JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller
Reference number	ID001
Third-party entity (TPE)	Lloyd's Register Quality Assurance Limited (LRQA)
Project participant contracting the TPE	Nippon Koei Co., Ltd.
Date of completion of this report	28/10/2014

A.2 Conclusion of validation

Overall validation opinion	☒ Positive ☐ Negative

A.3. Overview of final validation conclusion

Only when all of the checkboxes are checked, overall validation opinion is positive.

Item	Validation requirements	No CAR or CL remaining
Project design document form	The TPE determines whether the PDD was completed using the latest version of the PDD forms appropriate to the type of project and drafted in line with the Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan and Monitoring Report.	☒
Project description	The description of the proposed JCM project in the PDD is accurate, complete, and provides comprehension of the proposed JCM project.	☒
Application of approved JCM methodology (ies)	The project is eligible for applying applied methodology and that the applied version is valid at the time of submission of the proposed JCM project for validation.	☒
Emission sources and calculation of emission reductions	All relevant GHG emission sources covered in the methodology are addressed for the purpose of calculating project emissions and reference emissions for the proposed JCM project.	☒
	The values for project specific parameters to be fixed *ex ante* listed in the Monitoring Plan Sheet are appropriate, if applicable.	☒
Environmental impact assessment	The project participants conducted an environmental impact assessment, if required by the Republic of Indonesia, in line with Indonesia's procedures.	☒
Local	The project participants have completed a local stakeholder	☒

Item	Validation requirements	No CAR or CL remaining
stakeholder consultation	consultation process and that due steps were taken to engage stakeholders and solicit comments for the proposed project unless a local stakeholder consultation has been conducted under an environmental impact assessment.	
Monitoring	The description of the Monitoring Plan (Monitoring Plan Sheet and Monitoring Structure Sheet) is based on the approved methodology and/or Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan, and Monitoring Report. The monitoring points for measurement are appropriate, as well as whether the types of equipment to be installed are appropriate if necessary.	☒
Public inputs	All inputs on the PDD of the proposed JCM project submitted in line with the Project Cycle Procedure are taken into due account by the project participants.	☒
Modalities of communications	The corporate identity of all project participants and a focal point, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories are included in the MoC.	☒
	The MoC has been correctly completed and duly authorized.	☒
Avoidance of double registration	The proposed JCM project is not registered under other international climate mitigation mechanisms.	☒
Start of operation	The start of the operating date of the proposed JCM project does not predate January 1, 2013.	☒

Authorised signatory:	Mr. ☒ Ms. ☐
Last name: Chiba	First name: Michiaki
Title: Climate Change Manager - Asia & Pacific	
Specimen signature:	Date: 28/10/2014

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Michiaki Chiba	LRQA Ltd.	Team leader	☒	Technical competence authorised	☐
Mr. ☒ Ms. ☐	Dave Mateo	LRQA Ltd.	Team member	☒	Technical competence authorised	☒
Mr. ☒ Ms. ☐	Cholid Bafagih	LRQA Indonesia	Team member	☐	N/A	☐
Mr. ☒ Ms. ☐	Takahiro Iio	LRQA Ltd.	Internal reviewer	☒	N/A	☐

Please specify the following for each item.

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*
* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*
* *Technical competence: Indicate if the personnel have sufficient technical competence related to the project under validation.*

C. Means of validation, findings, and conclusion based on reporting requirements

C.1. Project design document form

<Means of validation>

The PDD was checked and confirmed as complete against the JCM Guidelines for Developing PDD and MR No. JCM_ID_GL_PDD_MR_ver01.0. A valid form of the JCM PDD Form No. JCM_ID_F_PDD_ver01.0 is used for the PDD Version 1.0 dated 24/09/2014 (the first edition). It was re-checked for the revised PDD Version 2.0 dated 27/10/2014. The version is the final version on which the validation was completed.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was identified to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the PDD was completed using the valid form of the JCM PDD Form and in accordance with the JCM Guidelines for Developing PDD and MR.

C.2. Project description

<Means of validation>

The project is to install a high efficiency centrifugal chiller at the textile factory of PT. Primatexco Indonesia in Batang, Central Java Province, Indonesia to reduce GHG emissions from electricity consumption for air-conditioning and process cooling. The project chiller has output capacity of 499 USRt and is made by Ebara Refrigeration Equipment & Systems Co., Ltd. (ERS), Japan.

The project is implemented by PT. Primatexco Indonesia from the Republic of Indonesia, Nippon Koei Co., Ltd. and ERS from Japan. The start date of project operation is on 01/03/2014 and the expected operational lifetime of the project is for 7 years.

The project receives financial support for JCM model projects from the Ministry of the Environment, Japan. The project participants (PPs) from Japan contribute in the project achieving GHG emission reductions by provision of high efficiency centrifugal chiller technology developed by ERS, after maintenance services for proper performance and operator training programme.

The validation team assessed the PDD and the supporting documents, conducted a physical site visit to validate the requirements concerning accuracy and completeness of the project description. The details of the persons interviewed and documents reviewed are provided in the Section E of this report.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Grade / Ref: CL 01

Nature of the issue raised:

The capacity of the old chillers indicated in the PDD, 250 USRt and 230 USRt, is noted as based on the name plate capacity for the existing centrifugal chiller while the actual capacity for the existing absorption chiller. The PPs were requested to provide relevant supporting information and clarify the operational circumstances where the proposed JCM project takes place, including cooling demand of the project site and service level of old chillers that will be displaced by the project chiller.

