JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Introducing double-bundle modular electric heat pumps at AXIA SOUTH CIKARANG Tower 2

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

The proposed JCM project aims to reduce CO2 emissions in Indonesia by introducing a high efficient technology for hot water supply and air conditioning system in commercial buildings. The proposed project introduces a water-to-water double-bundle modular electric heat pumps (modular HP) system with 45m^3 hot water tank to a new residential hotel "AXIA SOUTH CIKARANG Tower 2", in Bekasi which is located on the eastern border of Jakarta. The project will provide hot water and air conditioning to the common area and the back yard of the project hotel, reducing the consumption of fossil fuel which would have been used for the conventional boilers for hot water supply. In addition, the energy efficiency for the air conditioning would be also improved, leading to the additional energy saving. The emission reductions that would be achieved by the proposed project are estimated to be 175 ton annually. This estimate may vary depending on the hot water demand and the cooling demand at the hotel during the monitoring period.

A.3. Location of project, including coordinates

Country	The Republic of Indonesia
Region/State/Province etc.:	West Java Province
City/Town/Community etc:	JL. PAJAJARAN NO.7 DESA SUKARESMI, LIPPO CIKARANG BEKASI 17550
Latitude, longitude	S06°19'40.5660", E107°08'02.3028"

A.4. Name of project participants

The Republic of Indonesia	PT. TTL Residences
Japan	Toyota Tsusho Corporation

A.5. Duration

Starting date of project operation	01/04/2016
Expected operational lifetime of project	8 years

A.6. Contribution from developed countries

The proposed project receives financial support from the government of Japan. The project has been selected as one of the JCM model projects by the Ministry of the Environment, Japan (MOEJ). As a result of the financial support provided by MOE program, initial investment cost of the proposed project has been partially financed by Japanese government (up to 50% of the initial investment cost). Further, implementation of the proposed project promotes technology transfer of low carbon technologies in Indonesia. Through the MOE program, high efficiency double-bundle modular electric heat pump (modular HP) will be installed at a new building.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	ID_AM010
Version number	Ver1.0

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	A project introduces (a) modular HP(s) to a new building. The total cooling capacity of the modular HP(s) is altogether less than 176 kW or 600,000 BTU/hr.	The project introduces modular HPs to a new building. The total cooling capacity of the modular HP is less than 176kW.
Criterion 2	The modular HP(s) introduced under the project has its technical capability to produce outgoing hot water higher than or equal to 70 degrees Celsius. The value can be checked against specifications from an equipment supplier.	The modular HP introduced under the project has its technical capacity to produce outgoing hot water higher than or equal to 70 degrees Celsius.
Criterion 3	In addition to the modular HP(s) installed for project, oil-fired hot water generating equipment(s) and/or electric-run chilled water generating equipment(s) may be installed and	The project installs an electric-run chilled water generating equipment to supply chilled water to the project building, in case of increased demand for cooling. The capacity of the additional equipment

