# 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 Karawang, West Java |
| Reference number | ID 004 |
| Third-party entity (TPE) | PT Mutuagung Lestari |
| Project participant contracting the TPE | Nippon Koei Co., Ltd. |
| Date of completion of this report | 28/01/2016 |

A.2 Conclusion of validation

| | |
|---|---|
| Overall validation opinion | ☒ Positive<br>☐ 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 stakeholder | The project participants have completed a local stakeholder consultation process and that due steps were taken to engage | ☒ |

| Item | Validation requirements | No CAR or CL remaining |
|---|---|---|
| consultation | 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.<br>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: SIDAURUK | First name: FERRY |
| Title: TEAM LEADER | |
| Specimen signature: | Date: 28/01/2016 |

## B. Validation team and other experts

| | Name | Company | Function* | Scheme competence* | Technical competence* | On-site visit |
|---|---|---|---|---|---|---|
| Mr. ☒ Ms. ☐ | Ferry Sidauruk | PT Mutuagung Lestari | Team Leader | ☒ | Technical competence authorised | ☒ |
| Mr. ☒ Ms. ☐ | Abdul Rahman | PT Mutuagung Lestari | Team Member | ☒ | Technical competence authorised | ☒ |
| Mr. ☒ Ms. ☐ | Irhan Febijanto | BPPT Indonesia | Technical Expert | ☐ | Technical competence authorised | ☒ |
| Mr. ☒ Ms. ☐ | Tony Arifiarachman | PT Mutuagung Lestari | Internal Reviewer | ☒ | | ☐ |

*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_F_Val_Reff_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 09/01/2015 (the first edition). It was re-checked for the revised PDD Version 2.0 dated 25/12/2015. 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 Nikawa Textile Industry in Karawang, West 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 Nikawa Textile Industry from the Republic of Indonesia, Nippon Koei Co., Ltd. and ERS from Japan. The start date of project operation is on 20/12/2014 and the expected operational lifetime of the project is for 7 years. The project is partially supported by the Ministry of the Environment, Japan, through the financing programme for JCM model projects in which financial supports up to 50% of initial investment are available. As for technology transfer, ERS has conducted OJT training and provided a manual on operation, maintenance and safety measures of the facilities installed at the project site. The maintenance service after project start will be provided by PT. Ebara Indonesia, which will also contribute to technical transfer through maintenance experiences by the staff of PT. Nikawa Textile Industry. 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.: CAR 01

Nature of the issue raised:

The geographic coordinates S6.367404, E107.320875 of PT Nikawa Textile Industry in Karawang, which is stated in the PDD (JCM_ID_F_PDD_ver01.0), sub section A.3 (Location of project, including coordinates), does not match with the format stipulated on the Joint

Crediting Mechanism Guidelines for Developing Project Design Document and Monitoring Report (JCM_ID_GL_PDD_MR_2_ver02.0).
The format geographic coordinates in accordance with the Joint Crediting Mechanism Guidelines for Developing Project Design Document and Monitoring Report, point 4 (Developing a PDD), sub point 4.1 (Completing a PDD form), section A (Project description), sub section A.3 (Location of project, including coordinates), is N dd° mm' ss" and E dd° mm' ss". PPs are requested to change the geographic coordinates of the PT Nikawa Textile Industry Karawang site location as stipulated in the guidelines.

Nature of responses provided by the PPs:
The PPs confirmed that the geographic coordinates in the PDD sub section A.3 was miss-typed. The geographic coordianate has been revised with the required format as stipulated on the Joint Crediting Mechanism Guidelines for Developing Project Design Document and Monitoring Report (JCM_ID_GL_PDD_MR_2_ver02.0). The PPs put the new geographic coordinates become S6°22'3", E107°19'15" in the revised PDD.

Assessment of the responses:
The Validation Team has reviewed the revised PDD received from the Focal Point through the electronic mail on 14/12/2015. It is confirmed that the geographic coordinates format in the revised PDD for the project chiller has met the requirement of the Joint Crediting Mechanism Guidelines for Developing Project Design Document and Monitoring Report. Thus, CAR 01 was closed.

Grade/Ref.: CL 01

Nature of the issue raised:
In the PDD on sub section A.2 (General description of project and applied technologies and/or measures) was stated that "The factory has two units of absorption chillers, and the factory increased production capacity. To cope with heat load increase due to the capacity increase, additional chiller was installed". Based on site tour, Validation Team observed on the new chiller is the substitution to the old chillers, thus the PPs are requested to provide relevant information with confirmation of history of the factory and clarify status of the project chiller installed.