It was also noted that the existing absorption chiller was run with steam as the main energy source. The PPs were requested to clarify the source of the steam used for the old chiller and explain relevance of the reference scenario being applied for the project case.

Nature of responses provided by the PPs:

Plate capacity of the old chillers is 230 USRt and 400 USRt, while actual capacity is 200 USRt

and 250 USRt respectively. The cooling requirements of the project are 500 USRt.
The applied methodology is for the centrifugal chillers only. The reference scenario is the installation of a new normal efficiency centrifugal chiller. The absorption chiller of 400 USRt consumes coal for the source of steam.

Assessment of the responses:
The validation team reviewed technical specification and the other operational records and physically observed the old chillers that were kept as the stand-by units at the project site. The sources of steam used by the existing absorption chiller were confirmed as the on site steam boilers that use fossil fuels only.
The PPs revised the description of the PDD to remove inconsistency of information and accurately reflect the operational circumstances and the cooling demands there that the JCM project is implemented. The finding was closed on completion of review of the clarification provided by the PPs with supporting evidence as appropriate.

Grade / Ref: CL 02
Nature of the issue raised:
The PP referred to the Statutory useful life for the calculation of depreciation and amortization for machinery and equipment issued by Japan's Ministry of Finance for the basis of the expected operational lifetime of the project chiller indicated as for 7 years. The PPs were requested to clarify relevance of the chosen operational lifetime and its applicability for the use in the country of Indonesia.
It was also noted that the Annex 1 to the Act of Japan's Ministry of Finance concerning Statutory useful life for the calculation of depreciation and amortization indicates the useful life of air-conditioning facilities is for 13 years for chillers with output capacity less than 22 kW and for 15 years for the others (The project chiller has output capacity of 1,758 kW).

Nature of responses provided by the PPs:
According to the Act of Japan's Ministry of Finance, depreciation of machines and facilities for textile industry is 7 years, while in Indonesia, according to the Act 36 of 2008 and the Ministry of Finance Regulation No. 96/PMK.03/2009, the lifetime of air-conditioning facilities (Group 2) is for 8 years and it of textile industry (Group 3) is for 16 years. The PPs selected the one most conservative.

Assessment of the responses:
The PPs referred to the regulations in Japan and Indonesia. The project chiller applying the state-of-art design of the Japanese leading manufacturer will have a longer operational lifetime

with sound operation and maintenance activities. But the PPs selected the shortest lifetime among those specified by the applicable regulations. That is conservative and was considered acceptable as it fulfils the duration of the crediting period. The finding was closed after the clarification and supporting evidence provided by the PPs having been assessed.

Grade / Ref: CAR 03
Nature of the issue raised:
The geographic coordinates stated in the PDD did not match with the location of the project site as described in Batang, Central Java Province.
The format of the geographic coordinates is to be N ddº mm' ss" and E ddº mm' ss" instead of ddº mm' ss N and ddº mm' ss' E.

Nature of responses provided by the PPs:
Location of the project site was corrected with the coordinates S 6°55' 0", E 109°44'53" in PDD A.3.

Assessment of the responses:
The PPs corrected the geographic coordinates of the project site in Section A.3. of the revised PDD that are presented in a correct format as requested by the JCM Guidelines for Developing PDD and MR. The finding was closed on confirmation of the correction made by the PPs in the revised PDD.

<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
The validation team assessed the project description provided in the PDD with the supporting documents and conducted a physical site visit to the requirements on the accuracy and completeness. 1 CAR and 2 CLs raised were successfully closed as the resolution above detailed. The validation team confirmed that the proposed JCM project in the revised PDD is described in accurate and complete manners that is understandable the nature of the proposed project activity.

C.3. Application of approved methodology(ies)

<Means of validation>
The project applied the approved methodologies: JCM_ID_AM002_ver01.0 "Energy Saving by Introduction of High Efficiency Centrifugal Chiller". The methodology is approved by the JC on 17/09/2014 and valid as of the time of the validation.
LRQA assessed if the selected methodology is applicable to the proposed project. The project

applicability was checked against each eligibility criteria in the approved methodology selected. The steps taken to validate each eligibility criterion and the conclusions about its applicability to the proposed project are summarised as below.

Criterion 1: Project Chiller is a centrifugal chiller with a capacity of less than 1,250 USRt. 1 USRt = 3.52 kW

Justification in the PDD: Project chiller (Ebara high efficiency centrifugal chiller : RTBF 050) is centrifugal chiller with a capacity of 499 USRt. 1758 [kW] / 3.52 = 499.4 USRt

Steps taken for assessment:

Document review was conducted on the technical specification, the records of factory acceptance tests, and a site visit was conducted including assessment of the equipment supply contract, the performance test results and a physical observation.

Conclusion:

Based on the validation processes taken, the validation team confirmed that the project chiller is a centrifugal chiller with a capacity of 499 USRt. Therefore the criterion is satisfied.

