JCM Verification Report Form

A. Summary of verification

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
Monitoring period	01/03/2014 – 31/07/2015
Date of completion of the monitoring report	26/10/2015
Third-party entity (TPE)	Lloyd's Register Quality Assurance Limited
Project participant contracting the TPE	Nippon Koei Co., Ltd.
Date of completion of this report	06/11/2015

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☐ Unqualified opinion	Based on the process and procedure conducted, *Lloyd's Register Quality Assurance Limited* (TPE's name) provides reasonable assurance that the emission reductions for *Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller* (project name) ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents
(If overall verification opinion is negative, please check below and state its reasons.) ☒ Qualified Opinion ☐ Adverse opinion ☐ Disclaimer	<State the reasons> The measuring equipment used from 01/03/2014 to 16/12/2014 for the electricity consumption by the project chiller was not certified in compliance with a national or international standards that did not fulfil a requirement of the registered PDD. The verification team confirmed, however, it does not reduce accuracy of the monitored data or the resultant emission reductions and determined

	that the emission reductions achieved during the period from 01/03/2014 to 16/12/2014 are eligible for issuance without correction subject to approval by the JC. Therefore, LRQA recommends the JC to approve issuance of the emission reductions achieved during the monitoring period from 01/03/2014 to 31/07/2015 with a qualified verification opinion.

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with the eligibility criteria of the applied methodology	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology.	☒
The project implementation against the registered PDD or any approved revised PDD	The TPE assesses the status of the actual project and its operation with the registered/validated PDD or any approved revised PDD.	☒
Calibration frequency and correction of measured values with related requirements	If monitoring Option C is selected, the TPE determines whether the measuring equipments have been properly calibrated in line with the monitoring plan and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines.	☒
Data and calculation of GHG emission reductions	The TPE assesses the data and calculations of GHG emission reductions achieved by/resulting from the project by the application of the selected approved methodology.	☒
Avoidance of double registration	The TPE determines whether the project is not registered under other international climate mitigation mechanisms.	☒
Post registration changes	The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology.	☒

Authorised signatory:	Mr. ☒ Ms. ☐
Last name: Chiba	First name: Michiaki
Title: **Climate Change Manager - Asia & Pacific**	
Specimen signature: [redacted]	Date: 06/11/2015

B. Verification 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	Technical 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 verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

<Means of verification>

LRQA has determined during the verification process that the actual implementation and operation of the project has been conducted in conformance with the eligibility criteria of the applied methodology.

The project applied the approved methodology: JCM_ID_AM002_ver01.0 "Energy Saving by Introduction of High Efficiency Centrifugal Chiller".

LRQA assessed by means of an on-site visit that the physical features of the project are in place and that the PPs have operated the project as per the eligibility criteria of the applied methodology. The steps taken to verify each eligibility criterion and the conclusions about implementation of the 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 name plate, operational parameters, maintenance records, and a physical observation.

Conclusion:

Based on the verification processes taken, the verification 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 operation and maintenance records.

Conclusion:

Based on the verification processes taken, the verification 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. Through the on site visit as a part of the verification process, the verification team confirmed that the operational parameters remained unchanged. 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 Ebara Refrigeration Equipment & Systems Co., Ltd. (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 interviewing the PPs on the operational issues.
Conclusion:
It was confirmed that the periodical checks were implemented more than four (4) times annually and the eligibility condition is met by the project based on the review of records of periodical checks actually implemented since commissioning and interviews with the PPs. The monitoring period covers 17 months. During the first year since start of the project on 01/03/2014, PT Ebara Indonesia conducted the on site checks 9 times, and those were also conducted 6 times during the rest 5 months until 31/07/2015, the end of the monitoring period. In addition, ERS started on line checks of the chiller operation through the remote monitoring system since December 2014. The PPs plan to continue conducting 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.

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. On site visit was also conducted.
Conclusion:
The project chiller uses the refrigerant HFC 245fa whose ODP is zero and it was confirmed that the chiller used the same refrigerant through physical observation during 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 1 was raised in the verification process to confirm the implementation of the plan during the monitoring period that was subsequently closed as detailed below. The verification team confirmed that the eligibility condition is satisfied by the project by reviewing records of activities and interviewing the PPs through the on site assessment.