Nature of responses provided by the PPs:
The PPs clarified that the factory has two units of absorption chillers. In addition, the factory once had an old absorption chiller which was demolished. To cover the capacity of the old

chiller, the additional high-efficiency centrifugal chiller was installed, and was applied to JCM project. The chiller was installed in November 2014 and started its operation in December 2014.

Assessment of the responses:
The Validation Team confirmed, based on review of the documents and the physical site assessment that the project chiller replaced the old chiller. Thus, CL 01 is closed.

Grade / Ref: CL 02
Nature of the issue raised:
In the PDD it is described that "lifetime of the project chiller is 7 years". The PP is requested to provide relevant information and clarify the lifetime of the project chiller installed based on evidence from the relevant party (e.g. government agency of Japan).

Nature of responses provided by the PPs:
The PPs gave related document of legal life stipulated by Japanese Bureau of Taxation that the lifetime for kind of project chiller is 7 years.

Assessment of the responses:
The Validation Team reviewed related document from the PPs and the clarification from the PPs. The Validation Team confirms that the life time for project chiller of 7 years is described as appropriate to the document supplied by the PPs. Thus, CL 02 is closed.

Grade/Ref.: CL 04
Nature of the issue raised:
The PPs was clarified the description in PDD sub section A.2. (general description of project), that the project chiller seems to serve entire production process in the factory. Based on the physical validation on site Validation Team observed that the project chiller served only for factory #2. PP was requested to correct the description as stipulated in the PDD.

Nature of responses provided by the PPs:
The PPs clarified that the project chiller serves only the factory #2. Then the description on the revised PDD stated the proposed project covers Factory #2 at the textile factory of PT. Nikawa Textile Industry in Karawang, West Java province in Indonesia.

Assessment of the responses:
The Validation Team reviewed the clarification as stipulated in the revised PDD prepared by

the PPs. The Validation Team confirms that proposed project chiller only covers Facatory #2 production as described in the revised PDD is appropriate and it is accurate. Thus, CL04 is closed.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

MUTUAGUNG confirms that:

- The revised geographic coordinate stated in the revised PDD is described accurately and completely as appropriate.
- Through the physical site observation only the project chiller is operated to support the production in the textile factory.
- The lifetime of the project chiller is 7 years as stated on the PDD is described as appropriate to the legal life stipulated by concerning Japanese government agency.
- Based on the revised PDD prepared by the PPs, proposed project chiller only covers Factory #2 in the site not the entire textile factory.

C.3. Application of approved methodology(ies)

**<Means of validation>**

The project applied the approved methodologies: JCM_ID_AM002_ver02.0 of "Energy Saving by Introduction of High-Efficiency Centrifugal Chiller". The methodology is approved by the JC on 10/11/2015 and valid as of the time of the validation.

MUTUAGUNG 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 degree Celcius
Input 12 degree Celcius
Cooling water:
Output 37 degree Celcius
Input 32 degree Celcius

Justification in the PDD: The COP for project chiller (COP_PJ,tc,i) which is introduced to the proposed project is 6.25. The calculation is based on formula given on the approved methodology: 7.14 x (36.9 - 11 + 1.5 +1.5) / (37.0 - 7 +1.5 + 1.5) = 6.25

Steps taken for assessment:
Document review was conducted by the Validation Team 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 i under the project specific conditions was determined as 7.14 by results of the factory acceptance tests, i.e. the cooler output of 1,768.6 kW divided by the input motor power of 247.68 kW. The COP value is then adjusted to the standardizing temperature conditions as 6.25 following the procedures stipulated in the approved methodology using output cooling water temperature of the condenser at 36.9 degree Celcius and output chilled water temperature of the cooler at 11.0 degree Celcius 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. The old chiller already demolished and replaced by this project was an absorption chiller and it used water as the refrigerant, thus any special handlings of refrigerant in the old chiller was not required.

Justification in the PDD: Letter of consent on not releasing refrigerant used for project chiller was prepared by PT. Nikawa Textile Industry.

Steps taken for assessment:
Document review was conducted on the plan of the PT. Nikawa Textile Industry and the supporting information and a site visit was conducted including assessment of supporting evidence as well as the interviews with the PPs.