Criterion 2: COP for project chiller i calculated under the standardizing temperature conditions (COP_PJ,tc,i) is more than 6.0. COP_PJ,tc,i is a recalculation of COP of project chiller i (COP_PJ,i) adjusting temperature conditions from the project specific condition to the standardizing conditions. COP_PJ,i is derived in specifications prepared for the quotation or factory acceptance test data at the time of shipment by manufacturer.

The standardizing temperature conditions to calculate COP_PJ,tc,i

Chilled water: Output 7 ℃
Input 12 ℃
Cooling water: Output 37 ℃
Input 32 ℃

Justification in the PDD: The COP for project chiller (COP_PJ,tc,i) which is introduced to the proposed project is 6.01. 7.66 x (36.9 - 14 + 1.5 +1.5) / (37.0 - 7 +1.5 + 1.5) = 6.0119

Steps taken for assessment:

Document review was conducted on the technical specification, the records of the factory acceptance tests, and a site visit was conducted including assessment of the performance tests results.

Conclusion:

Based on the validation processes taken, the validation team confirmed that COP of the project chiller was determined as 7.66 by results of the factory acceptance tests, i.e. the cooler output of 1,758.1 kW divided by the input motor power of 229.5 kW. The COP value is then adjusted to the standardizing temperature conditions as 6.01 following the procedures stipulated in the

approved methodology using output cooling water temperature of the condenser at 36.9 ℃ and output chilled water temperature of the cooler at 14.0 ℃ as obtained in the factory acceptance tests. Thus the criterion is met by the proposed project.

Criterion 3: Periodical check is planned more than four (4) times annually.
Justification in the PDD: PT Ebara Indonesia (subsidiary of the ERS which is a chiller manufacturer) agreed to conduct periodical checks more than four (4) times annually, in order to check the troubles occurred from the last check.
Steps taken for assessment:
Document review was conducted on the confirmation from PT Ebara Indonesia, the periodical check reports since commissioning, and a site visit was conducted including assessment of the operation and maintenance records and discussion of operational issues.
Conclusion:
It was confirmed that the periodical check is planned more than four (4) times annually and the eligibility condition is met by the project based on the review of documented confirmation from PT Ebara Indonesia, records of periodical checks actually implemented since commissioning and interviews with the PPs. The criterion was therefore fulfilled.

Criterion 4: Ozone Depletion Potential (ODP) of the refrigerant used for project chiller is zero.
Justification in the PDD: Refrigerant for the project chiller is HFC 245fa, whose ODP is zero.
Steps taken for assessment:
Document review was conducted on the technical specification, MSDS of refrigerant (HFC 245fa) and the other supporting information.
Conclusion:
The project chiller uses the refrigerant HFC 245fa whose ODP is zero and the information was cross checked through the on site visit. Thus the criterion was confirmed as satisfied by the project.

Criterion 5: Plan for not releasing refrigerant used for project chiller is prepared. In the case of replacing the existing chiller with the project chiller, refrigerant used for the existing chiller is not released to the air.
Justification in the PDD: Letter of consent on not releasing refrigerant used for project chiller was prepared by PT. Primatexco Indonesia.
Steps taken for assessment:
Document review was conducted on the plan of the PT. Primatexco Indonesia and the supporting information and a site visit was conducted including assessment of supporting evidence as well as the interviews with the PPs.

Conclusion:
CL 03 was raised to request the PPs to clarify effective plan to satisfy the requirement of the criterion that was subsequently closed as the resolution detailed below. The validation team confirmed that the eligibility condition is satisfied by the project after reviewing responses from the PPs to the CL.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Grade / Ref: CL 03

Nature of the issue raised:
Concerning the letter of consent on not releasing refrigerant used for the project and existing chillers prepared to answer Criterion 5, the PPs were requested to clarify the plan to effectively prevent release of the refrigerant from the project chiller and the old chillers by providing supporting information of:
1) Procedures of the manufacturer to handle and manage refrigerant through the operation and maintenance being applied by PT. Ebara Indonesia.
2) Procedures of the manufacturer to safely store and re-use refrigerant of the old chillers being applied by PT. Ebara Indonesia, including information of refrigerant used in the old chillers.
3) Qualification and capacity of company destructing refrigerant (PPLi).

Nature of responses provided by the PPs:
1) PT. Ebara Indonesia will apply the recovery equipment specially designed for safe recovering of refrigerant from chillers.
2) PT. Primatexco will monitor the pressure of the refrigerant in the old chillers. The chiller operator monitors pressure gage of old chillers and will report to the supervisor in case the pressure goes down. The existing centrifugal chiller used HFC 134a while the existing absorption chiller used purified water as the refrigerant.
3) PPLi is the only licensed company to handle B3 (hazardous) waste in Indonesia and PPLi is conducting the thermal destruction of refrigerant in Holcim Company which is equipped with the appropriate facility for the thermal destruction.

