JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller
Reference number	ID009
Third-party entity (TPE)	TPE-ID-003 Japan Quality Assurance Organization
Project participant contracting the TPE	NTT FACILITIES, INC.
Date of completion of this report	24/03/2017

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: Tadayuki	First name: Yano	
Title: Senior Executive		
Specimen signa[redacted]		Date: 24/03/2017

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Koichiro Tanabe	JQA	Team leader	☒	Authorized	☐
Mr. ☒ Ms. ☐	Irhan Febijanto	External individual	Team member	☒	Authorized	☒
Mr. ☐ Ms. ☒	Sachiko Hashizume	JQA	Team member	☒	Authorized	☐
Mr. ☒ Ms. ☐	Tadashi Yoshida	External individual	Internal reviewer	☒	Authorized	☐

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>

Through a review of the draft PDD, it was checked and confirmed that the PDD was completed using the latest version of the PDD form (JCM_ID_F_PDD_ver01.0) appropriate to the type of project and drafted in line with JCM Guidelines for Developing PDD and MR (JCM_ID_GL_PDD_MR_ver02.0).

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concluded that the PDD was completed using the valid form in line with the JCM Guidelines for Developing PDD and MR.

C.2. Project description

<Means of validation>

The proposed JCM project aims to improve electricity consumption by introducing an advanced and efficient centrifugal chiller system to the shopping mall in Surabaya, the Republic of Indonesia. The project is to replace existing 5 central cooling systems with high efficient centrifugal chiller in the shopping mall as well as to replace existing 8 cooling towers with efficient Japanese models. These existing chillers were replaced with one high-efficiency centrifugal chiller of 569 USRt and four high-efficiency centrifugal chiller of 966 USRt by the project. The key technology is the new type economizer. Improvement of vapor-liquid separation performance and significant downsizing are realized by use of newly developed economizer. The emission reductions that would be achieved by the proposed project are estimated to be 398 ton annually. The estimated emission reductions of the period from 2016 through 2020 are calculated in the PDD.

The validation team conducted document review, and then conducted a one-day on-site inspection on 31/01/2017, including a follow-up interview. The location of the proposed JCM project, including coordinates, was checked during the on-site visit. The project description was also cross-checked through the physical inspection and interview with a representative of each of the entities below, who have been involved in the proposed JCM project as a project participant.

- PT.PAKUWON JATI Tbk:
  The owner of the shopping mall in which the proposed JCM project is implemented.
- NTT FACILITIES, INC
  The facility provider of the proposed JCM project

It was confirmed through document review that the starting date of project operation was on 01/12/2016, which was the successful completion date of the trial operation of the installed project chillers. It was also confirmed that the expected operational lifetime of the proposed JCM project is 15 years, which was defined by a statutory useful life of the proposed technology under the regulation of Japan. For the purpose of knowledge transfer of the advanced technology, NTT FACILITIES, INC has provided of PT.PAKUWON JATI Tbk with training of operation and maintenance through the trial operation of the project equipment. This finding was confirmed through review of supporting documents and the on-site inspection, with a satisfactory result.

As a result, the team determined that the description of the proposed JCM project in the PDD was accurate, complete, and provided an understanding of the proposed JCM project.

<**Findings**>

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

No outstanding issue was raised.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team concluded that the accuracy and completeness of the project description were valid.

C.3. Application of approved methodology(ies)

<**Means of validation**>

Selection of methodology(ies)

Through a review of the draft PDD and Monitoring Plan (Monitoring Plan Sheet and Monitoring Structure Sheet), it was confirmed that the following latest version of methodology was correctly quoted and applied in the proposed JCM project.

- JCM_ID_AM002_ver02.0

The assessment results of the eligibility criteria in the approved methodology are summarized as below:

Criterion 1:

"Project chiller is a centrifugal chiller with a capacity of less than 1,250 USRt."

** 1 USRt = 3.52 kW*

Through reviewing supporting documents (the specifications of the installed chiller) and the physical inspection, the project information of Criterion 1 described in the PDD was checked and confirmed as below with a satisfactory result:

- The capacities of the chillers introduced in the project are 569USRt and 996 USRt.