**<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.*
MUTUAGUNG confirms that the project applies the valid version of the approved methodology and the applicability is demonstrated to the eligibility criteria of the methodology 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 2,061 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 0.843 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 7.14 based on the result of the factory acceptance test that is adjusted to 6.25 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: 2,061 MWh x (6.25 / 5.59) x 0.843 - 2,061 MWh x 0.843 = 1,942.56 - 1,737.42 = 205 tCO2 (rounded).
The project started operation on 20/12/2014 and the GHG emission reductions of the year 2014, through performing above formula with proportional period, are estimated as 6.0 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, CAR 02 was raised and subsequently closed as the resolution detailed. 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 02

Nature of the issue raised:

On the Monitoring Plan Sheet (attachment of PDD form), the PPs referred the CO2 emission factor of 0.814 tCO2eq./MWh for consumed grid electricity. By using the reference emission factor it was yielded the estimated annual emissions reduction of 187 tCO2e as stipulated in the PDD. The data was sourced from the "Emission Factors of Electricity Interconnection Systems", National Committee on Clean Development Mechanism Indonesian DNA for CDM. The Validation Team assessed and found the information on the JCM Indonesia's website: http://www.jcmindonesia.com/en/projects/projref/emifact, that the most recent emission factor reference (released on 2014 report) for Interconnection system Java-Madura-Bali (ex-ante), is 0.843 tCO2eq./MWh. Thus, the PPs were requested to revise the emission factor reference with the latest version on the Monitoring Spreadsheet calculation. Moreover, the PPs were also requested to recalculate the estimated emissions in the PDD, particularly the annual estimated emissions reductions for period of 2014-2020, and the total estimated emissions reduction.

Nature of responses provided by the PPs

The PPs has revised the emission factor reference with the latest version on the Monitoring Spreadsheet calculation. Moreover, the PPs has recalculated the annual estimated emissions and the total estmated emissions reduction for 2014-2020 in the revised PDD. and the total estimated emissions reduction. By referring to the latest emission factor, thus the PPs calculated the estimated annual emission reduction is yielded of 205 tCO2eq, and the total estimated emissions reduction during the project period is yielded of 1,236 tCO2eq.

Assessment of the responses:

The Validation Team reviewed the revision of the annual estimated emissions and the total estimated emissions reduction for 2014-2020 as stipulated in the revised PDD prepared by the PPs. The Validation Team confirms that the emissions reduction calculation as described in the revised PDD is appropriate and it is accurate. Thus, CAR 02 is closed.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

The Validation Team confirmes that the emission factor has been updated in the revised PDD, and also the estimated annual emissions reduction, as well as the total estimated emissions reduction during the project period.

C.5. Environmental impact assessment

**<Means of validation>**

The proposed project is to use a high efficient centrifugal chiller at an existing textile production plant and the PDD states that an environmental impact assessment is required by laws of the host country. According to the laws of the host country, three levels of environmental management and reporting are applicable depending on the significance of the environmental impacts of project activity, i.e. AMDAL (detailed EIA), UKL/UPL (Environmental Management Plan and the Environmental Monitoring Plan) and SPPL. The Validation Team assessed the applicable legal requirements in the host country using its local expertise through the interview with the local official of Environmental Impact Assessment Section of West Java Province (BPLHD Kabupaten Karawang) on 22/12/2015. As a result, the followings are confirmed:

1) UKL/UPL (Environmental Management Plan / Environmental Monitoring Plan) was submitted by the PP and accepted by the local authority;

2) There is no regulation related to the activities of chiller installation in existing factory and it is not included in the types and businesses of EIA requirement.

For more refference, MUTUAGUNG reviewed the D-23_No.05_2012 about Types and businesses for EIA. MUTUAGUNG confirms that the PP is not requested to conduct an EIA, and there is no regulation related to project equipment in the host country. Thus, it deems that the impacts of the project activity on the environment is negligibly small.

**<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.*

MUTUAGUNG confirms by assessing the relevant documents and interviewing with the local official of BPLHD Kabupaten Karawang using the local expertise that the project does not need an environmental impacts assessment to meet the legal requirement of the host country. Thus, the PDD satisfies the requirements of the JCM.

