JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Introduction of PV-diesel Hybrid System at Fastening Manufacturing Plant
Reference number	BD004
Monitoring period	01/06/2016 – 31/07/2019
Date of completion of the monitoring report	30/01/2020
Third-party entity (TPE)	Japan Quality Assurance Organization (JQA) TPE-BD-002
Project participant contracting the TPE	YKK Corporation
Date of completion of this report	18/02/2020

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☒ Unqualified opinion	Based on the process and procedure conducted, JQA provides reasonable assurance that the emission reductions for Introduction of PV-diesel Hybrid System at Fastening Manufacturing Plant ✓ 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>

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of	☒

Item	Verification requirements	No CAR or CL remaining
the eligibility criteria of the applied methodology	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: Asada	First name: Sumio
Title: Senior Executive	
Specimen signature:	Date: 18/02/2020

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Tadashi Yoshida	JQA	Team Leader	☒	Authorized	☒
Mr. ☐ Ms. ☒	Aya Watarai	JQA	Team Member	☐		☒
Mr. ☐ Ms. ☒	Sachiko Hashizume	JQA	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 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>

The project was registered as a JCM project on 04/04/2019, which applied JCM approved methodologies BD_AM002_ver01.0 "Installation of Solar PV System" under the scheme of Joint Crediting Mechanism between People's Republic of Bangladesh and Japan.

The project participants (PPs) are YKK Bangladesh Pte Ltd. from People's Republic of Bangladesh and YKK Corporation from Japan.

The purpose of the registered project is to reduce CO_2 emissions from the consumption of captive electricity by introducing a hybrid solar-diesel power generation system into Phase 2 building of YKK Bangladesh Pte Ltd. which is located in the Dhaka Export Processing Zone (DEPZ), Ashulia, Dhaka, Bangladesh. The PV-diesel hybrid power generation system consists of 1,264 solar photovoltaic (PV) panels (Capacity: approximately 334.6 kW in total), 16 inverters, 5 diesel generators, Fuel Save Controller (FSC) and 1 unit of switchgear. The electricity meter to monitor electricity generated by the solar PV system is located at the switchgear.

The fastening manufacturing plant in Phase 2 building currently uses only electricity supplied by the captive diesel generators. As a result of introducing the solar PV system, the electricity from the existing diesel generators is partly displaced by the electricity generated

by the solar PV system. The FSC adjusts electricity output from the diesel generators through the operation control of the generators based on the quantity of electricity generated by the solar PV system, which leads to the reduction of oil fuel consumption, namely CO_2 emission reductions.

The JCM website indicates that the starting date of project operation is 01/06/2016 and this monitoring period is from 01/06/2016 to 31/07/2019. It is confirmed through the review of relevant documents, on-site assessment and the interview with the PPs that the monitoring actually started on 01/06/2019 after the commissioning of the project facilities on 26/05/2016 and the solar PV system has generated electricity of 671.0 MWh during the monitoring period. YKK Corporation has conducted OJT training on the operation and maintenance of the project facilities during the installation. Maintenance supports by the manufacturer (KYOCERA Asia Pacific Pte. Ltd.) are also available upon the request.

The verification team has assessed whether the project implementation and operation during the monitoring period comply with the eligibility criteria of the applied methodology. After the desk review, on-site assessment was conducted on 11/11/2019 and the verification team conducted a physical inspection and interviewed the PPs listed in Section F of this verification report.

The assessment results regarding the eligibility criteria are summarized as below:

Criterion 1

The project newly installs solar PV system(s).

- ✓ *The proposed JCM project newly installs a solar PV system in Factory of YKK Bangladesh Pte Ltd.*

Through the review of supporting documents, on-site inspection of the nameplate of solar PV system and the interview with the PPs, the project information of Criterion 1 in the PDD is confirmed as follows;

- ✓ The solar PV modules installed in Factory of YKK Bangladesh Pte Ltd. are the model KK260P-3C3CG (260 W) and KK265P-3CF3CG (265 W), made by Kyocera Corporation; and
- ✓ The installed solar PV systems consists of 1,264 panels, 16 inverters, 4 AC connection boards, 1 switchgear and 1 electricity meter.

Therefore, it is concluded that the project meets the criterion 1 with a satisfactory result.

Criterion 2

The PV modules have obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).