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."*

[Equation to calculate $COP_{PJ,tc,i}$]

$$COP_{PJ,tc,i} = COP_{PJ,i} \times [(T_{cooling\text{-}out,i} - T_{chilled\text{-}out,i} + TD_{chilled} + TD_{cooling}) \div (37 - 7 + TD_{chilled} +$$

$TD_{cooling}$)]

$COP_{PJ,tc,i}$: COP of project chiller i calculated under the standardizing temperature conditions [-]*
$COP_{PJ,i}$: COP of project chiller i under the project specific conditions [-]
$T_{cooling\text{-}out,i}$: Output cooling water temperature of project chiller i set under the project specific condition [degree Celsius]
$T_{chilled\text{-}out,i}$: Output chilled water temperature of project chiller i set under the project specific condition [degree Celsius]
$TD_{cooling}$: Temperature difference between condensing temperature of refrigerant and output cooling water temperature 1.5 degree Celsius set as a default value [degree Celsius]
$TD_{chilled}$: Temperature difference between evaporating temperature of refrigerant and output chilled water temperature,1.5 degree Celsius set as a default value [degree Celsius]
**The standardizing temperature conditions to calculate $COP_{PJ,tc,i}$*
Chilled water: output 7 degree Celsius
input 12 degree Celsius
Cooling water: output 37 degree Celsius
input 32 degree Celsius

Through reviewing supporting documents (factory acceptance test data of the installed chillers by manufacturer) and the physical inspection, the project information of Criterion 2 described in the PDD was checked and confirmed as below with a satisfactory result:

- The COP for project chiller ($COP_{PJ,tc,i}$) which are introduced to the proposed project are 6.14 and 6.11.
- Calculation results are as follows:

  <996 USRt >

  5.99 x (36.89 – 6.07 + 1.5 + 1.5) / (37.0 – 7 + 1.5 + 1.5) = 6.1388 ≒6.14

  <569 USRt >

  5.98 x (36.85– 6.12 + 1.5 + 1.5) / (37.0 – 7 + 1.5 + 1.5) = 6.1123 ≒6.11

Criterion 3:

“Periodical check is planned more than four (4) times annually.”

Through the interview with PT.PAKUWON JATI Tbk, the project information of Criterion 3 described in the PDD, was checked and confirmed as below with a satisfactory result:

- Periodical check is planned four times annually. In addition, a Letter of consent on the conductance of periodical check four times annually for the project chiller was prepared by project participants.

Criterion 4:

“Ozone Depletion Potential (ODP) of the refrigerant used for project chillers is zero.”

Through reviewing supporting documents (the specifications of the installed chillers and existing chillers) and the physical inspection, the validation team confirmed as below:

- The refrigerant type for the existing chillers was R123 and the new type chillers is HFC R134a
- ODP of HFC R134a used as the refrigerant of the project chillers is zero.

In this process, the validation team confirmed evidence, which demonstrates the refrigerant type of the existing chillers indicated in the evidence. However, any resource of the information was not indicated in the evidence. Therefore, CL01 was raised.

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."

Through the interview with PT.PAKUWON JATI Tbk and physical inspection, the validation team confirmed as below with satisfactory result:

- The refrigerant used for the existing chillers (old type chillers) is still being kept and it will be used for the same type of the existing chillers in the project site.
- Letter of consent on not releasing refrigerant used for project chillers and existing chillers were prepared by participants from both sides.

<Findings>

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

(Issue raised as CL01)

The validation team confirmed an evidential document, which demonstrates the refrigerant type of the existing chillers indicated in the evidence. However, any resource of the information was not indicated in the evidence. Therefore, it is requested to clarify it accordingly.

(Summary of the response on CL01)

Refrigerant type of the existing chillers is indicated in the manufacturer's brochure, titled "TRANE CHILLER (CVHE, CVHG)".