C.6. Local stakeholder consultation

**<Means of validation>**

The PPs identified the local stakeholders, such as Chairman of API (Board of Directors Indonesia Textile Association) from private sector, and West Java Provincial Government, as there is no residence within the area where any environmental impact may be caused by the proposed project. The PPs conducted a local stakeholder consultation meeting at the Conference room of the West Java Provincial on 06/08/2015. The local governments participated in the consultation are as follows:

- International Cooperation Division, Regional Autonomy and Cooperation Bureau, Government of West Java Province
- Department of Communications and Information, Government of West Java Province
- Social Service Bureau, Government of West Java Province
- Regional Environmental Management Board of West Java Province (BPLHD Jawa Barat)
- Economic Bureau, Government of West Java Province
- Industry and Trade Department, Government of West Java Province

The local stakeholders provided positive comments. No negative issues that require actions to be taken by the PPs were raised through the consultation. MUTUAGUNG confirms that the stakeholder consultation process and targeted stakeholders were appropriate for identifying stakeholders' opinions about the project and collecting their views.

**<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.*

MUTUAGUNG confirms 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.

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 two monitoring points as the methodology provides, namely No. 1: Power consumption of project chiller, and No. 2: Electricity imported

from the grid to the project site.
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. In case a calibration certificate issued by an entity accredited under national/international standards is not provided, such measuring equipment is required to be calibrated.
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 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.

**<Findings>**

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

Grade/Ref.: CL05

Nature of the issue raised:
In the MSS attachment of PDD, it is described the title of responsible personnel different with the actual factory at PT Nikawa Textile Industry. PPs were requested to revise with actual title of responsible personnel and describe the organization structure for the project chiller operation (e.g. Utility Service Department).

Nature of responses provided by the PPs:
The modification for the title of responsible personnel was made in the MSS of the PDD with actual name title in the factory, as follows:
- The “Supervisor” was modified become “Utility Manager and Assistant Utility Manager”
- The “Chiller Operator” was modified become “Utility Staff, Foremen, Operator Leaders and Operators”

Assessment of the responses:
The Validation Team reviewed the clarification and supporting documents prepared by the PPs. The Validation Team confirms that the title of responsible person are described accurately on the revised PDD. Thus, CL 05 is closed.

Grade/Ref.: CL 06

Nature of the issue raised:
Based on explanation from the PPs, manual recorded data from electric meter is more accurate than automatic collected data since automatic data collection has aspect that (i) it collects instantaneous kW value and interval time of kW value acquisition to accumulate kWh is different from that of energy meter and (ii) if communication of equipment problem happens, accumulation of kWh may be missing in the record system of ERS office in Tokyo.
The PPs should describe in PDD that the data of energy consumption of the project chiller to calculate the emission reduction amount applies manual recorded data, which is more accurate than automatic collected data.

Nature of responses provided by the PPs:
Data is measured by measuring equipments in the textile factory.

- Specification of measuring equipments :
1) Electrical power meter is applied for measurement of electrical power consumption of project chiller.
2) Meter is certified in compliance with national/international standards on electrical power meter.

- Measuring and recording :
1) Measured data is automatically sent to a server where data is recorded and stored. Measured data is manually recorded by responsible staff for calculation of emission reduction.
2) Recorded data is checked its integrity once a month by responsible staff.
The accuracy level of electric meter is +0.5%. The data monitored and required for verification and issuance will be kept and archived electronically for two years after the final issuance of credits.

- Calibration :
Calibration was conducted by the Manucfacturer at the time of Manufacturer's inspection. Next calibration is required after 10 years.

Assessment of the responses:
The Validation Team reviewed the clarification and supporting documents prepared by the PPs. MUTUAGUNG confirms information are described accurately on the revised Monitoring Plan Sheet. Thus, CL 06 is closed

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

The Validation Team confirms:

- Monitoring Plan 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 Monitoring Plan.
- Through reviewed the revised PDD prepared by the PPs, The Validation Team confirms that the title of responsible person are described accurately.
- Based on the revised Monitoring Plan Sheet, the manual recorded data of the meter will be utilized as the data of energy consumption of the project chiller to calculate the emission reduction amount in the factory.

C.8. Modalities of Communication

**<Means of validation>**

The MoC was submitted to MUTUAGUNG prior to on site validation for review in the form JCM_ID_F_MoC_ver01.0 in which Nippon Koei. Co., Ltd. is nominated as the focal point. The MoC 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.