Assessment of the responses:
The validation team reviewed the clarification and supporting documents submitted by the PPs. The plan for not releasing refrigerant applies the procedures of the equipment manufacturer including routine checks and use of the special refrigerant recovery equipment developed by a Japanese company to prevent a leak during maintenance. For destruction of waste refrigerant when a chiller is disposed, the PPs will commission the treatment by a licensed hazardous waste

treatment company such as PT Prasadha Pamunah Limbah Industri (PPLi) who is a subsidiary company of Dowa Eco System Co., Ltd. of Japan. The existing centrifugal chiller used HFC 134a as the refrigerant that has GWP of 1,300 while GWP of HFC 245fa applied by the project chiller is 1,030. GHG emissions won't increase with the JCM project applying the plan to prevent atmospheric release of the refrigerants. The finding was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the project applied the valid version of the approved methodology and the applicability was demonstrated to the eligibility criteria as appropriate.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

The project provides the cooling services by application of high efficiency chiller. The sources of GHG emissions are electric power consumption by the reference chiller and the project chiller. The annual electricity consumption by the project chiller is estimated at 1,910 MWh. There is no on site power generation unit to supply captive electricity at the project site and all the electricity is supplied by the public power grid system of the region. The CO2 emission factor of the grid electricity is determined as 0.814 tCO2/MWh based on the most recent data published by the Indonesian Designated National Authority (DNA). The COP of the reference chiller is determined as 5.59 applying the default value. The COP of the project chiller is 7.66 based on the result of the factory acceptance test that is adjusted to 6.01 following the standardizing temperature conditions. The GHG emission reductions during the period p are calculated as: ERp = REp - PEp = EC_PJ,i,p x (COP_PJ,tc,i / COP_RE,i) x EFelec - EC_PJ,i,p x EFelec. The annual GHG emission reductions are calculated using the estimated annual electricity consumption of the project chiller as: 1,910 MWh x (6.01 / 5.59) x 0.814 - 1,910 MWh x 0.814 = 1,672.09 - 1,554.74 = 117 tCO2. The project started operation on 01/03/2014 and the GHG emission reductions of the year 2014 are estimated as 1,672.09 x 10/12 - 1,554.74 x 10/12 = 1,393.41 - 1,295.62 = 97 tCO2.

The validation team assessed the documented evidence and by means of on site visit confirmed that all the relevant GHG emission sources covered in the applied methodology are addressed, and the steps taken and the equations applied to calculate project emissions and reference emissions for the proposed project comply with the requirements of the approved methodology.

Through the processes taken, CL 04 was raised and subsequently closed as the resolution detailed below.

The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Grade / Ref: CL 04

Nature of the issue raised:

The PPs were requested to clarify the extent of the project boundary in the description of the figure in the PDD C.2. in particular,

1) if the project boundary only includes the chiller and the electricity meter measures electricity consumed by the chiller only, including provision of electricity diagram of the project site, and

2) if the project does not affect energy consumption and the other operational conditions of the pumps and cooling towers, including provision of piping diagram of the project site, should the balance facilities be excluded from the project boundary.

Nature of responses provided by the PPs:

The project boundary includes the chiller and the electricity meter #1 that measures electricity consumed by the chiller only. The figure in the PDD C.2. was revised.

Assessment of the responses:

The validation team confirmed based on review of the documents and the physical site assessment that the project only includes the chiller and the energy meter #1 in its boundary. The figure in the PDD C.2. was revised for clarification.

The project replaces the service level of the existing equipment and any increase of cooling demand is not expected in the project site. The project chiller is more energy efficient than the existing chillers and may result in reduction of energy consumption by the auxiliary equipment, however, the applied methodology does not address such associated GHG emission reduction effect as it is simpler and conservative. The finding was therefore closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that:

- The methodology was applied correctly to calculate project emissions and reference emissions and no other significant emission source was identified that would be affected and reasonably attributed by implementation of the proposed project but not addressed by the applied methodology;

- The choice of whether a emission source or gas is to be included where the applied methodology allows was reasonably justified by the PPs;

- The Monitoring Plan Sheet was not altered and the fields were filled in as required so that all

estimates of the reference emissions could be replicated using the data and parameter values provided in the PDD;
- The values for the project specific parameters fixed ex ante listed in the Monitoring Plan Sheet were appropriate with all the data sources and assumptions and the calculations were correct to the proposed JCM project;
- All assumptions and data used by the PPs were listed in the PDD, including their references and sources; and
- All values used in the PDD were considered reasonable in the context of the proposed JCM project.

C.5. Environmental impact assessment

<Means of validation>

The proposed project is to adopt a high efficient chiller in the existing textile factory and the PDD stated that an environmental impact assessment is not required by laws of the host country. The validation team assessed the applicable legal requirements in the host country using its local expertise and raised a CL that was subsequently closed as detailed below.
The details of the persons interviewed and documents reviewed are provided in the Section E of this report.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Grade / Ref: CL 07

Nature of the issue raised:

The PDD states that the proposed project is not subject to an environmental impacts assessment according to national or local regulations, however, according to the laws of the host country, different levels of environmental management and reporting are applicable depending on the significance of the environmental impacts of the project activity, i.e. AMDAL (detailed EIA), UKL/UPL (Environmental Management Plan - Environmental Monitoring Plan), and SPPL. The PPs were requested to clarify if the project is applied either one of the EIA documentation or requirements of the local government to receive the environmental permit.
The PPs were also requested to provide IPLC (Wate Water Disposal Permit) that the factory has and confirm if the project affects it.