(Assessment result of the responses on CL01)

It is confirmed that the submitted supplementary document indicates refrigerant type of the existing chillers. Therefore, this check item is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team reached the conclusion that the relevant information contained in the PDD is in compliance with the eligibility criterion listed in the approved methodology applied. The issue raised by the team was fully clarified.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

It is confirmed through desk review that the emission sources and GHGs, which are described in the PDD, are described based on evidential documents properly. It is also confirmed through an on-site inspection that they are corroborated as below:

- As figured in the PDD, the proposed JCM project includes five high efficiency centrifugal chillers. Those chillers are operated with grid electricity.
- It was observed that seven captive power generators (diesel fuel) had been installed in the shopping mall, for emergency use. According to the applied methodology, it is required to calculate the emission reductions by using appropriate CO2 emission factors based on the proportion of grid electricity and captive electricity to electricity consumption of project chillers

With respect to the monitoring point for the captive electricity generation, as it was not indicated in the figure of all emission sources and monitoring points relevant to the JCM project, CL02 was raised and resolved.

Since the applied methodology does not allow the PPs to choose any source or gas to be included, all emission sources and their associated GHGs relevant to the proposed JCM project meet the applied methodology. With respect to the calculation of emission reductions, it was confirmed that an appropriate Monitoring Spreadsheet defined in the applied methodology is used without being altered. It is cross-checked and concluded that the required fields of the spreadsheet are filled in appropriately as a result of resolution of issues mentioned below.

<u>Parameters to be fixed ex ante</u>

Through cross-check of the project-specific parameters fixed *ex ante*, it was not confirmed whether EF_{elec} (CO_2 emission factor of electricity consumed) and RC_{gen} (Rated capacity of generator, where applicable) in the Monitoring Spreadsheet, are in line with the applied methodology or not. Therefore, CAR01 and CAR02 were raised

respectively.

<Findings>

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

(Issue raised as CL02)

It was confirmed through the site inspection that Monitoring point No.3 has been defined as is, whereas no information is presented in the diagram of section C.2 of the PDD. Therefore, it is requested to clarify it accordingly.

(Summary of the response on CL02)

Monitoring point No.3 has been added to the diagram of section C.2 of the PDD.

(Assessment result of the responses on CL02)

It is confirmed that the PDD has been revised accordingly. Therefore, this check item is closed.

(Issue raised as CAR01)

CO_2 emission factor for consumed electricity, as a fixed ex-ante parameter, was not the most recent value available at the time of the validation; therefore it is requested to review it accordingly.

(Summary of the response on CAR01)

CO_2 emission factor for consumed electricity will be the latest 0.840tCO_2/MWh of List of Grid Emission Factor published by IGES in 2016.

(Assessment result of the responses on CAR01)

It is confirmed that the revised CO_2 emission factor for consumed electricity is quoted from the calculation results and update of emission factor for some power interconnection systems of Indonesia in 2014, which is stated on JCM website established by Coordinating Ministry for Economic Affairs Republic of Indonesia. It is also confirmed that the Monitoring Plan Sheet and the PDD have been revised accordingly. Therefore, this check item is closed.

(Issue raised as CAR02)

The rated capacity of generator was indicated zero in the Monitoring Plan Sheet; however any specification of generator for captive electricity was presented to demonstrate it. Therefore, it is requested to review it accordingly.

(Summary of the response on CAR02)

The specification of meter equipped to the generator is indicated in the additional supplemental document. The rated capacity of generators will be described in the Monitoring Plan Sheet according to the specification of the rated capacity of generator.

(Assessment result of the responses on CAR02)

It is confirmed that the rated capacity of seven units of captive electricity generator have been reflected to the Monitoring Plan Sheet accordingly. Therefore, this check item is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team reached the conclusion through the validation that the selected emission sources and GHG types were justified for the JCM project. The validation team assessed values for project-specific parameters to be fixed ex ante in the Monitoring Plan Sheet and intermediate processes to derive the values. As a result, those were considered reasonable in the context of the proposed JCM project. The issue raised by the team was fully clarified, which resulted in a revision of the PDD and the Monitoring Plan Sheet.

C.5. Environmental impact assessment

<Means of validation>

It is confirmed through review of AMDAL (Environmental Impact Assessment in Indonesia) that the proposed JCM project is not required to conduct AMDAL, since it is not applicable for the project type of AMDAL.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concluded that the project design of the proposed JCM project was in accordance with the EIA regulation in the Republic of Indonesia.

