JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Energy Saving for Air-Conditioning at Textile Factory by Introducing High-efficiency Centrifugal Chiller in Batang, Central Java (Phase 2)
Reference number	ID005
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	22/02/2016

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: [redacted]	Date: 22/02/2016

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. ☐	Cholid Bafagih	LRQA Indonesia	Team member	☒	N/A	☒
Mr. ☒ Ms. ☐	Stewart Niu	LRQA China	Internal reviewer	☒	N/A	☐
Mr. ☐ Ms. ☐				☐		☐

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_ver02.0. A valid form of the JCM PDD Form No. JCM_ID_F_PDD_ver01.0 is used for the PDD Version 1.0 dated 27/11/2015 (First edition).

It was re-checked for the revised PDD Version 2.0 dated 19/01/2016. The version is the final version on which the validation was completed.

CAR 1 was raised through the validation process 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: CAR 1

Nature of the issue raised:

The format of the PDD form cannot be modified. The table of the section C.3. was altered in the PDD version 1.0 from “Estimated Emission Reductions” to “Annual Emission Reductions”.

Nature of responses provided by the PPs:
The title of the table in section C.3 has been changed from “Annual Emission Reductions” to “Estimated Emission Reductions” according to original PDD form.
Assessment of the responses:
The PPs submitted the PDD amended the table of the Section C.3. The estimated emission reductions have been revised reflecting the correct factor in response to CAR 2 below. The CAR was closed.
<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 01/04/2015 and the expected operational lifetime of the project is for 7 years. The commissioning tests completed on 30/03/2015 and the project chiller started the operation at 10:00 am of 01/04/2015. The PPs 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 (machines and facilities for textile industry). 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 specified by the applicable regulations. That is conservative and considered acceptable as it fulfils the duration of the crediting period.
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, supports for proper operation by direct instruction and use of the remote monitoring system. The remote monitoring system automatically detects potential error every hour and reports any abnormal condition of the chiller to ERS immediately.

The validation team assessed the PDD and the supporting documents, interviewed the PPs to validate the requirements concerning accuracy and completeness of the project description. validation contract was signed with Nippon Koei Co., Ltd. representing the PPs on 14/09/2015 and it was originally planned to conduct an on site visit covering both the first verification of the project ID001 and this validation. The site visit plan was changed to separate the 2 projects, however, the validation team members physically observed the new chiller and related elements of the project taking the opportunity for visiting the plant site for the first verification of the project ID001 on 16/10/2015 and it was determined that an additional on site visit was not required for the validation after the PDD was made publicly available (the period from 28/11/2015 to 27/12/2015) following approval of the revised methodology by the JC on 10/11/2015.

CL 1 was raised through the validation process and subsequently closed as the resolution 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 1

Nature of the issue raised:

The PP was requested to clarify the specification of the existing chiller that is replaced by the project by providing the detailed information for confirmation by the validation team.

Nature of responses provided by the PPs:

Specification of existing chillers replaced by the project chiller was provided. It was confirmed that existing three absorption chillers (400 USRt, 400 USRt, and 250 USRt) are replaced with 500 USRt high-efficiency centrifugal chiller. PDD Section A.2 was modified accordingly.

Assessment of the responses:

The PPs amended the description in the PDD A.2 and provided supporting evidence.

The supporting evidence was cross checked with the information at the project site. There were 3 absorption chillers serving the area of the textile factory that the cooling services are replaced by the new project chiller. The existing chillers have been used for more than 20 years, operated at a reduced load conditions in the recent years and will be kept at the project site as back-up machines. The validation team confirmed correctness of the information 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 to the requirements on the accuracy and completeness. The CL 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 methodology JCM_ID_AM002_ver02.0 "Energy Saving by Introduction of High Efficiency Centrifugal Chiller". The revised version of the methodology is approved by the JC on 10/11/2015 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 criterion 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, commissioning and the performance test results.

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 6.13. 7.81 x (36.9 - 14 + 1.5 +1.5) / (37.0 - 7 +1.5 + 1.5) = 6.1296

Steps taken for assessment:

Document review was conducted on the technical specification, the records of the factory acceptance tests, and the performance test results.

Conclusion:

Based on the validation processes taken, the validation team confirmed that COP of the project chiller was determined as 7.81 by results of the factory acceptance tests, i.e. the cooler output of 1,758 kW divided by the input motor power of 225 kW. The COP value is then adjusted to the standardizing temperature conditions as 6.13 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: ERS and PT Ebara Indonesia (PTEI, subsidiary of the ERS which is a chiller manufacturer) agreed to conduct at least one direct periodical check per year by PTEI and remote periodical checks every month by the remote monitoring system by ERS. This remote monitoring system automatically detects the potential error every hour and reports any abnormal condition of chiller to ERS immediately. This periodical check procedure both by direct and remote method is more frequent, effective and better than "more than four (4) times" of periodical checks stipulated in the methodology (ID_AM002).

