MONITORING REPORT

Verification 2

Ningguo Cement Plant 9100 kW Waste Heat Recovery and Utilisation for Power Generation Project of Anhui Conch Cement Co. Ltd

CDM Registration Reference No. 0898

Monitoring Period:

Start Date: **01 March 2008**

End Date: **31 May 2009**

Date of Report: **26 Jun 2009**

Version 1

1 INTRODUCTION

This document reports the emission reductions generated by **Ningguo Cement Plant 9100 kW Waste Heat Recovery and Utilisation for Power Generation Project of Anhui Conch Cement Co. Ltd** in the following monitoring period:

From **01 March 2008** to **31 May 2009**

This report serves as the basis for the verification of these reductions and issuance of the CERs

2 SUMMARY FOR THE MONITORING PERIOD

The Ningguo CDM project was registered on 04 May 2007 with a crediting period from 04 May 2007 until 03 May 2017.

Total amount of emission reductions generated in the current monitoring report:

ERs =71，857 t CO_{2e}

3 GENERAL DESCRIPTION OF THE PROJECT

3.1 SHORT DESCRIPTION OF THE PROJECT ACTIVITY

General introduction

The Project Activity is a waste heat recovery and utilization for power generation project located at the Ningguo Cement Plant in Ningguo City of Anhui Province, the People's Republic of China. The Ningguo Cement Plant is a part of the Conch Cement Group Company Limited. There are 3 clinker production lines with pre-calcination technology.

This project is the waste heat power generation project of No.3 5000t/d clinker production line in the Ningguo Cement Plant. Two sets of heat recovery boilers and one set of mixed-pressure admission condensing turbine-generator unit with the rated power of 9,100kW have been installed.

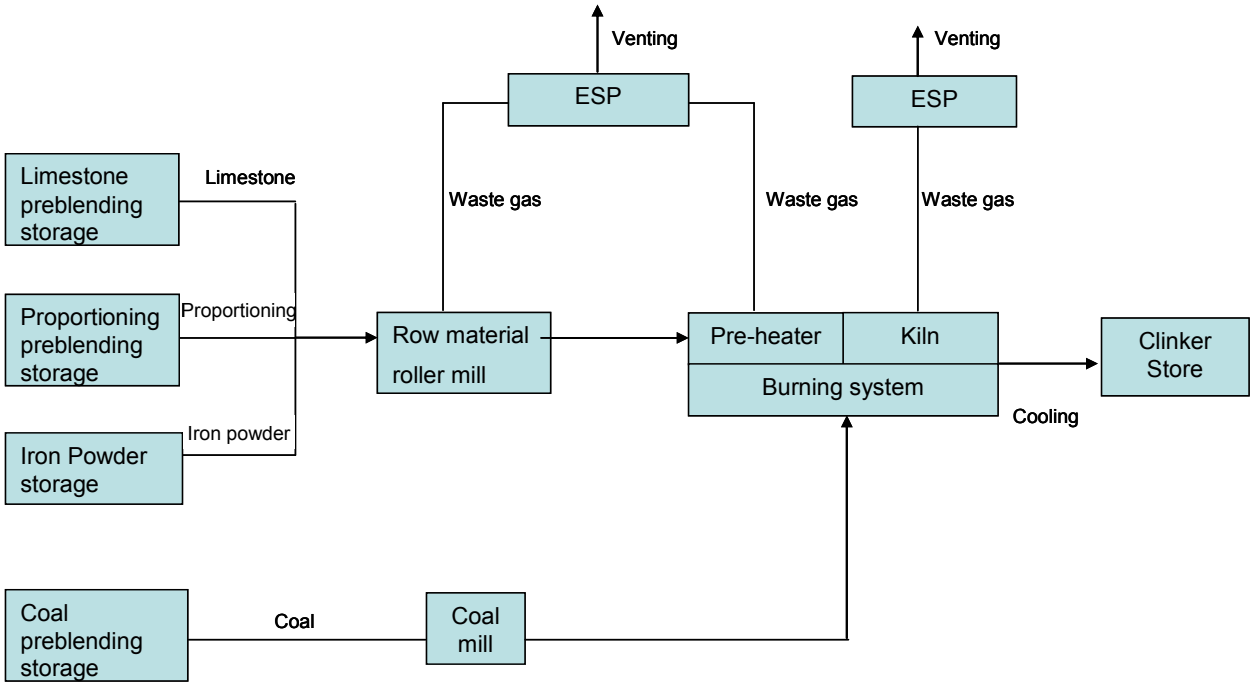
Additionally, the Project Activity also:

- significantly reduces harmful emissions (including SOx, NOx and floating particles), and thus improves the local environment
- leads to a reduction in the temperature of the vented hot air from over 360°C to 84°C and also reduces the volume of water that is consumed by the humidifying pump in the cooling towers and thereby saves water resources in this area.
- leads to an increase in local staff employed by about 19 persons.

Technology employed by the project activity

The production of cement relies on several processes:

Figure 1 Schematic Drawing of Clinker Production Line



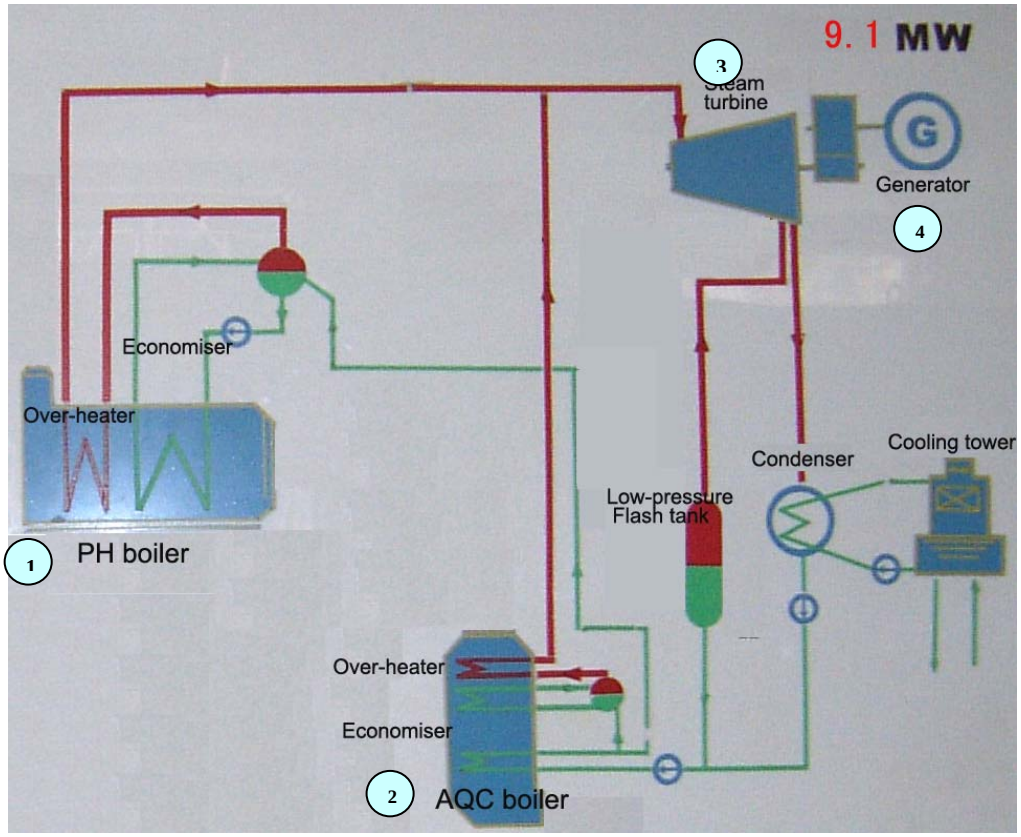
Raw material preparation → grinding → clinker production → clinker storage and grinding → cement silos and dispatch

A large portion of the energy consumption for the production of cement occurs in the calcination process in clinker production. This involves passing the ground raw materials through a pre-heater stack containing cyclone heaters to a long rotating kiln to create clinker and then cooling this in the clinker cooler. Waste heat is typically mainly vented to atmosphere and if captured and used for power generation, as proposed in this Project Activity, can lead to significant greenhouse gas emission reductions.