- ✓ *The installed PV module of Kyocera has obtained a certification of design qualifications (IEC 6121) and safety qualification (IEC 61730-1 and IEC 61730-2).*

Through the review of supporting documents, on-site inspection and the interview with the PPs, the project information of Criterion 2 in the PDD is confirmed as follows;

- ✓ Kyocera Corporation was certified for design qualifications (IEC 61215) and safety qualification (IEC 61730-1 and IEC 61730-2) by Japan Electrical Safety & Environment Technology Laboratories (JESETL) on 10/07/2014 (Certificate No.: PV03-53202-1068, which is valid until 09/07/2019), and
- ✓ The model KK260P-3C3CG (260 W) and KK265P-3CF3CG (265 W) installed by the project activity are certified by an applied standard for testing.

Therefore, it is concluded that the project meets the criterion 2 with a satisfactory result.

Criterion 3

The equipment to monitor output power of the solar PV system(s) and irradiance is installed at the project site.

- ✓ *The equipment to monitor output power of the solar PV system and irradiance is installed at the YKK Bangladesh Pte Ltd factory.*

Through the review of supporting documents, on-site assessment and the interview with the PPs, the project information of Criterion 3 in the PDD is confirmed as follows;

- ✓ The equipment to monitor output power of the solar PV system and irradiance has been installed at the project site;
- ✓ The measuring equipment consists of electricity meter (Model: SQLC-110L) made by DAIICHI Electronics Co., Ltd. and pyranometer (Model: MS-602) made by EKO Instruments Co., Ltd. for measuring the solar power generation.

Therefore, it is concluded that the project meets the criterion 3 with a satisfactory result.

Regarding the project boundary of the project activity and the function of Fuel Save Controller (FSC), the verification team raised CL 01 and CL 02 and these issues were resolved as explained in "Findings".

<Findings>

< *CL 01* >

The PPs are requested to clarify the project boundary where the PV-diesel hybrid system is applied and operated at the fastening manufacturing plant.

< Comments from the PPs >

The power generated by the solar PV system is utilized for the operation of fastening

manufacturing facilities in Phase 2 building of YKK Bangladesh Pte Ltd.

< Assessment by the TPE >

It is confirmed through the on-site inspection and the interview with the PPs that the electricity generated by the solar PV system is fully consumed only for the operation of fastening manufacturing facilities in Phase 2 building of YKK Bangladesh Pte Ltd. Thus, CL 01 is closed.

< *CL 02* >

The PPs are requested to clarify how the FSC controls against the variations of electricity demand from the factory and of electricity generation by the solar PV system.

< Comments from the PPs >

By the operation of fuel save controller (FSC), power generated by the solar PV system is preferentially consumed for the operation of fastening manufacturing facilities in Phase 2 building. Then, diesel generator is operated to meet the electricity demand in case of power shortage from the solar PV system.

< Assessment by the TPE >

It is confirmed through the review of relevant documents and the interview with the PPs that the FSC adjusts electricity output from the diesel generators through the operation control of the generators based on the quantity of electricity generated by the solar PV system, which leads to the reduction of oil fuel consumption, namely CO_2 emission reductions. Thus, CL 02 is closed.

< Conclusion based on reporting requirements >

The verification team concludes that the implementation and the operation of the registered project are in compliance with three eligibility criteria of the applied methodology BD_AM002 during this monitoring period.

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

<Means of verification>

The verification team has assessed the status of the actual project and its operation with the registered PDD through the review of relevant documents, on-site assessment and the interview with the PPs. The project is implemented by YKK Bangladesh Pte Ltd. from the People's Republic of Bangladesh and YKK Corporation from Japan.

[Physical features of the project]

YKK Bangladesh Pte Ltd. has newly introduced a hybrid solar-diesel power generation system to reduce CO_2 emissions from the consumption of captive electricity. The electricity from the existing diesel generators at the project site, which has been consumed for the operation of fastening manufacturing facilities in Phase 2 building, is partly displaced by the electricity generated by the solar PV system newly installed. For this monitoring period, 9% of the electricity from the diesel generator was displaced by electricity from the solar PV system. This result shows that the hybrid solar-diesel power generation system contributed to the reduction of the CO_2 emission from the diesel generators.

It is confirmed through the review of the monitored electricity generation data, on-site inspection and the interview with the PPs for the first verification that the project solar PV system has been installed on the roof of Phase 3 building of the project company and the electricity generated by the solar PV system is fully consumed for the operation of fastening manufacturing facilities in Phase 2 building. The commissioning of the project facilities was completed on 26/05/2016. The verification team concludes that the physical features of the project are in place and the PPs have implemented the project as per the registered PDD.

[Monitoring points]

Monitoring parameter ($EG_{i,p}$) described below is measured by the electricity meter (SQLC-110L), in accordance with the monitoring plan.