C.6. Local stakeholder consultation

<**Means of validation**>

Through document review and interviews with local stakeholders, the following information was confirmed with a satisfactory result:

(a) Comments been invited from local stakeholders that are relevant for the proposed project.

The relevant local stakeholders have been identified by the project participants, and a LSC meeting was held on 08/11/2016, followed by a face to face interview with Indonesia JCM Secretariat held on 31/10/2016, with inviting the following local stakeholders respectively:

- Shopping mall director (Staff member of PT PAKUWON JATI Tbk)
- Indonesia JCM Secretariat
- Institute Technology of 10th November
- Surabaya government

(b) The summary of the comments received as provided in the PDD is complete.

The summary of the comments received has been described in the PDD. Through interview with one of local stakeholders (Staff member of PT PAKUWON JATI Tbk), it is confirmed that those comments have been described in the PDD appropriately.

(c) The project participants have taken due account of all comments received and have described this process in the PDD.

JQA determines that the relevant local stakeholders have been identified appropriate and the information on the LSC meeting has been described in the PDD appropriately. JQA also confirms that the consideration of the comments received at the LSC meeting is adequate and the additional action to share the information on the proposed JCM project to the local stakeholders is to be implemented in an appropriate manner.

<**Findings**>

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

No outstanding issue was raised.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team concluded that the local stakeholder consultation of the proposed JCM project was adequate.

C.7. Monitoring

<Means of validation>

Through document review and interviews with the project participants, the following information was confirmed:

(a) Assessment of compliance of the monitoring plan with the approved methodology and/or PDD and Monitoring Guidelines

The parameters, which are required in the applied methodology, have been defined in Monitoring Plan Spreadsheet (MPS). As for the means of monitoring, JQA conducted interview with the project participants to confirm the following information:

- $EC_{PJ,I,p}$ (Power consumption of project chiller i during the period p) is monitored by a electricity meter. The specification of the electricity meter, measuring and recording procedure and calibration status are in line with the requirement of the applied methodology.
- $EI_{grid,p}$ (Electricity imported from the grid to the project during the period p) is collected and recorded from invoices from the power company.

With regard to the parameter, $h_{gen,p}$ (Operating time of captive electricity generator during the period *p*), the validation team could not confirm a method how to measure it during the monitoring period. Therefore, CL03 was raised.

(b) Assessment of the implementation of the plan

Through interview with the project participant, it is confirmed that the monitoring is conducted in line with Monitoring Structure Sheet (MSS) of the proposed JCM project. In addition, the responsible personnel and their role are identified, and confirmed the description in the MSS is reflecting the actual and feasible monitoring structure.

<Findings>

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

(Issue raised as CL03)

As for monitoring point No.3 ($h_{gen,p}$,), it is requested to clarify how to measure $h_{gen,p}$ (Operating time of captive electricity generator during the period *p*) through a meter equipped to a generator. It was observed through visual inspection at the on-site assessment that a few electricity measuring meters have been equipped to the generator, whereas no timing measurement device has been installed.

(Summary of the response on CL03)

Power meters, which have been installed in the project site, can measure total power consumption of the generators. The operating time of the generator is calculated through inverse calculation using “Rated capacity of generator” and the power consumption data, which will be measured by the power meters and collected once a month.

(Assessment result of the responses on CL03)

It was confirmed that the monitoring plan of the parameter $h_{gen,p}$, which the PPs mentioned through the response, is still in accordance with the approved monitoring plan. Therefore, this check item is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concluded that Monitoring Plan of the proposed JCM project complied with the requirements of the methodology and/or PDD and Monitoring Guidelines, and the project participants had ability to implement the described Monitoring Plan, including Monitoring Structure Sheet.

C.8. Modalities of Communication

<Means of validation>

JQA received the Modalities of Communication (MoC) by NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, INC., who supports NTT FACILITIES, INC. as JCM consultant. Through document review, it is confirmed that the Modalities of Communication (MoC) have applied the latest version of MoC form. The date of submission indicated in the MoC is 31/01/2017. JQA also conducted interviews with the signatories of the Modalities of Communication (MoC), and then identified the personnel and their employment status, including the specimen signatures. Therefore, JQA determine that the information of all project participants, including the focal point provided in the MoC and its correctness of authority, is appropriate.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concluded that the MoC complied with all relevant forms and requirements.