The production process of this project is an energy conversion process. Feedwater recovers the heat energy of low-temperature waste heat exhausted by 5000 t/d cement clinker production line through PH heat recovery boiler and AQC heat recovery boiler, to covert it into superheated steam, and then steam is fed into steam turbine through the steam pipe. The heat energy is converted into kinetic energy in steam turbine to enable turbine rotor to rotate at high speed, and then drive the generator to rotate, and final product – electric energy is generated.

A schematic presentation of the key equipment fitted as part of the Project Activity can be seen in Figure 2.

Figure 2 Schematic Drawing of Key Technology Employed by the Project Activity



The model numbers and performance characteristics of the main equipment are shown in the following table:

Name of major equipment	Model, specification and performance	Quantity (set)	Point on Figure 4	Manufacturer
PH boiler	KAWASAKIBLW forced circulation boiler	1	1	KAWASAKI HEAVY INDUSTRIES, LTD
AQC boiler	Natural circulation boiler	1	2	Jiangsu Nantong Wanda Boiler Co. Ltd.
Steam turbine and auxiliaries	Mixed-pressure admission condensing	1	3	Nan Jing Steam Turbine Co. Ltd.
Generator	Totally-enclosed self-cooling 3-phase AC synchronous generator	1	4	Nan Jing Steam Turbine Co. Ltd.

The output from the 9.1MW generator with a rated voltage of 6.3kV is connected to the power distribution system of Ningguo cement plant.

3.2 GEOGRAPHIC LOCATION

The project is located at the Conch Cement Company's Ningguo Cement Plant in Ningguo City of Anhui Province of China. The project's geographical coordinates are longitude 118° 54' and latitude is 30° 43'. Figure 3 shows the location of the Ningguo Cement Plant in Anhui Province.

Figure 3. Map of Anhui Province Showing Project Location

4 EMISSIONS REDUCTION CALCULATION FOR THE PROJECT

According to the methodology, the emission reductions are calculated as:

$$ER_y = BE_y - PE_y$$

Where,

- ER_y: are the total emissions reductions during the monitoring period in tons of CO_2
- BE_y: are the baseline emissions for the project activity during the monitoring period in tons of CO_2
- PE_y: are the emissions from the project activity during the monitoring period in tons of CO_2

The leakage can be ignored according to the methodology

4.1 PROJECT EMISSIONS (PE_Y)

PE_y are the project emissions due to fuel consumption changes in the cement kiln of the cement plant as a result of the project activity and are calculated by using the following formula:

$PE_y = \Delta EI * O_{clinker} * COEF_{fuel}$

Where:

ΔEI is the impact of the Project Activity on the energy consumption of the clinker kiln in TJ/tClinker. Its calculation is described in detail as given below.

$O_{clinker}$ is the clinker output of the No. 3 clinker line of Ningguo Cement Plant during the monitoring period

$COEF_{fuel}$ is the carbon coefficient (tCO_2 / TJ of input fuel) of the fuel used in the cement plant to raise the necessary heat for clinker production.

ΔEI is calculated as follows:

$\Delta EI = EI_p - EI_B$

Where:

EI_B is the measured baseline energy consumption per unit output of clinker in TJ/ton of clinker. The validated value in the PDD is 0.003130 TJ/tClinker.

EI_p is the energy consumption per unit output of clinker in TJ/ton of clinker during monitoring period. It is calculated from total fuel consumption in TJ divided by the clinker output during the monitoring period.