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 1

Nature of the issue raised:

The PP was requested to confirm the plan for not releasing refrigerant used for the old chillers replaced by the project was implemented during the monitoring period.

Nature of responses provided by the PPs:

The PPs presented a written confirmation on not releasing refrigerant used for the old chiller replaced by the project.

Assessment of the responses:

The verification team conducted on site assessment and confirmed that the plan for not releasing refrigerant used for the old chillers replaced by the project was implemented during the monitoring period for which the PPs provided written confirmation. The refrigerant was kept in the same status as before the implementation of the project as of the time of the on site assessment by the verification team. The CL was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team confirmed that the project has been implemented in conformity with the eligibility criteria of the applied methodology.

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

<Means of verification>

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 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 and supports for proper operation.

The verification team assessed the MR and the supporting documents, conducted a physical site visit to assess the status of the actual project and its operation in accordance with the registered PDD. No revision to the registered PDD was requested.

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

The verification team determined through the verification process that the implementation and operation of the project has been in accordance with the description contained in the registered PDD. The verification team, by means of a desk review and an on-site visit, assessed that:

- all physical features of the JCM project described in the registered PDD are in place, and
- the PPs have operated the JCM project as per the registered PDD.

The MR follows the Monitoring Plan (MP) of the registered PDD consisting of the Monitoring Plan Sheet (MPS) and Monitoring Structure Sheet (MSS) that have been established 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 system has been installed and started automatic data compilation since 23/12/2014. The system, however, used the on line data for checking purpose and the manually recorded data continued to be used for calculation of the emission reductions of the project, since the monitored data has not been compiled in complete and consistent manners by the remote monitoring system yet during the monitoring period.

The recorded data is checked on a monthly basis by the responsible staff and the data is also checked through the on line system.

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 of the parameter is not applicable. The verification team confirmed

during the on site visit that there was no captive electricity generator in the project site.
The roles and responsibilities of the persons are described in the MSS in accordance with the requirements of the applied methodology. The monitored data collected is to be checked by the Chiller Operators and the Supervisor, and reported after approval by the Plant Manager. The Plant Manager recently changed but there was no other change in the organizational structure during the monitoring period.
Through the processes taken, CAR 1, CAR 2 and CL 2 were 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 1

Nature of the issue raised:

The measurement methods and procedures were not described in the Monitoring Report Sheet (MRS) based on the registered MPS and the actual implementation during the monitoring period.

Nature of responses provided by the PPs:

The measurement methods and procedures in the MRS were updated that followed “the case for use of measuring equipment” in the registered MPS. The revised MRS describes as below.

[Use of measuring equipment]

Data is measured by measuring equipments in the factory.

- Specification of measuring equipments：

1) Electrical power meter is applied for measurement of electrical power consumption of project chiller.

2) [Before Replacement of Meter] Meter is certified with the standards of manufacturer whose accuracy on power consumption is as good as international standards.

[After Replacement of Meter] Meter is certified with International Standard (IEC) on electrical power meter.

- Measuring and recording：

1) Measured data is recorded and stored in the measuring equipments.

2) Recorded data is checked its integrity once a month by responsible staff.

- Accuracy level:

[Before Replacement of Meter] Spec: ±1% (from factory test, ±0.48%)

[After Replacement of Meter] Spec: ±0.5% (from factory test, ±0.32%)

- Calibration：

Calibration was not conducted since both meters have not been used for more than one year.

- QA/QC：

Continuous automatic measurement and daily manual recording at every 7 o'clock in the morning.

Assessment of the responses:

Compliance of the actual monitoring with the registered MP [The case for use of measuring equipment] was confirmed based on the revised MRS.

Specification of measuring equipments : Please refer to CL 2 and its resolution as below detailed. The electricity meter was replaced to address FAR 01 of the validation.

Accuracy level: Accuracy of the original meter is ±1% and the new meter is ±0.5%. Both meters satisfy the accuracy of ±1.0% or better required by the registered MP.