Steps taken for assessment:

Document review was conducted on the confirmation from PT Ebara Indonesia, the periodical check reports since commissioning.

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 PPs plan to conduct at least an on-site direct check by PTEI every year and remote periodical checks every month by the remote monitoring system by ERS. The remote monitoring system automatically detects the potential error every hour and reports any abnormal condition of the chiller to ERS immediately. The periodical check procedures by direct and remote methods provide more frequent and effective checks than the 4 times in a year as required by the Criterion 3. 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, SDS of refrigerant (HFC 245fa)

and the other supporting information.
Conclusion:
The project chiller uses the refrigerant HFC 245fa whose ODP is zero as confirmed in the supporting documents. 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. Existing chillers are absorption chillers which use water as the refrigerant, thus any special handlings of refrigerant in the existing chiller are not required.
Steps taken for assessment:
Document review was conducted on the plan of the PT. Primatexco Indonesia, technical specification and instructions of the project chiller and the existing absorption chillers, and the supporting information as well as the interviews with the PPs.
Conclusion:
In accordance with the letter of consent on plan for not releasing refrigerant used for the project chiller and the existing chillers, PT. Primatexco Indonesia follows the instructions of the equipment manufacturer and the Indonesian Laws on handling the refrigerant at relevant stages of operation, maintenance, removal and disposal. Besides the project chiller is designed to prevent leakage of the refrigerant from the normal operation, 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 absorption chillers used water as the refrigerant that does not result in GHG emissions. The validation team confirmed that the eligibility condition is satisfied by the project.

<Findings>

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

No issue was raised to this section.

<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 1,872 MWh, based on the motor input of 225 kW and assumed utilization factor of 0.95, 225 kW x 8760 hours x 0.95 = 1,872,450 kWh). 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 0.843 t-CO2/MWh based on the most recent data published by the Joint Crediting Mechanism Indonesia Secretariat which is based on the data of year 2013 in the Directorate General of Electricity, Ministry of Energy and Mineral Resources, Indonesia, 2015. The COP of the reference chiller is determined as 5.59 applying the default value. The COP of the project chiller is 7.81 based on the result of the factory acceptance test that is adjusted to 6.13 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: 1,872 MWh x (6.13 / 5.59) x 0.843 - 1,872 MWh x 0.843 = 1,730.54 - 1,578.10 = 152 t-CO2. The project started operation on 01/04/2015 and the GHG emission reductions of the year 2015 are estimated as 1,730.54 x 9/12 - 1,578.10 x 9/12 = 1,297.91 - 1,183.57 = 114 t-CO2.

The validation team assessed the documented evidence and 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, CAR 2 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: CAR 2

Nature of the issue raised:

CO2 emission factor for consumed electricity supplied from the grid did not use the most recent value available as of the time of validation.

Nature of responses provided by the PPs:

CO2 emission factor has been updated and emission reduction has been modified in PDD C.3.

The latest emission factor 0.843 tCO2e/MWh referring to http://www.jcmindonesia.com/en/projects/projref/emifact was applied in the estimation.

Assessment of the responses:

The PPs recalculated the estimated emission reductions using the correct emission factor published by the JCM Indonesia Secretariat (release in 2014) that have been reflected in the section C.3. of the PDD and the MPS. By the correction applying the grid emission factor of 0.843 tCO2e/MWh instead of 0.814 tCO2e/MWh in the previous year for the Interconnection System Java-Madura-Bali (JAMALI) to which the textile factory is supplied electricity, the estimated annual emission reductions of the project was changed from 147 t-CO2e to 152 t-CO2e in the revised PDD.

The validation team reviewed the revised PDD and confirmed using the local expertise that the latest emission factor at the time of validation is correctly applied by the PPs. The CAR was 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 an 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 efficiency 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 confirmed that an environmental impact assessment is not required to be conducted for implementation of the project. The existing textile factory has UKL/UPL (Environmental Management Plan - Environmental Monitoring Plan) approved by the local government and maintained as of the time of the validation.

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.

No issue was raised to this section.

<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 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 as the local stakeholders and collected comments on the proposed project through interviewing them at the project site on 09-10/03/2015. The PPs also invited the local governments, chamber of commerse and textile association for comments on 14/08/2015. 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 2 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 2

Nature of the issue raised:

The PPs were requested to provide supporting evidence to clarify the processes taken to the factory staff related to the chiller operation as well as staff of chamber of commerce and textile association.

The title of the Section E.2. was indicated with remarks “(as of 1st Application, need update)”. The PPs were requested to provide complete information to demonstrate fulfilment of requirements of the section.