C.9. Avoidance of double registration

<**Means of validation**>

It was confirmed through review of the relevant website (e.g. UNFCCC website, Markit Environmental Registry, etc.) that the proposed JCM project has not been registered under other international climate mitigation mechanisms. Also, the written confirmation of the avoidance of double registration was provided through the signed MoC, and was cross-checked through interview with the project participant, with a satisfactory result.

<**Findings**>

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

No outstanding issue was raised.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team concluded that the proposed JCM project was not registered under the other international climate mitigation mechanisms at the stage of validation.

C.10. Start of operation

<**Means of validation**>

Through interview with the project participant, it was confirmed that the starting date of project operation was identified as 01/12/2016, which was the successful completion date of the trial operation of the installed project chillers. It was confirmed that the date is not before 01/01/2013.

<**Findings**>

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

No outstanding issue was raised.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team concludes that the start of the operating date of the proposed JCM project has been defined appropriately.

C.11. Other issues

<Means of validation>

No other issue was identified.

<Findings>

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

No outstanding issue was raised.

<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

The PDD of the proposed JCM project, which was submitted in line with the Project Cycle Procedure, was made publicly available through the JCM website for public inputs. This call for public comments is open from 02/02/2017 to 03/03/2017 (24:00 GMT). The specific JCM website is as below:

- https://www.jcm.go.jp/id-jp/information/194

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

No comment was received during the period of the public comments; therefore, no action was required to be taken into due account by the project participants.

E. List of interviewees and documents received

E.1. List of interviewees

- Steviana Mecano Oen, General Manager, PT Pakuwon Jati
- Eko Supriyanto, Head of Engineering, PT Pakuwon Jati
- Achmad Qurani, Mechanical Engineer, PT Pakuwon Jati
- Alief Noeralamsyah, Project Manager – M&E Engineer, NTT FACILITIES, INC.
- Go Muto, Assistant Chief Representative, NTT FACILITIES, INC.

- Mikiko Saito, Manager, NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, INC.

E.2. List of documents received

1. Project Design Document (draft) (JCM_ID_F_PDD_ver01.0(Chiller)_0131_clear.docx)
2. Monitoring Plan Sheet and Monitoring Structure Sheet (draft) (JCM_ID_AM002_ver02.0(Chiller569RT)_ver6.xlsx)
3. Monitoring Plan Sheet and Monitoring Structure Sheet (draft) (JCM_ID_AM002_ver02.0(Chiller966RT①)ver2.xlsx)
4. Monitoring Plan Sheet and Monitoring Structure Sheet (draft) (JCM_ID_AM002_ver02.0(Chiller966RT②)ver2.xlsx)
5. Monitoring Plan Sheet and Monitoring Structure Sheet (draft) (JCM_ID_AM002_ver02.0(Chiller966RT③)ver2.xlsx)
6. Monitoring Plan Sheet and Monitoring Structure Sheet (draft) (JCM_ID_AM002_ver02.0(Chiller966RT④)ver2.xlsx)
7. Modalities of communications statement, submitted with the draft PDD for publication (JCM_ID_F_MoC_ver01 2(Chiller)_0131.pdf)
8. Modalities of communications statement, a validated version for submission of request for registration
9. JCM Approved Methodology ID_AM002 (JCM_ID_AM002_ver02.0.pdf)
10. Monitoring Plan Sheet and Monitoring Structure Sheet ID_AM002 (JCM_ID_AM002_ver02.0.xlsx)
11. JCM Glossary of Terms (JCM_ID_Glossary_ver02.0)
12. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_ID_GL_PDD_MR_ver02.0.pdf)
13. JCM Project Cycle Procedure (JCM_ID_PCP_ver05.0.pdf)
14. JCM Guidelines for Validation and Verification (JCM_ID_GL_VV_ver01.0.pdf)
15. JCM Modalities of Communication Statement Form (JCM_ID_F_MoC_ver01.0.pdf)
16. JCM Project Design Document Form (JCM_ID_F_PDD_ver01.0.docx)
17. JCM Validation Report Form (JCM_ID_F_Val_Rep_ver01.0.docx)
18. Company profile of PT.PAKUWON JATI Tbk
19. Test results of trial operation of the installed project chillers
20. List of operating life of equipment/fixtures provided by Japanese national tax agency
21. Specification of the chillers for both the model of 569USRt and 996USRt
22. Factory acceptance test data by manufacturer