It is confirmed that all corporate and personal details including specimen signatures are valid and accurate as requested in the JCM Guidelines for Validation and Verification. MUTUAGUNG confirms through the review of the corporate information of the PPs and the interview with these representatives of 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 the requirement.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

MUTUAGUNG confirms that the MoC is completed using the latest form and the information in the MoC is correct and sufficient, 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 Validation 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. Three 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.*
MUTUAGUNG confirms 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 20/12/2014 in the revised PDD form.
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.*

Grade/Ref.: CL 03

Nature of the issue raised:

The PDD stated that starting date of project operation was 20/12/2015 for 7 (seven) years onwards operation. The annual estimated emissions reduction was stated as of 6.00 tCO2eq for 2014 period on sub section C.3 (Estimated emissions reduction in each year). The PPs were clarified to provide relevant documents or information on the starting date of project operation of the textile factory.

Nature of responses provided by PPs:

The relevant documents to specify the starting date of the project operation were provided by the PPs. Then the PPs corrected the start of project operation from 20/12/2015 to 20/12/2014 in the revised PDD form. The Validation Team confirmed through the on-site inspection and the review of relevant documents, thus concluded that the start of project operation on 20/12/2014 was reasonable, complying with the definition for the start of project operation. Thus, CL 03 is closed.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

MUTUAGUNG confirmed through the on site assessment that the start date of operation of the proposed JCM project was 20/12/2014 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

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|---|
| 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/information/60. |

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

| |
|---|
| Based on information through electronic mail we received from Mr. Osamu Bannai (Assistant Manager, Global Environment Centre Foundation) on 05/01/2016, no comment was received during the above period to receive public inputs.<br>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

| |
|---|
| 1. Nippon Koei Co. Ltd., Japan<br>- Ms. Yuka Nakagawa (Associate Senior Staff)<br>2. Ebara Refrigeration Equipment & Systems Co., Ltd., Japan<br>- Mr. Masahiko Kosho (Group Manager)<br>3. PT. Nikawa Textile Industry<br>- Mr. Masaki Asahina (Utility Manager)<br>- Mr. Rahmat Jaelani (Utility Ass. Manager)<br>4. PT. Ebara Indonesia<br>- Mr. Masanori Okada (Technical Adviser)<br>- Mr. Agus Pramudibyo (Ass. Manager Service & Maintenance Department)<br>5. Local official of BPLHD Karawang Regency, West Java Provice<br>- Mrs. Sri Mukti<br>- Mr. Niki Jatmika |

E.2. List of documents received

1. Documents of Category A (Prepared by the Project Participants)
- PDD Version 1.1 dated 14/12/2015
- PDD Version 1.2 dated 15/01/2016
- PDD Version 2.0 dated 19/02/2016
- Modalities of Communication Statement Form (MoC) dated 21/08/2015
- 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 Ebara RTBF Centrifugal Chiller
- 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® HFC-245fa, Honeywell
- Chiller Overhauling History Report
- Letter of Consent Sole Supply of Grid Electricity to the Project Chiller dated 10/08/2015 by PT. Nikawa Textile Industry
- Letter of Consent regarding the plan not releasing refrigerant used for the project and existing chillers dated 10/08/2015 by PT. NIkawa Textile Industry
- Letter of Consent regarding periodical checks the project chiller for JCM Model Project

in PT. Nikawa Textile Industry dated 01/01/2015 by Ebara Refrigeration and Equipment Systems, Co. Ltd.
- 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 October 2015
- 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 Introduction of High-efficiency Centrifugal Chiller dated 06/08/2015
- Organizational structure of PT. Nikawa Textile Industry's Utility Unit, 2015
- Piping layout / dimensional drawing of project chiller
- UKL & UPL report (October 2015)
- Procedures for checking and maintenance of chillers, ERS
- Specification of refrigerant recovery equipment
- Operation manual of refrigerant recovery equipment
- Clarification on the monitoring plan
- Report of Job Completion Commisioning New Turbo Chiller Type RTBF 050 Dated November 28, 2014 by PT. Ebara Indonesia
- The location map of Project Chiller PT. Nikawa Textile Industry
- Monitoring Procedure Ebara RTBF Centrifugal Chiller
- Electricity Energy Data Record PT. Nikawa Textile Industry

2. Documents of Category B (other documents referenced)
- PT. Nikawa Textile Industry 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
- 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 RegulationNo. 101/2014 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_ver02.0
- JCM Guidelines for Validation and Verification JCM_ID_GL_VV_ver01.0
- JCM_ID_GL_TPE_ver03.0
- 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
- 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 Profiles Prasadha Pamunah 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.