Joint Crediting Mechanism Project Design Document Form

Note: This JCM Project Design Document (PDD) is drafted as the result of the GEC's JCM Feasibility Study Programme in JFY2013. Therefore, this draft PDD is not officially approved by any governments involved in JCM, and is subject to change in the future.

A. Project description

A.1. Title of the JCM project

Power Generation by Waste Heat Recovery at a Cement Factory of PT Semen Indonesia

A.2. General description of project and applied technologies and/or measures

The proposed project plans to introduce a waste heat recovery (WHR) boiler steam turbine generator system at an existing cement production plant (PT Semen Indonesia, Tuban Plant) located in Tuban, East Java, Indonesia. The WHR system will utilize waste heat currently emitted from the factory without utilization. WHR boilers will generate steam using the waste heat exhausted from the cement plant, and the steam will be fed to the steam turbine generator to generate electricity at output rate of 28MW. Out of the 28MW, the operation of the WHR system itself consumes power at rated capacity of 2.4MW, and the rest will be used in the operation of the cement plant. This will result in reduced power import of approximately 165,000MWh/year from the grid which will lead to the reduction of fossil fuel combustion at grid-connected power plants.

The PT Semen Indonesia Tuban Plant has four kilns with annual production capacity of 10 million tons. The project plans to introduce two WHR boilers as a package to each kiln amounting to eight boilers which will capture exhaust gas 1) from a suspension preheater (SP) and 2) from an air quenching cooler (AQC) of each kiln.

The project is the second case of introducing WHR system in Indonesia after the first one implemented as a part of the CDM project activity in Padang, West Sumatra, Indonesia.

A.3. Location of project, including coordinates

Country	Republic of Indonesia
Region/State/Province etc.:	West Java
City/Town/Community etc:	Sumberarum, Kec. Kerek, Tuban
Latitude, longitude	-6.865459 111.911598

A.4. Name of project participants

Indonesia	PT Semen Indonesia (Persero) Tbk.
Japan	JFE Engineering Corporation

A.5. Duration

Starting date of project operation	April 2016
Expected operational lifetime of project	15 years

A.6. Contribution from developed countries

WHR technology of JFE Engineering Corporation of Japan will be introduced and JFE Engineering Corporation will provide staff training on the operation and maintenance of the WHR system. The engineering expertise will also be transferred to the host party through this project activity. This will result in the transference of technology and know-how associated with the installation and operation of the WHR system.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	JCM-JP-ID-XXXX
Version number	Ver. 01
Selected approved methodology No.	N/A
Version number	N/A
Selected approved methodology No.	N/A
Version number	N/A

B.2. Explanation of how the project meets eligibility criteria of the approved methodology

Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	The project utilizes waste heat from a cement production facility by waste heat recovery system (WHR) to generate electricity	The proposed project will utilize waste heat exhaust from cement kilns located in the Tuban cement factory by waste heat recovery system to generate electricity.
Criterion 2	WHR system consists of a Suspension Preheater boiler (SP	Planned WHR system which will be introduced to the Tuban factory consists

	boiler) and/or Air Quenching Cooler boiler (AQC boiler), turbine generator and cooling tower	of four sets of SP boiler, AQC boiler, turbine generator and cooling tower to four cement kilns.
Criterion 3	WHR system utilizes only waste heat and does not utilize fossil fuels as a heat source to generate steam for power generation	WHR system to be used in the project does not have any designed specification for using fuels for power generation.
Criterion 4	WHR system has not been introduced to a corresponding cement kiln of the project prior to its implementation	The Tuban cement factory does not have any WHR system before the project. WHR has only been introduced in the Padang cement factory located in West Sumatra in Indonesia up to date.
Criterion 5	Cement factory where the project is implemented is connected to a grid system and the theoretical maximum electricity output of the WHR system, which is calculated by multiplying maximum electricity output of the WHR system by the maximum hours per year (24 * 365 = 8,760 hours), is not greater than the annual amount of the electricity imported to the cement factory from the grid system: ➢ During the previous year before the validation, if the validation of the project is conducted before the operation of the project, or ➢ During the previous year before the operation of the project, if the validation of the project is conducted after the operation of the project	The Tuban cement factory is connected to the grid system and purchases power from PLN which is the state-owned power corporation. The factory has only standby power generation plants.

