/05/2010	172,609.520	32,879.200	0.024	786.927
01/06/2010-30/06/2010	171,548.710	17,267.780	0.023	393.402
01/07/2010-31/07/2010	115,241.230	28,180.620	0.023	654.897
01/08/2010-31/08/2010	140,943.800	27,689.720	0.024	670.508
01/09/2010-30/09/2010	114,262.200	3,613.180	0.024	85.795
01/10/2010-31/10/2010	180,626.220	32,298.480	0.025	805.177
01/11/2010-30/11/2010	175,347.280	22,559.360	0.025	561.976
01/12/2010-31/12/2010	159,350.120	28,340.240	0.026	736.520
01/01/2011-31/01/2011	141,573.930	22,108.660	0.024	525.960
Ending Storage	/	14,500.000	0.024	342.354
Total	2,002,313.940	30,6079.020	/	7,276.740

O_{clinker} , $Q_{\text{fuel,y}}$, $NCV_{\text{fuel,y}}$ of Guangde Site from 12/2009 to 01/2011

Clinker production and coal consumption	5000 t/d Line	5000 t/d Line Coal	$NCV_{\text{fuel,y}}$	$F_{P,y}$
	O_{clinker}	Consumption $Q_{\text{fuel,y}}$		
	tonne	tonne	TJ/t	TJ
Beginning Storage	/	12,150.060	0.022	270.498
01/12/2009-31/12/2009	186,167.000	33,802.610	0.022	743.657
01/01/2010-31/01/2010	125,538.000	15,496.860	0.022	341.892
01/02/2010-28/02/2010	52,115.000	12,668.440	0.021	268.901
01/03/2010-31/03/2010	172,452.000	22,234.690	0.022	478.553
01/04/2010-30/04/2010	175,769.000	32,694.760	0.022	719.126
01/05/2010-31/05/2010	180,246.000	27,345.760	0.022	595.302
01/06/2010-30/06/2010	167,159.700	10,114.780	0.021	214.739
01/07/2010-31/07/2010	168,327.000	39,049.920	0.020	775.499
01/08/2010-31/08/2010	180,177.000	44,005.670	0.021	924.133
01/09/2010-30/09/2010	174,464.000	19,772.980	0.021	416.644
01/10/2010-31/10/2010	136,770.000	25,036.770	0.021	529.129
01/11/2010-30/11/2010	160,077.000	19,612.310	0.020	397.518

01/12/2010-31/12/2010	172,905.300	21,785.030	0.020	438.188
01/01/2011-31/01/2011	170,718.000	19,575.050	0.020	397.236
Ending Storage	/	5,922.360	0.000	0.000
Total	2,222,885.000	349,423.330	/	7,511.017

Energy Intensity ($E_{P,y}$)

Project site	Monitoring period	Clinker production $O_{clinker}$ [tonnes]	Energy consumption from Coal $F_{P,y}$ [TJ]	Energy Intensity, Project $E_{P,y}$ [TJ/tClinker]	Energy Intensity, Baseline E_B [TJ/tClinker]
Tonglu	01/12/2009-31/01/2011	1,812,448	6,263.415	3.46×10^{-3}	3.75×10^{-3}
Jiande	01/12/2009-31/01/2011	2,002,314	7,276.740	3.63×10^{-3}	3.64×10^{-3}
Guangde	01/12/2009-31/01/2011	2,222,885	7,511.017	3.38×10^{-3}	3.69×10^{-3}

COEF_{fuel,y} of Coal used in Tonglu Clinker Production line

Monitoring period	A	B	C
	OXID _{fuel}	EF _{CO2,fuel,y}	COEF _{fuel,y}
	%	tCO ₂ e/t	tCO ₂ e/GJ
01/12/2009-31/12/2009	100.00%	1.608	0.071
01/01/2010-31/01/2010	100.00%	1.587	0.069
01/02/2010-28/02/2010	100.00%	1.646	0.069
01/03/2010-31/03/2010	100.00%	1.672	0.070
01/04/2010-30/04/2010	100.00%	1.645	0.070
01/05/2010-31/05/2010	100.00%	1.684	0.072
01/06/2010-30/06/2010	100.00%	1.643	0.071
01/07/2010-31/07/2010	100.00%	1.684	0.071
01/08/2010-31/08/2010	100.00%	1.645	0.070
01/09/2010-30/09/2010	100.00%	1.598	0.069
01/10/2010-31/10/2010	100.00%	1.631	0.069
01/11/2010-30/11/2010	100.00%	1.614	0.069
01/12/2010-31/12/2010	100.00%	1.629	0.070
01/01/2011-31/01/2011	100.00%	1.656	0.071
01/12/2009-31/01/2011 Average	100.00%	1.608	0.070