Calibration：In resolution to the FAR 01 of the validation, the electricity meter was replaced in December 2014. During the monitoring period covering 17 months, the original electricity meter was operated for 10 months and the replacement meter was operated for 7 months that did not reach the due date of the annual calibration during the monitoring period.

QA/QC：The data is continuously monitored by the electricity meter. Accumulated electricity consumption by the project chiller is read and recorded in the log book every day. The data is monthly transferred to the calculation sheet in MS Excel.

The CAR was closed.

Grade / Ref: CAR 2

Nature of the issue raised:

A certificate of quality of the new electricity meter (parameter EC_PJ,i,p) was not presented.

Nature of responses provided by the PPs:

The PPs submitted the inspection certificate of the new power meter for review by the verification team.

Assessment of the responses:

The verification team confirmed that the new meter was inspected and certified the quality based on the inspection certificate submitted by the PPs. The CAR was closed.

Grade / Ref: CL 2

Nature of the issue raised:

The PP was requested to confirm if the old electricity meter used for measurement from Mar. to Dec. 2014 met the quality standards as requested by the registered PDD.

Nature of responses provided by the PPs:

The PPs submitted the technical specification and the quality certificate for both old and new power meters and clarified that the old meter used during Mar. to Dec. 2014 is not certified in compliance with the national or international standard but the accuracy of measurement satisfies

the requirement of the MP of the registered PDD.

Assessment of the responses:

The verification team assessed the technical specifications, the quality certificates and the requirements of the applicable international standards. The old meter used until the meter replacement in Dec. 2014 was not certified in compliance with a national or international standard. But its accuracy of measurement fulfilled the level required in the applicable international standards and it does not affect the resultant calculation of the emission reductions. The old electricity meter was certified in accordance with the manufacturer's specification with the measurement accuracy within ±1% and the result of factory inspection was ±0.48%. The applicable international standard IEC 62053 Part 21 is relevant to a static meter for active energy with accuracy class of 1 and 2, i.e. ±1 or 2% that is normally supplied by manufacturers and widely applied for the industrial uses. The old electricity meter was not certified with the international standard but satisfied the measurement accuracy required therein. Therefore the verification team determined that the emission reductions during Mar. to Dec. 2014 used the old electricity meter are eligible for issuance without correction subject to approval by the JC of the request for issuance to be submitted by the PPs using this qualified verification opinion. The CL was closed based on this qualitied opinion.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team confirmed that the project was implemented and operated in accordance with the registered PDD and no revision to the same was requested for the monitoring period. The measuring equipment used from 01/03/2014 to 16/12/2014 for the electricity consumption by the project chiller was certified by the manufacturer's standard but not certified in compliance with a national or international standards, that did not fulfill the requirement of the MP of the registered PDD based on the applied methodology. The verification team confirmed it does not reduce accuracy of the monitored data and the resultant emission reductions and determined that the emission reductions achieved during the period from 01/03/2014 to 16/12/2014 are eligible for issuance without correction subject to approval by the JC.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

<Means of verification>

The parameter EC_PJ,i,p applies the monitoring Option C and the monitoring of the parameter uses a measuring equipment. The measuring equipment is to be calibrated in line with the MP and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines.

In order to address the FAR 01 issued in the validation, the electricity meter was replaced in

December 2014. During the monitoring period covering 17 months, the original electricity meter was operated for 10 months and the replacement meter was operated for 7 months that did not reach a year and the original quality certifications were deemed valid for the monitoring period.

<Findings>

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

No issue was raised to the requirements of the section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team confirmed that the measuring equipment applied for the parameter EC_PJ,i,p satisfied the requirements of the MP concerning the regular calibration and no correction was required to the measured values during the monitoring period.

C.4. Assessment of data and calculation of GHG emission reductions

<Means of verification>

The MR is developed using the MRS applied to the registered JCM project that is confirmed fulfilment of the requirements of the MRS of the applied methodology.