Nature of responses provided by the PPs:

PT. Primatexco has appropriate and effective permits related to environmental regulations in Indonesia, namely UKL-UPL approved by Environmental Agency of Batang Regency (Letter No. 660.1/139A/2009 dated 30/04/2009) and IPLC approved by Environmental Agency of

Batang Regency (Letter No. 660.3/4/2014 dated 16/06/2014). To acquire these permits, potential impacts by the factory were already considered and necessary countermeasures were taken so that the environmental standards of Indonesia were met. Considering the nature of the project chiller whose design is environment-friendly and energy saving, this project to replace cooling demands having been supplied by the existing chillers decreases the potential impacts and thus, the current effective UKL-UPL remains effective as the normal practice. In the same way, the project does not affect current effective IPLC.

Assessment of the responses:
The validation team through the on site assessment reviewed the documents related with the environmental permits of the project factory and confirmed its compliance status with the host country regulations. The project activity was confirmed not required to conduct an EIA and it does not adversely affect the compliance status of the project factory with the host country regulations. Thus the finding was closed.

<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
The validation team confirmed by assessing the relevant documents and using the local expertise and raised CL 07 to clarify the compliance status with the host country legal requirements. The finding was subsequently closed as the resolution detailed above and the validation team confirmed that the project does not need an environmental impacts assessment to be conducted to meet the legal requirement of the host country and the PDD satisfies the requirements of the JCM.

C.6. Local stakeholder consultation

<Means of validation>
The PPs identified the plant manager and the supervisor (please refer to CL 06 below) as the local stakeholders and collected comments on the proposed project through interviewing them at the project site on 07/09/2013, 25/09/2013, 03/02/2014 and during their visit to ERS and the other locations in Japan during 25-27/11/2013. The PPs also invited the local governments for comments on 01/09/2014. The local stakeholders appreciate the project and provided positive comments. No negative issue was raised through the processes that require actions to be taken by the PPs.
The validation team raised CL 06 and confirmed through assessing the resolution as detailed below that the stakeholder consultation process and targeted stakeholders were appropriate for identifying stakeholders' opinions about the project and collecting their views.
The details of the persons interviewed and documents reviewed are provided in the Section E of

this report.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Grade / Ref: CL 06

Nature of the issue raised:

The PPs were requested to explain how they have identified and invited for the consultation process the local stakeholders relevant for the proposed project.

It was noted that the person commented was the supervisor instead of the chiller operator.

Nature of responses provided by the PPs:

Since this project is installation of a chiller only, direct stakeholders are only the factory staff related to chiller operations, namely the plant manager and supervisor.

As a JCM project, indirect stakeholders were identified to be staff of local governments since they enjoy the benefit of the project (GHG reduction, energy saving, capacity development within their administrative boundary). Provincial and district governments were selected through consultation with Indonesian JCM secretariat.

Assessment of the responses:

The project activity is limited to installation of a new chiller in the existing textile factory with environmental friendly design. Considering the extent of the activity with a limited level of potential social and environmental impact, the stakeholders identified by the PP were considered as satisfactory to the requirements of JCM. The explanation was added to Section E.1. of the revised PDD to clarify how the local stakeholders were identified relevant to the project. Correction was made on the description of local stakeholder who made the comment in Section E.2. of the revised PDD. The finding was therefore closed after reviewing the clarification and correction made in the revised PDD.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the PPs have invited comments to the proposed project from the relevant local stakeholders, the summary of the comments received is provided in the PDD in a complete manner and the PPs have taken due account of all the comments received from the local stakeholders as the processes described in the PDD.

C.7. Monitoring

<Means of validation>

The Monitoring Plan consisting of the Monitoring Plan Sheet and Monitoring Structure Sheet was based on the approved methodology. There are three monitoring points as the methodology provides, namely No. 1: Power consumption of project chiller, No. 2: Electricity imported from the grid to the project site, and No. 3: Operating time of captive electricity generator.

The power consumption of the project chiller is directly and continuously measured by an electricity meter. The project plans to apply an auto data collection system. The recorded data is to be checked on a monthly basis by the responsible staff. The electricity meter is to be certified in compliance with national/international standards and annually calibrated by a qualified agency.

The electricity imported from the grid to the project site is to be monitored by invoices from the power company on a monthly basis.

The operating time of captive electricity generator is directly and continuously measured by meter equipped to a generator. However, there is no generator for captive electricity in the project and the monitoring is not applicable. Please refer to CL 05 below.

The roles and responsibilities of the persons are described in the Monitoring Structure Sheet in accordance with the requirements of the applied methodology. The monitored data collected is to be checked by the Chiller Operator and the Supervisor and reported after approval by the Plant Manager.

The validation team confirmed that the Monitoring Plan complied with the requirements in the approved methodology and that the PPs will be able to apply the Monitoring Plan following the monitoring arrangements described in it. CAR 01 and CL 05 were closed after reviewing of the corrective action and clarification undertaken by the PPs through the validation while FAR 01 was issued to draw a specific attention at the first verification that does not prevent the project from registration as a JCM project.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Grade / Ref: CL 05

Nature of the issue raised:

The parameter h_gen,p is indicated in the column of other comments that in the project, there is no generator for captive electricity. However, the PPs were requested to clarify that the monitoring is not applicable for the project case.

Nature of responses provided by the PPs:

In this project, there is no on site generator for captive electricity. So parameter “h_gen,p“ is not applicable. The clarification was added to the PDD C.2. and the Monitoring Plan Sheet (the other comments).