COEF_{fuel,y} of Coal used in Jiande Clinker Production line

Monitoring period	A	B	C
	OXID _{fuel}	EF _{CO2,fuel,y}	COEF _{fuel,y}
	%	tCO ₂ e/t	tCO ₂ e/GJ
01/12/2009-31/12/2009	100.00%	1.400	0.060
01/01/2010-31/01/2010	100.00%	1.517	0.069
01/02/2010-28/02/2010	100.00%	1.498	0.070
01/03/2010-31/03/2010	100.00%	1.610	0.071
01/04/2010-30/04/2010	100.00%	1.726	0.074
01/05/2010-31/05/2010	100.00%	1.790	0.075
01/06/2010-30/06/2010	100.00%	1.629	0.072

01/07/2010-31/07/2010	100.00%	1.679	0.072
01/08/2010-31/08/2010	100.00%	1.734	0.072
01/09/2010-30/09/2010	100.00%	1.701	0.072
01/10/2010-31/10/2010	100.00%	1.800	0.072
01/11/2010-30/11/2010	100.00%	1.854	0.074
01/12/2010-31/12/2010	100.00%	1.897	0.073
01/01/2011-31/01/2011	100.00%	1.699	0.071
01/12/2009-31/01/2011 Average	100.00%	1.681	0.071

COEF_{fuel,y} of Coal used in Guangde Clinker Production line

Monitoring period	A	B	C
	OXID _{fuel} %	EF _{CO₂,fuel,y} tCO ₂ e/t	COEF _{fuel,y} tCO ₂ e/GJ
01/12/2009-31/12/2009	100.00%	1.736	0.079
01/01/2010-31/01/2010	100.00%	1.699	0.077
01/02/2010-28/02/2010	100.00%	1.645	0.078
01/03/2010-31/03/2010	100.00%	1.660	0.077
01/04/2010-30/04/2010	100.00%	1.707	0.078
01/05/2010-31/05/2010	100.00%	1.635	0.075
01/06/2010-30/06/2010	100.00%	1.578	0.074
01/07/2010-31/07/2010	100.00%	1.532	0.077
01/08/2010-31/08/2010	100.00%	1.585	0.075
01/09/2010-30/09/2010	100.00%	1.634	0.078
01/10/2010-31/10/2010	100.00%	1.643	0.078
01/11/2010-30/11/2010	100.00%	1.651	0.081
01/12/2010-31/12/2010	100.00%	1.610	0.080
01/01/2011-31/01/2011	100.00%	1.530	0.075
01/12/2009-31/01/2011 Average	100.00%	1.632	0.077

Project emissions (PE_y)

Project site	Monitoring period	Clinker O _{clinker} [tonnes]	Diff. in Energy int. ΔEI [GJ/tClinker]	Project Emissions PE _y [tCO ₂]
Tonglu	01/12/2009-31/01/2011	1,812,448	-0.29	0
Jiande	01/12/2009-31/01/2011	2,002,314	-0.01	0
Guangde	01/12/2009-31/01/2011	2,222,885	-0.31	0
Total	01/12/2009-31/01/2011			0

E.3. Leakage calculation

>>

As per AM0024 (version 01), the leakage is not considered, and hence $LE_y = 0$.