LRQA has determined whether:

1. a complete set of data for the specified monitoring period is available,
2. information provided in the MR has been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis,
3. calculations of reference emissions and project emissions, as appropriate, have been carried out in accordance with the formulae and methods described in the MP and the applied methodology,
4. any assumptions used in emission calculations have been justified, and
5. appropriate emission factors, default values and other reference values have been correctly applied.

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 total electricity consumption during the monitoring period was 1,992.62 MWh as reported in the MR. The average annual electricity consumption was 1,406.56 MWh (1,992.62 MWh x 12/17 months) that was relatively low in comparison with the ex-ante estimation of 1,910 MWh. The ex-ante estimation was based on 346 operating days in a year with 100% load conditions, while the actual average is based on 326 operating days in a year with 78.33% load conditions (1,406.56 MWh / (229.5kW/1000*24h*326days/year). Actual operation of a chiller highly dependent on the demands of the manufacturing processes and activities and the

conditions are considered as normal. No major operational trouble or maintenance outage occurred during the monitoring period.
There is no on site power generation unit to supply captive electricity at the project site and all the electricity was supplied by the public power grid system of the region. The CO2 emission factor of the grid electricity is 0.814 tCO2/MWh as fixed ex-ante at the validation.
The COP of the reference chiller is 5.59 and it of the project chiller is 6.01 after adjusted following the standardizing temperature conditions. These are also fixed ex-ante.
The GHG emission reductions during the monitoring period 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: 1,992.62 MWh x (6.01 / 5.59) x 0.814 - 1,992.62 MWh x 0.814 = 1,744.42 - 1,621.99 = 122 tCO2.

The verification team assessed the reported data with documented evidence and by means of on site visit. Through the processes taken, CAR 3 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.

Parameters	Monitored values	Method to check values in the monitoring report with sources
EC_PJ,i,p	1,992.62 MWh/p	Assessement was conducted based on the daily log book and the calculation sheet in MS Excel format.
EI_grid,p	101,714.72 MWh/p	Assessment was conducted based on the monthly invoices issued by the power company and the calculation sheet in MS Excel format.
h_gen,p	0 hours/p	On site assessment was conducted and confirmed there was no captive generator in the project site.

<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 monitored data was not reported in correct and consistent manners over the monitoring period.
Nature of responses provided by the PPs:
The monitored data once applied automatic collection data, but it was found that the automatic data collection system cannot accumulate the chiller electricity consumption at the time of

communication problem. This was the cause of inconsistency between ERS monitored data and operator's manual recorded data. Accordingly, the monitored data was updated using the operator's manual record. Respective data and the supporting evidence were submitted to the verification team.

Assessment of the responses:

The PPs corrected compilation of the monitored data in the revised MRS that consistently applies the daily data log over the monitoring period. The verification team confirmed that the emission reductions achieved by the project during the monitoring period is correctly calculated using the monitored data in the revised MR. The CAR was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team confirmed that appropriate methods and formulae for calculating reference emissions and project emissions have been followed. The verification team is of the opinion that all assumptions, emissions factors and default values that were applied in calculations have been justified.

C.5. Assessment of avoidance of double registration

<Means of verification>

The verification team assessed and confirmed relevance of the written confirmation from the PPs that the project is 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.

Through the processes taken, CL 3 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 3

Nature of the issue raised:

The PPs were requested to confirm that a double registration has been prevented at the implementation stage till the end of the monitoring period and the time of the first verification.

Nature of responses provided by the PPs:

The letter of consent that the project is not registered under any other international climate mitigation mechanism other than JCM is submitted to the verification team.

Assessment of the responses:

The PPs provided a written confirmation signed by all the PPs. The CL was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team confirmed that the projects not registered under other international climate mitigation programs.

C.6. Post registration changes

<Means of verification>

The verification team assessed the project documentation and through the on site visit and confirmed that there was no post registration change from the registered PDD or the approved methodology.

<Findings>

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

No issue was raised to the requirements of this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification through the verification processes determined that there was no post registration change from the registered PDD or approved methodology which prevent from use of the applied methodology.