Refer to the following table for EI_p and EI_B

Monitoring period	Clinker production $O_{Clinker}$ [tons]	Coal consumption (energy value) [TJ]	Energy Intensity, Production EI_P [TJ/tClinker]	Energy Intensity, Baseline EI_B [TJ/tClinker]
01/03/2008 - 31/05/2009	2,335,756	6,982	0.002989	0.003130

To be conservative and avoid negative project emissions, if ΔEI is negative, then $\Delta EI = 0$. Thus, the project emissions are calculated as follows:

Monitoring period	Clinker $O_{Clinker}$ [tons]	Diff. in Energy int. ΔEI [TJ/tClinker]	Emissions Factor $EF_{CO2,fuel,y}$ [tCO_2/TJ]	Project Emissions PE [tCO_2]
01/03/2008 - 31/05/2009	2,335,756	0.000000	100.060	0

$PE_y = 0\ tCO_{2e}$

4.2 LEAKAGE EMISSIONS

These are zero for the Project and are not monitored (Leakage can be ignored according to Methodology)

Leakage=0

4.3 BASELINE EMISSIONS

The avoided baseline emissions, EB_y, by the project activity during the monitoring period are calculated as:

$$BE_y = EG_y * EF_y$$

Where

EG_y is the electricity supplied from the Project Activity to the cement plant.
EF_y is the emission factor of the East China Power Grid

EGy is measured with three power meters as described in the monitoring plan of PDD. The three meters measure respectively the net power supplied from the power plant, total power generation, and auxiliary power consumption. EGy is obtained as follows:

- When the meter for net power supplied from the power plant is in normal operation, EGy is measured directly. This meter is a bidirectional power meter which can measure both the power exported from the power plant and power imported to the power plant. i.e. EGy = power export from the power plant – power import to the power plant
- When the meter for net power supplied from the power plant is in malfunction, EGy = total power generation – auxiliary power consumption

During the first verification, it was found that the meter accuracy for auxiliary power consumption is lower than what is required in PDD. A deviation was filed for the first verification and approved at EB47. During current monitoring period, the low-accuracy meter has been replaced with a new meter which meets the requirement of PDD.

Baseline emissions during this monitoring period are summarized as follows:

Monitoring period	Electricity Generated EG [tons]	Emission Factor EF [tCO_2/MWh]	Baseline Emission BE [tCO_2]
01/03/2008 - 31/05/2009	85,240	0.843	71,857

BE_Y =71，857 tCO_{2e}

The avoided baseline emissions are 71，857 tCO_{2e}. Please see attached Ningguo Monitoring Records and Emission Reduction spreadsheet for more information.

4.4 EMISSION REDUCTIONS

The emission reductions, ER_y, by the project activity during the monitoring period are the difference between the baseline emissions (BE_y) and project emissions (PE_y), as follows:

$$ER_y = BE_y – PE_y$$

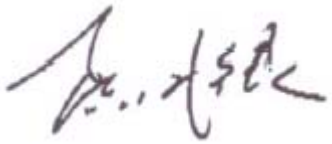
Monitoring period	Baseline Emission BE [tCO_2]	Project Emissions PE [tCO_2]	Emission Reduction ER [tCO_2]
01/03/2008 - 31/05/2009	71,857	0	71,857

The emission reductions, ER_y, by the project activity during the monitoring period are 71，857 tCO_2. Please see attached Ningguo Monitoring Records and Emission Reduction spreadsheet.

4.5 MONITORING RECORDS AND EMISSION REDUCTIONS CALCULATION

For detailed data refer to attached Ningguo Monitoring Records and Emission Reduction spreadsheet

Following person with signature below confirms the Monitoring Report of Ningguo Cement Plant 9100 kW Waste Heat Recovery and Utilisation for Power Generation Project of Anhui Conch Cement Co. Ltd



Mr. Chen Fengyin

Date: 26 Jun 2009