E.4. Emission reductions calculation / table

>>

Since the leakage and is zero in the project activity, the emission reductions of the project activity (ER_y) are equal to baseline emissions (BE_y) minus project emissions (PE_y). The emission reductions are calculated as below:

$$ER_y = BE_y - PE_y - LE_y = BE_y - PE_y$$

Emission Reductions (ER_y)

Project site	Monitoring period	Baseline Emission BE_y [tCO ₂]	Project Emissions PE_y [tCO ₂]	Emission Reduction ER_y [tCO ₂]
Tonglu	01/12/2009-31/01/2011	54,456.7	0	54,456.7
Jiande	01/12/2009-31/01/2011	62,281.6	0	62,281.6
Guangde	01/12/2009-31/01/2011	55,121.9	0	55,121.9
Total	01/12/2009-31/01/2011	171,860	0	171,860

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

>>

This section shall include a comparison of actual values of the emission reductions achieved during the monitoring period with the estimations in the registered CDM-PDD.

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO ₂ e)	162,203*427/365=189,755	171,860

E.6. Remarks on difference from estimated value in the PDD

>>

The actual emission reduction achieved during this monitoring period is 171,860 tCO₂e, 9.4% less than estimated value in the registered PDD.

Annex 1. Additional monitoring information

Parameters of devices used in the project activity and Calibration information:

Jiande Site:

Device	Model No.	S.N.	Accuracy	Calibration Date	Calibration Standard	Comment
Kilowatt meter	DTSD5(A)	3070128990	Class 0.5	2009-02-25 2010-02-25	JJG596-1999	Monitoring $EG_{CP,y}$
	DTSD5(A)	3070132916	Class 0.5	2009-05-12 2010-05-12		Monitoring $EG_{CP,y}$ when the meter 3070128990 was validated in March and April
	DSSD535	070813148732	Class 1.0	2009-05-08 2010-02-25		Monitoring the electricity consumed by auxiliary equipments of WHR power station, used for internal reference
	DSSD535	070813148734	Class 1.0	2009-05-08 2010-02-25		Monitoring the electricity generated by the WHR power station, used for internal reference
	DSSD535	070813148735	Class 1.0	2009-05-08 2010-02-25		Monitoring the electricity consumed by auxiliary equipments of WHR power station, used for internal reference
Weighbridge	SCS150	E6000657	Class 3	2009-03-31 2010-05-09	JJG539-1997	Monitoring $O_{clinker,y}$ and $Q_{fuel,y}$
	SCS80	/	Class 3	2009-05-07 2010-05-09		
Analytical Balance	TG328A	68676	Class ① ₃	2009-06-02 2010-06-01	JJG 98-2006	Monitoring $EF_{CO_2,fuel,y}$ and $NCV_{fuel,y}$
	TG328A	62816	Class ① ₃			
	TG328A	71411	Class ① ₃			
Muffle Furnace	TDW-2001	001	±2.5%F.S	2009-06-02 2010-06-01	JJG617-1996	
	TDW-2001	002	±2.5%F.S			
	TDW-2001	003	±2.5%F.S			
	TDW-2001	004	±2.5%F.S			
Drying oven	101A-1	2000185	/	2009-06-02 2010-06-01	/	

* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

Tonglu Site:

Device	Model No.	S.N.	Accuracy	Calibration Date	Calibration Standard	Comment
Kilowatt meter	DSSD31	060500	Class 0.2S	2009-10-26 2010-10-25	JJG596-1999 JJG307-2006	Monitoring $EG_{CP,y}$
	DSSD25	0800758	Class 0.5	2009-10-26 2010-10-25		Monitoring the electricity consumed by auxiliary equipments of WHR power station, used for internal reference
	DSSD25	0800992	Class 0.5S	2009-10-26 2010-10-25		Monitoring the electricity generated by the WHR power station, used for internal reference
	DSSD25	0800756	Class 0.5	2009-10-26 2010-10-25		Monitoring the electricity consumed by auxiliary equipments of WHR power station, used for internal reference
Weighbridge	SCS120	01	Class 3	2009-05-18 2010-05-18	JJG539-1997	Monitoring $O_{clinker,y}$
	SCS150 ⁴	02	Class 3	2009-05-18 2010-05-18		
Electronic Balance	FA1104N	51383	Class I	2009-06-08	JJG 98-1990	Monitoring $EF_{CO_2,fuel,y}$ and $NCV_{fuel,y}$
	MP1100B	5114	Class II	2010-05-25		
Muffle Furnace	SX2-6-13	NO.016	/	2009-06-08	HZC-0049	
	SX2-6-13	NO.021	/	2010-05-25		
Drying oven	101A-1	A0162	/	2009-06-08	HZC-0049	
	101A-1	A0163	/	2010-05-25		
Rotor Balance	LS-DD	1#	Class 3	2009-10-08 2010-09-23	JJG96-2007	Monitoring $Q_{fuel,y}$
	LS-DD	2#	Class 3			
	DRW	1#	Class 3			
	DRW	2#	Class 3			

⁴ The measurement range of weighbridge 02 was expanded from 120t to 150t in 2009, viz the model No. of weighbridge 02 was changed from SCS120 to SCS150.