Nature of responses provided by the PPs:

The PPs provided the record of the local stakeholders’ consultation with the factory staff related to the chiller operation. The PPs invited Indonesia Textile Association and Regional Chambers of Commerce & Industry for the local stakeholder meeting in August 2015 and the invitation was submitted to the validation team. There was no attendant and no comment from those organizations. The PDD Section E.2 was added the description “No comments were received.” for the stakeholder’s comment from Indonesia Textile Association and Regional Chambers of Commerce & Industry.

The text “(as of 1st Application, need update)” has been deleted in PDD Section E.2.

Assessment of the responses:

The PPs added information of consultation with the local stakeholders in the PDD section E.2. and providing supporting evidence. The validation team confirmed that the local stakeholders’ consultation processes taken by the PPs as completed are appropriately described in the revised PDD. The CL was closed.

<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 in addition to the on site manual recording. 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.

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 3 and CAR 4 were closed after reviewing the corrective action and clarification undertaken by the PPs through the validation. The details are as described 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: CAR 3

Nature of the issue raised:

The measurement methods and procedures did not include details of accuracy level and calibration frequency of the electricity meter to be used.

Nature of responses provided by the PPs:

"The accuracy level of electric meter is ±0.5%" is added in MPS (Monitoring Plan Sheet) of PDD, (1)-(h), as specified in Manufacturer's specification.

Since calibration certificate issued by an entity accredited under national/international standards is not provided, the energy meter was calibrated by the manufacturer at the time of manufacturer's inspection.

As for calibration frequency, in MPS of PDD (1)-(h) , the description" Calibration was conducted by the Manufacturer at the time of Manufacturer's inspection. Next calibration is required after 10 years." was added.

The detailed information and explanation on the meter calibration were submitted to the validation team.

Assessment of the responses:

The PPs added the information of accuracy level and calibration frequency to the MPS.

The electricity meter is certified in compliance with an international standard IEC 62053-22 class 0.5s and the accuracy level of ±0.5% satisfies the quality requirements.

The electricity meter used for the project chiller is not a fiscal meter and the calibration frequency is not regulated by Indonesian laws.

The calibration frequency is not specified in the international standard or the manufacturer's specification, however, the technology supplier sets the re-calibration to be conducted in 10 years or when abnormal measurement is observed through the periodical checks/monitoring following a good practice.
The validation team reviewed the technical specification of the electricity meter, the test record, host country regulations, the international standard, the manufacturer's specification, the Measurement Act of Japan, and confirmed that the relevant calibration information is described in the revised MPS. The CAR was closed.

Grade / Ref: CAR 4
Nature of the issue raised:
The Monitoring Plan Sheet does not include confirmation by the PPs to ensure that data monitored and required for verification and issuance be kept and archived electronically for two years after the final issuance of credits.
Nature of responses provided by the PPs:
The description "3) The data monitored and required for verification and issuance will be kept and archived electronically for two years after the final issuance of credits."was added in MPS of PDD (1)-(h).
Assessment of the responses:
The description is added to the MPS as requested by the JCM guideline. The CAR was closed.
<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.

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. The written confirmation was issued by Mr. Tetsuya Saito 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.

No issue was raised to this section.

<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 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

2 projects applying AM0070 and number of projects applying AMS II.E inclusive of efficient chillers as a project component have been registered under CDM, but all are in India.

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.

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 01/04/2015 in the PDD.

The validation team confirmed correctness/relevance of the information by reviewing the supporting evidence and by the physical observation at the project site, 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. The commissioning tests were completed by 30/03/2015 and the project chiller started operation at 10:00 am of 01/04/2015. The project chiller had been kept in a good operating conditions since the commissioning when it was observed on site in October 2015.

<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 01/04/2015 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 28/11/2015 to 27/12/2015 as per https://www.jcm.go.jp/id-jp/projects/10.

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. Tetsuya Saito, Environmental Science & Engineering Dept., International Consulting Operations
Ms. Yuka Nakagawa, Environmental Science & Engineering Dept., International Consulting Operations

Ebara Refrigeration Equipment & Systems Co., Ltd.
Mr. Toshihiro Okuda, Executive Expert Manager, Engineering & Sales Group, Engineering & Sales Department, Overseas Business Division
Mr. Masahiko Kosho, Group Manager, Chiller Sales Group, Southeast Asia Sales Dept., Overseas Business Division

PT. Primatexco Indonesia
Mr. Hiroshi Ishikawa, Finance Director
Mr. Yoshiaki Nishizawa, Production Director (Plant Manager)
Mr. Taufik Sujak, Utility Manager
Mr. Andi Rahman, Mechanic Supervisor

Mr. A. Chaerudin, Electric Supervisor PT. Ebara Indonesia Mr. Masanori Okada, Technical Advisor, Chiller Cooling Tower Specialist Mr. Agus Pramudibyo, Assistant Manager, Service & Maintenance Dept. Mr. Andi Suhendi