Assessment of the responses:
It was confirmed through the on site assessment that there is no power generator to supply captive electricity in the project site.
The PPs revised the PDD and Monitoring Plan Sheet to clearly state that the parameter is not applicable for the project. The finding was closed after reviewing appropriateness of the clarification in the revised PDD.

Grade / Ref: CAR 01
Nature of the issue raised:
Based on the review of the description in the Monitoring Plan Sheet and the technical specification of the measuring equipment, it was not confirmed that the requirements of the applied methodology had been fulfilled concerning the certification of the measuring equipment and the calibration at the specified frequency. The PPs were requested to demonstrate how the monitoring plan satisfies the requirements of the applied methodology including the quality of meter and the calibration.
The measurement methods and procedures do not include details of accuracy level of the electricity meter to be used.
The PPs were also requested to clarify if the description includes the QA/QC procedures as appropriate.

Nature of responses provided by the PPs:
The PPs confirmed to use an electricity meter certified with national/international standards that is to be calibrated annually after the installation by a qualified agency in order to fulfil the requirements of the applied methodology. The electricity meter has accuracy at ±1.0% or better. QA/QC procedures are added to the description in the revised Monitoring Plan Sheet.

Assessment of the responses:
The PPs corrected the description of the measuring equipment and the calibration in the revised Monitoring Plan Sheet to meet the requirements of the applied methodology. Description of QA/QC was added to the description and the calibration frequency was confirmed on an annual basis. The validation team reviewed the revised Monitoring Plan Sheet and confirmed that the described monitoring plan as revised meets the requirements of the applied methodology.
FAR 01 was raised, while CAR 01 was closed, since the PPs confirmed in resolution of the CAR to apply a new electricity meter that fully satisfies the requirements of the applied methodology. That is to be reviewed through the first verification.

Grade / Ref: FAR 01

The PPs confirmed in resolution of CAR 01 above to apply a new electricity meter that fully satisfies the requirements of the applied methodology. The resolution will be reviewed through the first verification to ensure that the data used for calculation of the emission reductions is measured by equipment that fulfils the requirements of the applied methodology.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the MP was described in compliance with the requirements of the approved methodology and the Guidelines for developing PDD and MR, and the PPs have demonstrated feasibility of the monitoring structure and their ability to implement the MP. FAR 01 raised above in resolution of CAR 01 is to be reviewed through the first verification.

C.8. Modalities of Communication

<Means of validation>

The MoC was submitted to LRQA for review in the form JCM_ID_F_MoC_ver01.0 that nominates Nippon Koei Co., Ltd. as the focal point and was signed by the authorized representatives of all the PPs with the contact details. The form used is the latest one as of the time of validation.

The validation team assessed the personal identities including specimen signatures and employment status of the authorized signatories through reviewing the written confirmation from the PP with whom LRQA contracted the validation, namely Nippon Koei Co., Ltd. CAR 02 was raised since the relevant document was not submitted by the PPs at the start of the validation process that was subsequently closed as the resolution below detailed. The written confirmation was issued by Mr. Masaru Ishikawa whose authorization by Nippon Koei Co., Ltd., the focal point of the PPs, was confirmed by the power of attorney, and it confirms that all corporate and personal details including specimen signatures are valid and accurate as requested in the JCM Guidelines for Validation and Verification. The validation team also confirmed through reviewing the corporate information of the PPs and by meeting the persons representing the PPs that the information provided in the MoC is correct.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Grade / Ref: CAR 02

Nature of the issue raised:

Evidence was not presented to enable confirmation of authorization of signatories for the MoC at the start of the validation process.

Nature of responses provided by the PPs:
The written confirmation was issued by Mr. Masaru Ishikawa representing the focal point of the PPs, Nippon Koei Co., Ltd. The power of attorney was also submitted to confirm the authorization.

Assessment of the responses:
The validation team assessed corporate and personal identities of the PPs based on the written confirmation issued by the authorised representative of the focal point. It confirms that all corporate and personal details including specimen signatures are valid and accurate as requested in the JCM Guidelines for Validation and Verification and the authorisation was confirmed based on the power of attorney submitted by the PP. The validation team also confirmed through reviewing the corporate information of the PPs and by meeting the persons representing the PPs that the information provided in the MoC is correct. The CAR was closed.

<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
The validation team confirmed that the MoC was completed using the latest form. CAR 02 was issued and subsequently closed after assessment conducted on relevance of the MoC in compliance with the requirements of the JCM Guidelines.

C.9. Avoidance of double registration

<Means of validation>
The validation team assessed and confirmed relevance of the written confirmation in the MoC from the PPs that the proposed JCM project was not registered under the other international climate mitigation mechanisms.
The team in addition to the interviews with the PPs checked publicly accessible information of Clean Development Mechanism (CDM), Joint Implementation (JI), Verified Carbon Standard (VCS) and Gold Standard (GS) and found no identical project as the proposed JCM project in terms of the name of entities, applied technology, scale and the location. The result of researches confirmed that the proposed project was not registered under the other international climate mitigation mechanisms than JCM and it will not result in a double counting of GHG emission reductions.
Particular attention was given to that there are approved CDM methodologies,
AM0060 - Power saving through replacement by energy efficient chillers,

AM0070 - Manufacturing of energy efficient domestic refrigerators,
AM0071 - Manufacturing and servicing of domestic and/or small commercial refrigeration appliances using a low GWP refrigerant,
AMS II.C - Demand-side energy efficiency activities for specific technologies, and
AMS II.E - Energy efficiency and fuel switching measures for buildings

Only 2 projects have been registered under CDM both applying methodology AM0070 in India. 3 PoAs have been proposed for validation in India, Philippines and Singapore of which some are assisted by the World Bank Programme, but none has been registered yet.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement of the section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the proposed JCM project was not registered under the other international climate mitigation mechanisms.