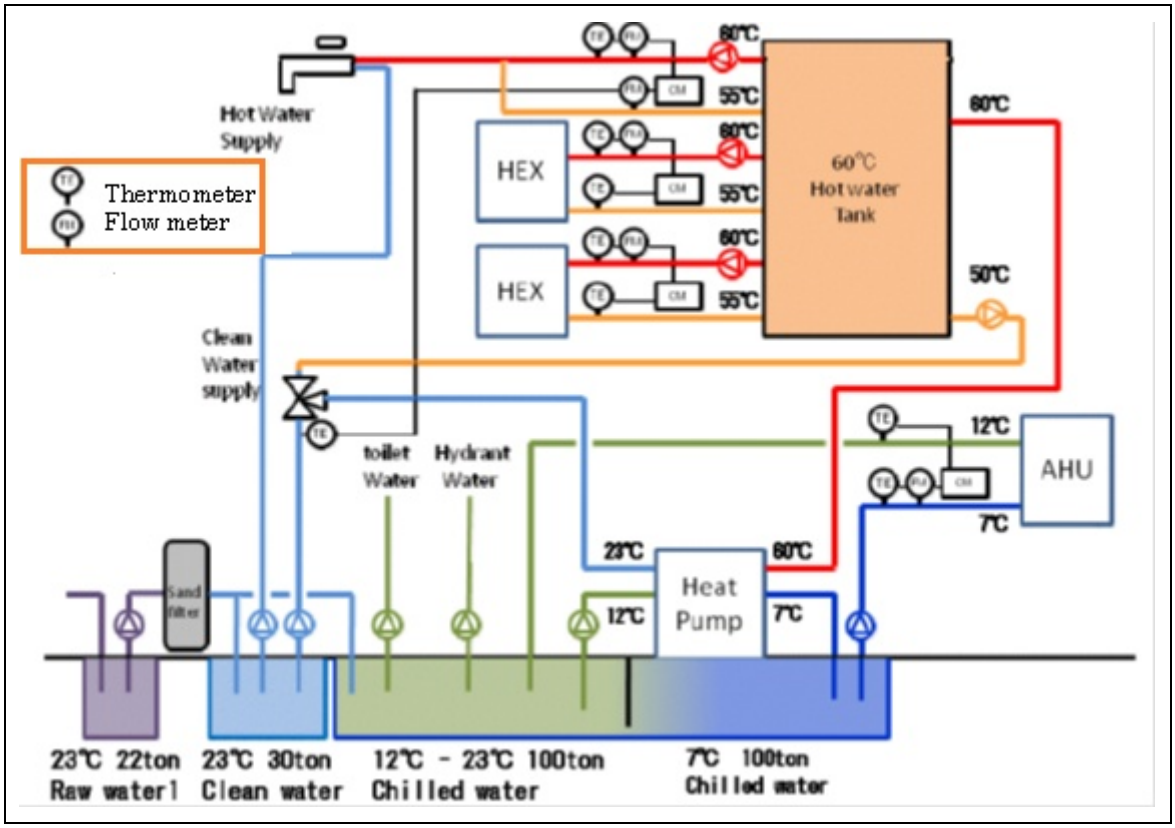
	operated to supply hot and/or chilled water to the project building. In such cases, the capacity of these additional equipment to generate hot and/or chilled water is less than or equal to half of the heating capacity and/or the cooling capacity of the modular HP(s), respectively.	to generate chilled water is less than or equal to half of the cooling capacity of the modular HP(s).
Criterion 4	A plan for not releasing refrigerant used for the modular HP(s) is prepared, if the refrigerant contains CFCs, HFCs, or HCFCs.	HFC134a is the refrigerant used for the modular HP. A management plan for not releasing refrigerant used for the modular HP has been prepared. More specifically, in case of leakage, alarm will be activated and leaked machine will stop operation until repaired.

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
Electricity consumption by chilled water generating equipment	CO_2
Oil consumption by hot water generation equipment	CO_2
Project emissions	
Emission sources	GHG type
Electricity consumption by modular HPs	CO_2
Electricity consumption by auxiliary equipment of modular HPs (i.e. air handling unit, fan coil unit, pump)	CO_2

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	390	259	131
2017	520	345	175
2018	520	345	175
2019	520	345	175
2020	520	345	175
Total (tCO_{2e})	2,470	1,639	831

D. Environmental impact assessment	
Legal requirement of environmental impact assessment for the proposed project	No

E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

To solicit comments from local stakeholders, a consultation meeting was planned by the project participant, and the project participant invited various stakeholders by sending invitation letters. Details of the local stakeholders consultation meeting is summarized as follows:

Date and Time: 04th February 2016, 09:30 – 12:00
Venue: PT Takenaka Indonesia Site Office, Jl. Pajajaran No 7 Lippo Cikarang, Jawa Barat 17530, Indonesia
Attendees:

- Indonesia JCM Secretariat
- Bureau of Industry, Trade, Cooperative, and Micro Small Medium Business of Bekasi Regency
- International Cooperation Division, Regional Autonomy and Cooperation Bureau, Government of West Java Province
- Social Service Bureau, Government of West Java Province
- PT TTL Residences
- PT Takenaka Indonesia
- PT Toyota Tsusho Indonesia
- Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.

For the following agencies which were invited and were unable to attend the local stakeholders' consultation meeting, the project participants sent the presentation materials used in the meeting, requesting them to send their comments, if any.