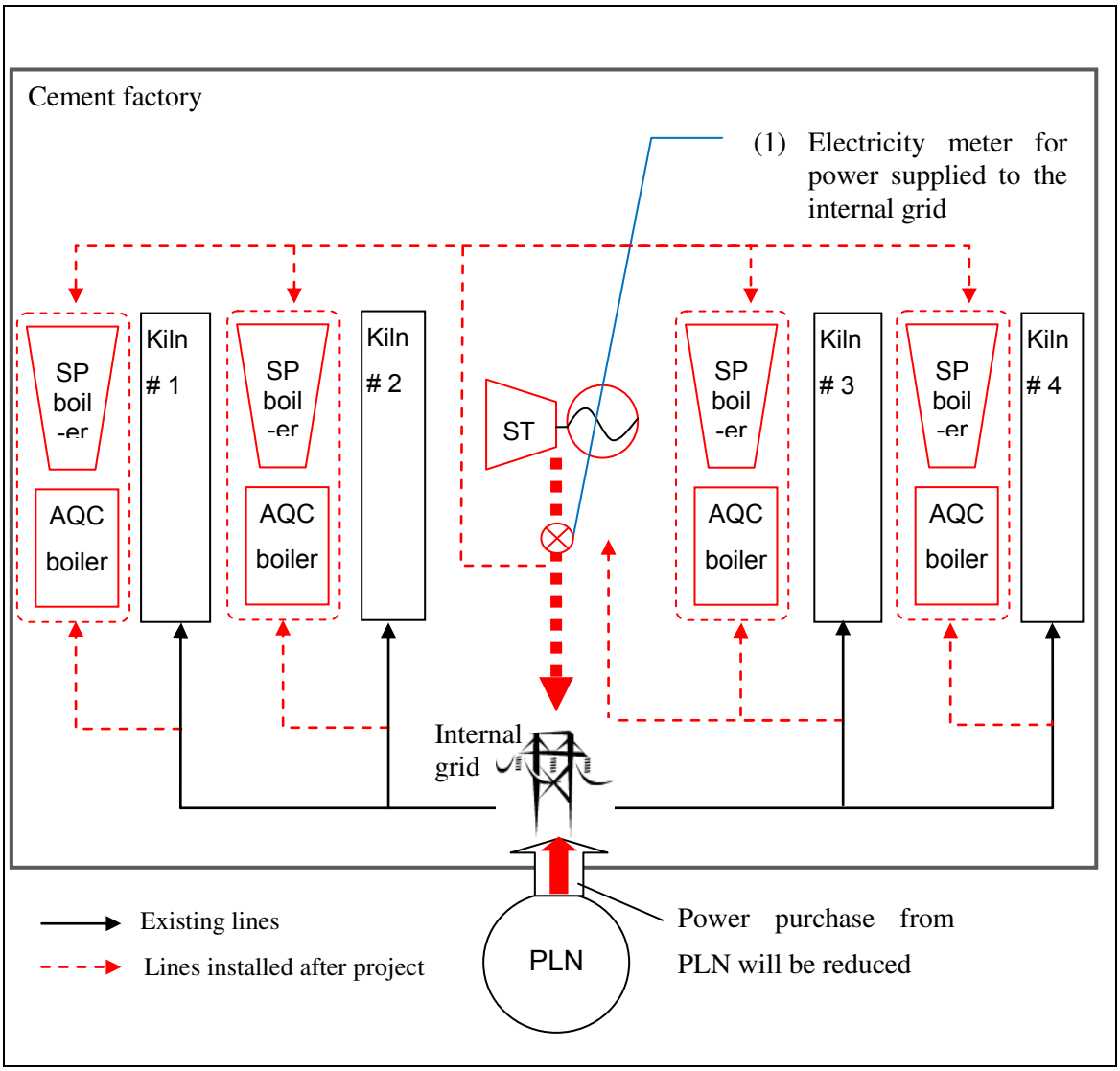
Criterion 6	N/A	N/A
Criterion 7	N/A	N/A
Criterion 8	N/A	N/A
Criterion 9	N/A	N/A
Criterion 10	N/A	N/A

C. Calculation of emission reductions

C.1. All emission sources and their associated greenhouse gases relevant to the JCM project

Reference emissions	
Emission sources	GHG type
Grid electricity generation	CO_2
Project emissions	
Emission sources	GHG type
N/A	N/A

C.2. Figure of all emission sources and monitoring points relevant to the JCM project



C.3. Estimated emissions reductions in each year

Year	Estimated Reference emissions (tCO_{2e})	Estimated Project Emissions (tCO_{2e})	Estimated Emission Reductions (tCO_{2e})
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	122,358	0	122,358
2017	122,358	0	122,358
2018	122,358	0	122,358
2019	122,358	0	122,358
2020	122,358	0	122,358

Total (tCO_{2e})	611,790	0	611,790

D. Environmental impact assessment	
Legal requirement of environmental impact assessment for the proposed project	There is no requirement for the project to conduct an EIA as stipulated in ministerial decree No. 11, 2006[1]

E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

The project participants conducted a local stakeholder consultation on 10 September 2013.
As there are no neighboring communities adjacent to the Tuban factory, the project participants selected factory workers as the stakeholders to the project. Project participants selected wide range of stakeholders to participate in the consultation. The stakeholders ranged from the managers and engineers to workers.

During the consultation, project participants explained the overview of the project, technical aspects of the WHR system, and ancillary benefits of the project.
Stakeholders generally welcomed the introduction of such technology and its benefits.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
Manager	Semen Indonesia (SI) is highly conscious about the environmental issues and is willing to commit to solve environmental problems.	N/A
Manager	SI also has paid attention to energy efficiency technology as the price of fossil fuel is rising.	N/A
Staff	What is the difference between the CDM and the JCM?	The JCM tries to streamline its process as well as it tries to reduce

[1] "PERATURAN MENTERI NEGARA LINGKUNGAN HIDUP NOMOR 11 TAHUN 2006"

		the burden on the project participants by incorporating the concept of additionality into methodologies (project participants do not need to demonstrate it) and by preparing spreadsheet for emission reduction calculation.

F. References

Reference lists to support descriptions in the PDD, if any.

Annex

Revision history of PDD		
Version	Date	Contents revised
01.0	14/01/2014	First edition
02.0	06/02/2014	Second edition
02.1	13/02/2014	Third edition