C.10. Start of operation

<Means of validation>

The start date for the operation of the proposed JCM project is indicated as 01/03/2014 in the PDD.

The validation team confirmed correctness/relevance of the information by reviewing the supporting evidence and on site visit, including but not limited to assessing of the contracts and commissioning report, and that the date is not before 01/01/2013 as required to be eligible as a JCM project.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement of the section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed through the on site assessment that the start date of operation of the proposed JCM project is 01/03/2014 and not before 01/01/2013 as required to be eligible as a JCM project.

C.11. Other issues

<Means of validation>

No issue was identified as relevant element not covered above.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Not applicable

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Not applicable

D. Information on public inputs

D.1. Summary of public inputs

In line with the JCM Project Cycle Procedure, the PDD is to be made publicly available for 30 days to invite public comments. The PDD was made publicly available in line with the requirements of the procedure for the period of 25/09/2014 to 24/10/2014 as per https://www.jcm.go.jp/id-jp/information/60.

D.2. Summary of how inputs received have been taken into account by the project participants

No comment was received during the above period to receive public inputs.

Thus no action was required to be taken by the PPs to satisfy the JCM requirement.

E. List of interviewees and documents received

E.1. List of interviewees

Nippon Koei Co., Ltd.

Mr. Masaru Ishikawa, Manager, Climate Change Group, Environmental Science & Engineering Dept., International Consulting Operations

Mr. Tetsuya Saito, Environmental Science & Engineering Dept., International Consulting

Operations Ebara Refrigeration Equipment & Systems Co., Ltd. Mr. Toshihiro Okuda, Executive Expert Manager, Overseas Sales & Engineering Group, Overseas Sales & Engineering Department, Overseas Business Division Mr. Masahiko Kosho, Group Manager, Sales Group East Asia, Sales & Adm. Department, Overseas Business Division PT. Ebara Indonesia Mr. Masanori Okada, Technical Advisor, Chiller Cooling Tower Specialist PT. Primatexco Indonesia Mr. Hiroshi Ishikawa, Finance Director Mr. Takashi Sato, Director, Factory Manager Mr. Taufik Sujak, Unit Supervisor Mr. Andi Rahman, Mechanic/Supervisor Global Environment Centre Foundation (GEC) Mr. Osamu Bannai, Assistant Manager Mr. Katsuhiko Sugiyama, Senior Programme Officer

E.2. List of documents received

Category A documents (documents prepared by the PP) - PDD Version 1.0 dated 24/09/2014 - PDD Version 2.0 dated 27/10/2014 - MoC dated 17/09/2014 - Environmental Protection and Management Law No. 32/2009 dated October 3, 2009 - Refrigerator Test Record for S/N B13V015801 dated 01/10/2013 - Specification data sheet - Drawing - Outline dimension - Drawing - Foundation - Drawing - Flow sheet - Drawing - Notes - Starting characteristics

- Electrical drawing (main motor starter panel)
- Electrical drawing (local control panel)
- Transformer box electrical drawing
- Procedure of site thermal insulation for RTBF centrifugal chiller unit
- Procedure of the 2nd site wiring construction
- Operation & maintenance manual
- Operation chiller spinning 3 (economic analysis of chiller replacement)
- Project schedule
- Weekly report commissioning turbo chiller RTBF050 dated 19/02/2014
- Annexes 1 and 2 to the Act of Japan's Ministry of Finance concerning Statutory useful life for the calculation of depreciation and amortization
- Record of visit to Japan by members of Indonesian committee
- Daily report
- Material Safety Data Sheet Genetron® 245fa, Honeywell
- Chiller Overhauling History Report
- Letter of Consent dated 18/08/2014 by PT. Primatexco Indonesia
- National Standardization Agency of Indonesia SNI ISO/IEC 17025:2008
- Instruction for use of multi power meter model 53U, MSYSTEM
- Performance test results of Multi Power Meter Model 53U-1206-AD4-X dated 02/09/2013, MSYSTEM
- ISO9001:2008/JIS Q9001:2008 Certificate for MSYSTEM
- Estimation of annual operation hours
- Sample invoice from PT. PLN (Persero) for July 2014
- Grid Electricity Emission Factors (calculated in year 2013), Carbon Trading Mechanism Division
- List of business plan and/or activities required have environmental impact assessment No. 5 in 2012, Environment Minister of State of the Republic of Indonesia
- Meeting Memo on Stakeholder (Local Government) Consultation for the JCM Model Project on Energy Saving by High-efficiency Centrifugal Chiller dated 01/09/2014
- Organizational structure of PT. Primatexco Indonesia's Utility Unit, 2013
- Piping layout / dimensional drawing of project chiller
- UKL & UPL report (July 2014)
- Procedures for checking and maintenance of chillers, ERS
- Specification of refrigerant recovery equipment
- Operation manual of refrigerant recovery equipment
- Clarification on the monitoring plan
- Power of Attorney dated 22/10/2014, Nippon Koei Co., Ltd.