23. Letter of consent on the conductance of periodical check four times annually for the project chiller
24. Installation, Operation, and Maintenance Manual of the existing chillers, indicating the specification and type of the refrigerant used
25. Letter of consent on not releasing refrigerant used for project chiller and existing chillers
26. Utility piping system schematic diagram
27. Legal requirement of environmental impact assessment in Indonesia
28. Meeting minutes of the local stakeholder consultation
29. Presentation materials for local stakeholder consultation
30. Specification of measuring equipment
31. Test and calibration certificate for chiller for 569USRt
32. Test and calibration certificate for chiller for 996USRt
33. CDM approved small scale methodology: AMS-I.A
34. Invoice from the power company (sample)
35. Specification of meter for measuring operating time
36. List of Grid Emission Factor, published by IGES
37. Calculation spreadsheet of estimated values of power consumption of the project chiller (Monitoring point No.1)
38. Calculation spreadsheet of estimated values of electricity imported from the gid to the project site (Monitoring point No.2)
39. O&M procedure for internal use, indicating the rated capacity of captive electricity generators
40. Project Design Document (final) (JCM_ID_F_PDD_ver01.0(Chiller)_0315.docx)
41. Monitoring Plan Sheet and Monitoring Structure Sheet (final) (JCM_ID_AM002_ver02.0(Chiller569RT)_ver8.xlsx)
42. Monitoring Plan Sheet and Monitoring Structure Sheet (final) (JCM_ID_AM002_ver02.0(Chiller966RT①)ver4.xlsx)
43. Monitoring Plan Sheet and Monitoring Structure Sheet (final) (JCM_ID_AM002_ver02.0(Chiller966RT②)ver4.xlsx)
44. Monitoring Plan Sheet and Monitoring Structure Sheet (final) (JCM_ID_AM002_ver02.0(Chiller966RT③)ver4.xlsx)
45. Monitoring Plan Sheet and Monitoring Structure Sheet (final) (JCM_ID_AM002_ver02.0(Chiller966RT④)ver4.xlsx)
46. Summary of calculation of emission reductions achieved by the proposed JCM project

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.

Statement of competence JQA

Name: Mr. Koichiro Tanabe

Qualified and authorized by Japan Quality Assurance Organization.

Function

	Date of qualification
Validator	-
Verifier	2014/12/22
Team leader	2014/12/22

Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	-
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	2014/12/22
TA 13.1. Solid waste and wastewater	2014/12/22
TA 14.1. Afforestation and reforestation	-

Statement of competence JQA

Name: Dr. Irhan Febijanto

Qualified and authorized by Japan Quality Assurance Organization.

Function

	Date of qualification
Validator (JCM project only)	2017/1/24
Verifier (JCM project only)	2017/1/24
Team leader	-

Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	-
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	-
TA 4.6. Other manufacturing industries	-
TA 5.1. Chemical industry	-
TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	-
TA 14.1. Afforestation and reforestation	-

Statement of competence JQA

Name: Ms. Sachiko Hashizume

Qualified and authorized by Japan Quality Assurance Organization.

Function

	Date of qualification
Validator	2015/11/20
Verifier	2015/11/20
Team leader	-

Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2015/11/20
TA 1.2. Renewables	2015/11/20
TA 3.1. Energy demand	2015/11/20
TA 4.1. Cement and lime production	-
TA 4.6. Other manufacturing industries	-
TA 5.1. Chemical industry	-
TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	2015/11/20
TA 14.1. Afforestation and reforestation	-

Statement of competence JQA

Name: Dr. Tadashi Yoshida

Qualified and authorized by Japan Quality Assurance Organization.

Function

	Date of qualification
Validator	2014/12/22
Verifier	2014/12/22
Team leader	2014/12/22

Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	2014/12/22
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	-
TA 14.1. Afforestation and reforestation	-