- Regional Environment Management Board of West Java Province
- Department of Communications and Information, Government of West Java Province
- Indonesia Hotel Engineers Association
- Building Engineers Association Indonesia

As the result, the project did not receive any comments from those who were invited and were not able to attend the local stakeholders' consultation meeting.

At the meeting, a brief introduction about JCM was provided first. Then details of the project and the technology introduced by the project were explained by the engineering firm who are in charge of the technical design of the project, followed by a Q and A session. Total of nineteen

attendees to the meeting expressed their comments to the proposed project actively at the consultation meeting. In general, the project was received positively, and many stakeholders showed their interest in JCM scheme. At the meeting, no negative comments toward the proposed project were heard. The received comments from the local stakeholders, along with the responses/action to the comments, are listed in the following section.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
Official, Social Service Bureau, Government of West Java Province	What can Government of West Java do to assist with this project? The technology introduced to produce hot water may be applicable for other hotels especially since there are trends of more high-rise buildings being built in West Java.	Following feedback was provided to the comments by the project participants: It would be appreciated that Government of West Java could support in information distribution and dissemination regarding the technology employed in this project to other potential hotels, especially the members of West Java hotel association (PHRI of West Java). In addition, the government can also facilitate in business matching between local and Japanese companies with relevant technologies. **No further action is necessary.**
Official, Social Service Bureau, Government of West Java Province	Will this technology be applicable to the existing hotels?	Following feedback was provided to the comments by the project participants: It may be applicable as long as the hotel's needs for hot water can be balanced with the heat generation from other equipment such as Air Conditioning etc. AXIA hotel uses a lot of hot water especially for its hot water pool, whereas most of the hotels in Indonesia may not need a lot of hot water, so the requirement is unbalanced as compared to heat generated from ACs. **No further action is necessary.**
Official, Bureau of Industry, Trade, Cooperative,	For this project, how is the progress on Environmental Impact Assessment (UPL/UKL)?	Following feedback was provided to the comments by the project participant: The relevant permits (UPL/UKL, Building permit, Disturbance permit, etc) have been

and Micro Small Medium Business of Bekasi Regency	Also, how is the permit for the installation of the technology?	obtained from the authorities concerned before the start of the project, and the implementation of the technology has also been included. In addition, for the equipment, there is also a permit from Ministry of Manpower regarding operational safety of the equipment. **No further action is necessary.**
Official, International Cooperation Division, Regional Autonomy and Cooperation Bureau, Government of West Java Province	Currently, the Government of West Java is having a sister city program with Japan between Bandung and Kawasaki city. Is JCM program here a one-door way for the cooperation, or whether there is any other ways as an alternative to JCM?	Following feedback was provided by Indonesian JCM secretariat: So far, JCM is the one-door access for the cooperation which includes the sister city program. Other examples of sister city is the cooperation between Surabaya and Kita-Kyushu and between Batam and Yokohama. The cooperation of Bandung with Kawasaki City has been advanced from LoI (Letter of Intent) to MoU (Memorandum of Understanding) signing, which creates more cooperation in many sectors. Potential companies who would like to apply for JCM can do so by submitting a Project Idea Note (PIN) and propose the project through JCM website at http://jcm.ekon.go.id/. The assistance from JCM can be obtained for Feasibility Study, Project Planning Study and the actual subsidy, as long as the project employs a Japanese technology and contributes to reducing Emissions. **No further action is necessary.**
Official, Social Service Bureau, Government of West Java Province	How long will it take for the project to go through Joint Crediting Mechanism (JCM) procedures, and what are the detailed processes?	Following feedback was provided to the comment by the project participants: The process of JCM includes the methodology development, PDD development, validation, and verification. The process for JCM from the conception (Project Idea Note) until registration will normally take about 1– 1.5 years, if a suitable methodology is available in Indonesia. If no

		methodology exists yet, then new methodology development may take another 1 year. **No further action is necessary.**

F. References
N/A

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

Annex
N/A

Revision history of PDD		
Version	Date	Contents revised
01.0	03/08/2016	First Edition
02.0	29/08/2016	Second Edition