- Written confirmation dated 27/10/2014 from Nippon Koei Co., Ltd.

Category B documents (other documents referenced)

- PT. Primatexco Indonesia Corporate Profile
- JCM_ID_AM002_ver01.0 Energy Saving by Introduction of High Efficiency Centrifugal Chiller
- Additional Information for Reference Emissions, ID_PM002
- RTBF Series High-Efficiency Centrifugal Chiller (Using Low-Pressure Refrigerant HFC-245fa) Specifications
- Double-Effect Absorption Chillers RCW Series, Ebara Refrigeration Equipment & Systems Co., Ltd.
- Water Quality Standard for Cooling water, Cold water, Hot water, Makeup water JRA GL02-1994
- HFC-245fa: An Overview of Properties and Applications
- An Overview Of The Properties And Applications of HFC-245fa
- HFC-245fa Product Stewardship Summary, Honewell
- Safety Data Sheet HFC-245fa, Honewell
- MSDS HFC-245fa
- IPCC Forth Assessment Report
- Emission Factors of Electricity Interconnection Systems, National Committee on Clean Development Mechanism, No. B-06/KNMPB/DNPI/03/2012 dated 27/03/2012
- Act 36 of 2008 Forth Amendment Law No. 7 on Income Tax 1983
- Finance Minister Regulation 96/PMK.03/2009 on Types of Assets including Intangible Assets for Depreciation Purposes
- Indonesia Government Regulation No. 18/1999 on Hazardous and Toxic Waste Management
- Ministry of Environment No. 13 of 2010 Environmental Management Plan, Environmental Monitoring Plan and Environmental Management and Monitoring Statement
- Act 2 of 1981 Legal Metrology
- Government Regulation No. 2 of 1985 Mandatory and Exemption for Calibration and/or Re-calibration, Measuring Device, Weighing and Accessories
- Minister of Trade Regulation No. 8/M-DAG/PER/3/2010 Measuring Device, Weighing and Accessories Required Calibration and Re-calibration
- JCM Project Cycle Procedure JCM_ID_PCP_ver01.0
- JCM Guidelines for Validation and Verification JCM_ID_GL_VV_ver01.0
- JCM Guidelines for Developing PDD and MR JCM_ID_GL_PDD_MR_ver01.0
- JCM Glossary of Terms JCM_ID_Glossary_ver01.0
- JCM PDD Form JCM_ID_F_PDD_ver01.0

- JCM MoC Statement Form JCM_ID_F_MoC_ver01.0
- JCM Validation Report Form JCM_ID_F_Val_Rep_ver01.0
- Approved Methodology AM0060 Power saving through replacement by energy efficient chillers
- Approved Methodology AM0070 Manufacturing of energy efficient domestic refrigerators
- Approved Methodology AM0071 Manufacturing and servicing of domestic and/or small commercial refrigeration appliances using a low GWP refrigerant
- Approved Small Scale Methodology AMS II.C. Demand-side energy efficiency activities for specific technologies
- AM_REV_0148 Response to request for modification of procedure for accounting of leakage of emissions from physical leakage of the initial charge of refrigerant in the new chiller
- SSC_510 Clarification on the applicability of AMS-II.C to a project activity replacing multiple low efficiency equipment with a single high efficient equipment
- SSC_539 Clarification on identification of baseline scenario and demonstration of additionality for chiller programme under AMS-II.C
- SSC_540 Clarification on calculation of baseline emissions for chiller programme under AMS-II.C
- SSC_580 Clarification on the requirement of AMS-II.C for project activity replacing inefficient refrigerators
- Chiller Energy Efficiency Project, Philippines, the World Bank
- The Chiller Energy Efficiency Project, Republic of India, the World Bank
- CDM-SSC-PoA-DD/CDM-SSC-CPA-DD Demand Side Management (DSM) for accelerating the diffusion of energy efficient chiller technology
- CDM-PoA-DD/CDM-CPA-DD Philippines – Chiller Energy Efficiency Programme (PCEEP)
- CDM-SSC-PoA-DD/CDM-SSC-CPA-DD Climate Action Response Enterprise (CARE) for Energy Efficiency in Chiller Plants
- Indonesia Energy Efficiency Report
- Government Regulation No. 27/2012 about Environmental Permit (Governmental Regulation No. 27/1999 concerning Environmental Impact Assessment)
- Environmental Impact Assessment Regulations and Strategic Environmental Assessment Requirements, Practices and Lessons Learned in East and Southeast Asia
- The AMDAL Process and the Equator Principles
- Company information of PT Prasadha Parnunah Limbah Industri (PPLi)

Annex Certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers

Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.

Certificate of Appointment is attached to this report.

Lloyd's Register
LRQA

Certificate of Appointment

Title of Project: Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller

We hereby certify that the following personnel have engaged in the validation process that has fully satisfied the competence requirements of the validation of the JCM project.

Name of Person	Assigned Roles
Michiaki Chiba	Team Leader
Dave Mateo	Team Member
Cholid Bafagih	Team Member
Takahiro Iio	Technical Reviewer

Michiaki Chiba
Climate Change Manager – Asia & Pacific
01/09/2014