E.2. List of documents received

Category A documents (documents prepared by the PP) - PDD Version 1.0 dated 27/11/2015 with the Monitoring Spreadsheet - PDD Version 1.1 dated 21/12/2015 with the revised Monitoring Spreadsheet - PDD Version 2.0 dated 19/02/2016 - MoC dated 27/11/2015 - Specification data sheet No. DB14V002301-4001 Rev0, 12/05/2014 - Project implementation plan - Project outline - Power of Attorney dated 02/12/2015, Nippon Koei Co., Ltd. - Confirmation of Modalities of Communications dated 03/12/2015 from Nippon Koei Co., Ltd. - Chillers location in the factory - Project schedule - Report for Job Completion - Commissioning Turbo Chiller RTBF050 dated 30/03/2015 - Operation & Maintenance Manual No. CRT317E-H002, 07/01/2015 - Material Safety Data Sheet Genetron® 245fa, Honeywell - Annexes 1 and 2 to the Act of Japan's Ministry of Finance concerning Statutory useful life for the calculation of depreciation and amortization - Operation Report April to August, 2015, ERS - Refrigerator Test Record for S/N B14V002301 dated 14/05/2014 - Information of remote monitoring system - Details of the periodical check procedure by direct and remote methods and explanation of the effectiveness and advantages - Letter of Consent dated 10/03/2014 by PT. Primatexco Indonesia - Single Line Diagram, PT. Primatexco Indonesia - National Standardization Agency of Indonesia SNI ISO/IEC 17025:2008 - Instruction for use of multi power meter model 53U, MSYSTEM - Specification of Wasion Three Phase Smart Energy Meter S/N 201305000546

- Performance test results of Multi Power Meter Model 53U-1206-AD4/H-X dated 07/11/2014, MSYSTEM
- Certificate of ISO9001:2008 and the National Grid in Indonesia (LMK) for Wasion Group
- ISO9001:2008/JIS Q9001:2008 Certificate for MSYSTEM
- About accuracy management and calibration for MSYSTEM products
- Estimation of power consumption by the project chiller
- Grid Electricity Emission Factors (calculated in year 2013), Carbon Trading Mechanism Division
- Latest Emission Factor (release in 2014), JCM Indonesia Secretariat
- Approval for Environmental Management and Monitoring Plan (UKL-UPL) No. 660.1/139A/2009 dated 30/04/2009
- Approval on Industrial Wastewater Discharge Permit No. 660.3/09/2013 dated 18/02/2013 and No. 660.3/14/2014 dated 16/06/2014
- Water supply agreement 2014
- Approval for Extension of Underground Water Intake License, 14/10/2010
- Records of Local Stakeholder Consultation meeting at Central Java, 14/08/2015
- Specification of existing absorption chillers
- Record of meeting with the local stakeholders on 9 and 10 March 2015
- Invitation for local stakeholder consultation dated 27/07/2015

Category B documents (other documents referenced)
- PT. Primatexco Indonesia Corporate Profile
- Nippon Koei Co., Ltd. Corporate Profile
- JCM_ID_AM002_ver02.0 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
- Absorption Chillers specifications, 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
- IPCC Forth Assessment Report
- 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
- Environmental Protection and Management Law No. 32/2009 dated October 3, 2009
- 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
- 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_ver02.0
- JCM Guidelines for Validation and Verification JCM_ID_GL_VV_ver01.0
- JCM Guidelines for Developing PDD and MR JCM_ID_GL_PDD_MR_ver02.0
- JCM Glossary of Terms JCM_ID_Glossary_ver02.0
- 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
- Proposed and registered projects under CDM, VCS, Gold Standard, and the other international schemes
- 62052-11:2002, Electricity metering equipment (ac) - General requirements, tests and test conditions - Part 11: Metering equipment
- 62053-11:2003, Electricity metering equipment (ac) - Particular requirements. Part 11: Electromechanical meters for active energy (classes 0,5, 1 and 2 classes).
- IEC 62053-21: Static meters for active energy (class 1 and 2).
- IEC 62053-22:2003, Electricity metering equipment (ac) - Particular requirements. Part 22: Static meters for active energy (classes 0,2 S and 0,5 S)
- 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)
- Ordinance for Enforcement of the Measurement Act

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

Joint Crediting Mechanism Certificate of Appointment

Title of Project: Validation of Energy Saving for Air-Conditioning at Textile Factory by Introducing High-efficiency Centrifugal Chiller in Batang, Central Java (Phase 2)

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
Cholid Bafagih	Team Member
Stewart Niu	Technical Reviewer

Signed by

[redacted]

Michiaki Chiba
Climate Change Manager – Asia & Pacific
05/10/2015