Guangde Site:

Device	Model No.	S.N.	Accuracy	Calibration Date	Calibration Standard	Comment
Kilowatt meter	PD194E-9F3	1615089093	Class 0.5	2009-06-24 2010-06-24	JJG596-1999	Monitoring $EG_{CP,y}$
	PD194Z-9SY	1615089090	Class 0.5	2009-06-24 2010-06-24		Monitoring the electricity consumed by auxiliary equipments of WHR power station, used for internal reference
	PD194E-9F3	1615089092	Class 0.5	2009-06-24 2010-06-24		Monitoring the electricity generated by the WHR power station, used for internal reference
	PD194Z-9SY	1615089091	Class 0.5	2009-06-24 2010-06-24		Monitoring the electricity consumed by auxiliary equipments of WHR power station, used for internal reference
	DSS607	210-796160	Class 1.0	2009-06-24 2010-06-24	JJG124-2005	Monitoring the electricity consumed by auxiliary equipments of WHR power station, used for internal reference
Weighbridge	SCS-100	West 1	Class 3	2009-10-15 2010-09-27	JJG539-1997	Monitoring $O_{clinker,y}$ and $Q_{fuel,y}$
	SCS-100	West 2	Class 3			
	SCS-100	East 1	Class 3			
	SCS-80	East 2	Class 3			
Electronic Balance	FA2004N	53524	Class I	2009-04-28 2010-03-25	JJG 98-2006	Monitoring $EF_{CO_2,fuel,y}$ and $NCV_{fuel,y}$
Muffle Furnace	4-10	0866	/	2009-04-28	/	
	4-10	202102	/	2010-03-25	/	
Drying oven	101-1	040966	/	2009-04-28	/	
	101-1	040967	/	2010-03-25	/	