D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or

previous verification period, if appropriate

The FAR 01 was issued in the validation to confirm applying of a new electricity meter that fully satisfies the requirements of the applied methodology, in particular, a certification in compliance with a national or international standards. The PPs replaced the electricity meter on 16/12/2014 to address the FAR 01 of the validation. CAR 2 and CL 2 were raised and subsequently resolved as above detailed and the verification team determines that the FAR 01 was addressed by the PPs as appropriate. The manufacturer supplies the high accuracy type of the same model electricity meter as the original meter, that accuracy level is 0.5s and certified in compliance with the international standard IEC 62053-22:2003. The level of accuracy of the new electricity meter is as high as being applied to a fiscal meter. The meter used for electricity consumption by the project chiller is not for a fiscal purpose and meters with equivalent accuracy as the original meter used by the project of ±1% certified with IEC 62053-21 are also applicable. The verification team reviewed the specification, quality certificate and conducted physical on site assessment for the relevant actions taken by the PPs.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2013	0	0	0
2014	1,061	987	74
2015	683	635	48
2016			
2017			
2018			
2019			
2020			
Total (tCO_2e)	1,744	1,622	122

F. List of interviewees and documents received

F.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

F.2. List of documents received

Category A documents (documents prepared by the PP)
- Monitoring Report Sheet dated 14/10/2015 and the revision dated 26/10/2015
- Monitored data and calculation sheets, the original and its revision
- Remote monitoring data sheets
- Power meter reading records for the project chiller for 2014 and 2015
- Daily operation record for the project chiller from Feb. 2014 to Oct. 2015
- Refrigerator Test Record for S/N B13V015801 dated 01/10/2013
- Specification data sheet and drawings of project chiller
- Operation & maintenance manual
- Weekly report commissioning turbo chiller RTBF050 dated 19/02/2014
- Daily working reports from Feb. 2014 to May 2015, ERS
- Daily report from Apr. 2014 to Aug. 2014, ERS
- Chiller Overhauling History Report
- Letter of Consent dated 18/08/2014 by PT. Primatexco Indonesia
- Declaration for Non Leakage No. ERS090-P5T201 dated 20/10/2015
- Specification of electricity meters
- Instruction for use of multi power meter
- Performance test results of Multi Power Meter Model 53U-1206-AD4-X dated 02/09/2013, MSYSTEM
- Performance test results of Multi Power Meter Model 53U-1206-AD4/H-X dated 07/11/2014, MSYSTEM
- Outline of the remote monitoring system
- Invoices from PT. PLN (Persero) from Jan. 2014 to Aug. 2015
- Grid Electricity Emission Factors (calculated in year 2013), Carbon Trading Mechanism Division
- Company information of PT. Primatexco Indonesia as of 01/09/2015
- Layout of the factory
- Procedures for checking and maintenance of chillers, ERS

- Letter of Consent (confirmation for no double counting) signed by all the PPs dated 16/10/2015

Category B documents (other documents referenced)
- Registered PDD
- Validation report
- JCM_ID_AM002_ver01.0 Energy Saving by Introduction of High Efficiency Centrifugal Chiller
- RTBF Series High-Efficiency Centrifugal Chiller (Using Low-Pressure Refrigerant HFC-245fa) Specifications
- Water Quality Standard for Cooling water, Cold water, Hot water, Makeup water JRA GL02-1994
- Safety Data Sheet HFC-245fa, Honewell
- IPCC Forth Assessment Report
- 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_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 Verification Report Form JCM_ID_F_Vrf_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
- 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)
- Technical data for Electricity Meters IEC, Landis + Gyr Ltd.
- Technical specification of Multi-function electrical energy meters, CIRCUTOR, SA

Annex Certificates or curricula vitae of TPE's verification 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.

Joint Crediting Mechanism Certificate of Appointment

Title of Project: Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller (Project #ID001)
Verification for the first monitoring period: 01/03/2014 – 31/07/2015

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

Name of Person	Assigned Roles
Michiaki Chiba	Team Leader
Cholid Bafagih	Team Member
Stewart Niu	Technical Reviewer

Signed by

Michiaki Chiba
Climate Change Manager – Asia & Pacific
07/10/2015