Sketch Maps of the three WHR power stations of the project activity

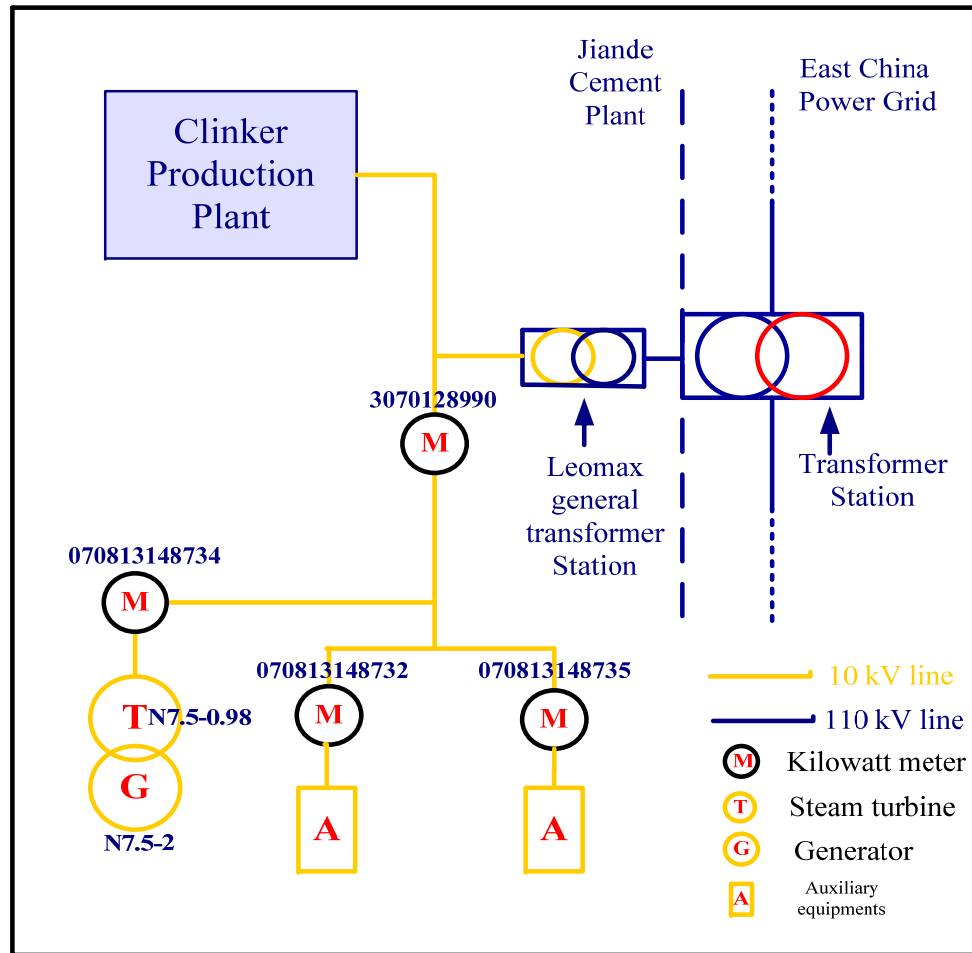


Fig. Annex2-1 Sketch Map for Power station in Jiande Site

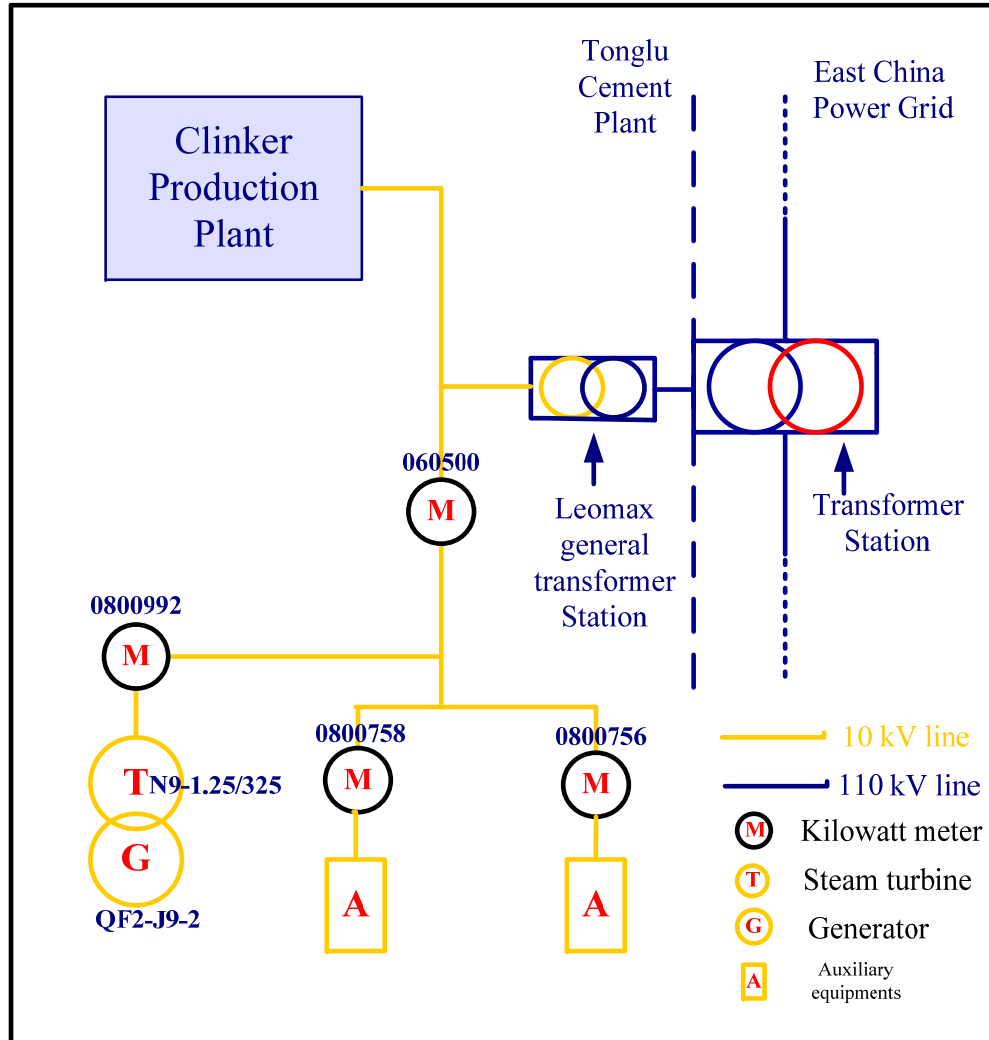


Fig. Annex2-2 Sketch Map for Power station in Tonglu Site

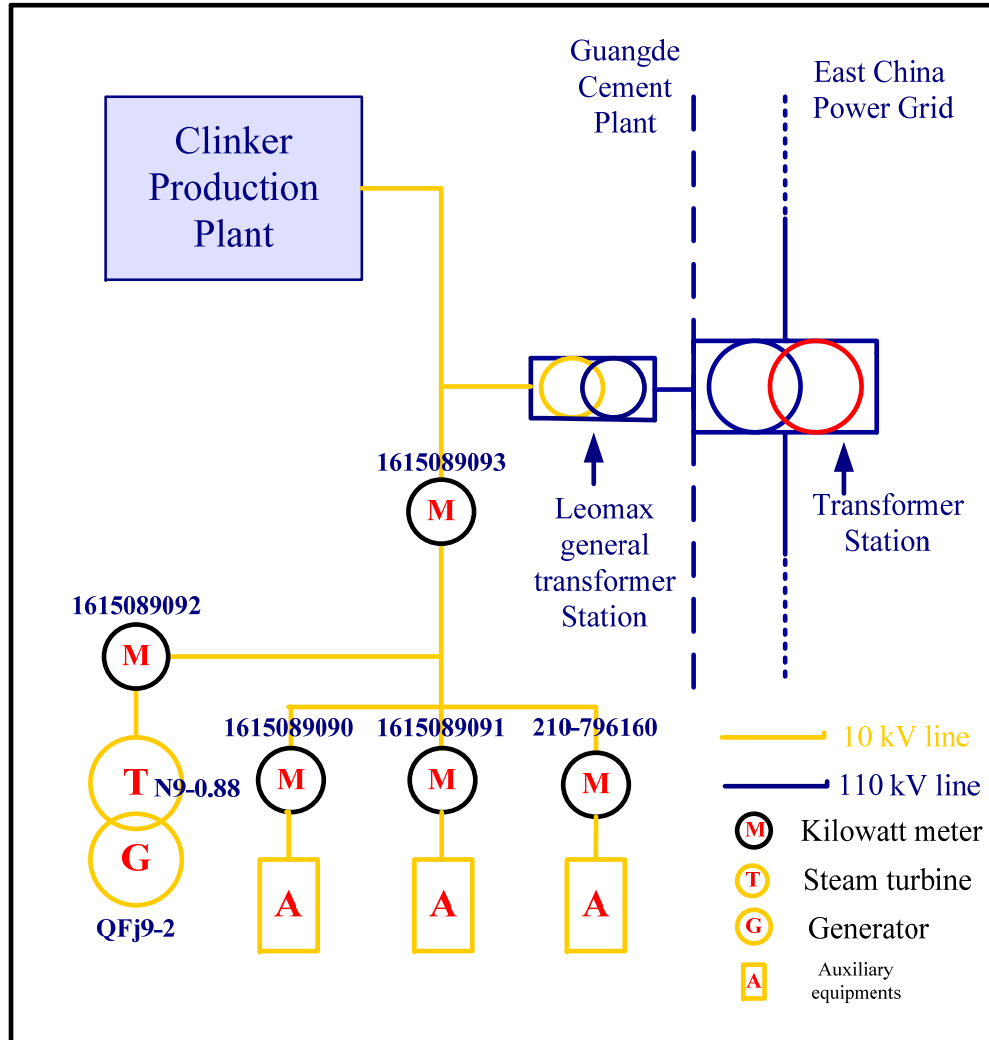


Fig. Annex2-3 Sketch Map for Power station in **Guangde** Site