1. $EG_{i,p}$, : Quantity of the electricity generated by the project solar PV system *i* during the period *p* [MWh/p]

It is confirmed through the on-site inspection and the interview with the PPs that the electricity meter is installed at the switchgear to measure the quantity of electricity generated by the solar PV system. The quantity of electricity is continuously monitored by the electricity meter and is manually recorded once a day by the responsible staff because this meter has no automatic transmission function. The daily data is aggregated on a monthly basis to make a monthly report.

[Monitoring structure]

The monitoring structure has been established and the roles and responsibilities of the personnel are consistent with the description in Monitoring Structure Sheet. The staff training for operation, maintenance and monitoring of the system was conducted in May 2016.

The data monitored and required for verification and issuance is to be kept and archived electronically for two years after the final issuance of credits.

It is confirmed through the review of relevant documents and the interview with the PPs

that the monitoring activity has been appropriately implemented during the monitoring period, in line with the monitoring plan of the registered PDD.

Regarding the inconsistency of the description between the MPS and the MRS, the verification team raised CAR 02 and this issue was resolved as explained in "Findings".

<Findings>

< *CAR 02* >

The PPs are requested to provide the description on the calibration of measuring equipment and archiving of the monitored data into the MRS which was provided in the MPS.

< Comments from the PPs >

The description on the calibration of measuring equipment and the archiving of the monitored data has been provided in the MRS.

< Assessment by the TPE >

It is confirmed through the review of the revised MRS that the calibration of measuring equipment and archiving of the monitored data in the MPS were appropriately copied into "(i) Measurement methods and procedures" of the MRS. Thus, CAR 02 is closed.

<Conclusion based on reporting requirements>

The verification team concludes that the project has been implemented in accordance with the registered PDD during the monitoring period, and no changes are found from the description of the registered PDD.

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

<Means of verification>

The electricity generated by the solar PV system during the monitoring period is measured by the electricity meter (Model: SQLC-110L made by DAIICHI Electronics Co., Ltd.) which is installed and managed by the PPs. As per the monitoring plan, the electricity meter is calibrated or replaced once in 7 years after the installation. The electricity meter was tested and certified by the manufacturer at the time of shipment from the factory on 11/12/2015.

It is confirmed through the review of the inspection certificate issued by the manufacturer that the electricity meter to measure the quantity of electricity generated by the solar PV system was tested and certified on 11/12/2015.

<Findings>

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

The verification team confirms that the electricity meter was tested and certified by the manufacturer at the time of shipment from the factory on 11/12/2015 before the start date of the monitoring activity and its calibration frequency is once in 7 years as per the monitoring plan. Therefore, no correction of the measured values for this monitoring period is required.

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

<Means of verification>

The verification team has assessed the data and calculation of GHG emission reductions achieved by the project activity as follows;

(a) The corresponding Monitoring report Sheet of the applied methodology has been used;

Through the review of the monitoring report for the project which is titled as JCM_BD004_MP_2016_rev+Jun&Jul_200130.xlsx, JCM_BD004_MP_2017_rev.xlsx, JCM_BD004_MP_2018_rev.xlsx and CM_BD004_MP_2019_rev.xlsx, it is confirmed that the Monitoring Report Sheets (MRS(input), MRS(input_separate) and MRS(calc_process)) of applied methodology BD_AM002 is appropriately used.

(b) A complete set of data for the monitoring period for all parameters monitored ex post was provided to the verification team in the form of several kinds of files;

Monitoring Report Sheet (MRS) provided by the PPs contains a complete set of the monitored data of electricity generated by the solar PV system during the monitoring period of 01/06/2016 - 31/07/2019. These data are separately provided for each year of 2016, 2017, 2018 and 2019. It is confirmed through the review of these monitored data that the monitored electricity generation data are fully provided for the monitoring period of 01/06/2016 - 31/07/2019.

(c) Information provided in the monitoring report has been checked with sources such as plant logbooks, inventories, purchase records, laboratory analysis;

The verification team has reviewed the correctness of monitored data given in the MRS through cross-checking with the monthly electricity generation data provided by the PPs.

Parameters	Monitored values	Method to check values in the monitoring report with sources
$EG_{i,p}$ (2016)	158.48 MWh/p	The quantity of electricity generated by the project solar PV system in the MRS is cross-checked with the
$EG_{i,p}$ (2017)	211.88 MWh/p	

$EG_{i,p}$ (2018)	175.68 MWh/p	monthly electricity data and the daily data manually recorded by the PPs.
$EG_{i,p}$ (2019)	125.00 MWh/p	

It is confirmed through the cross-check of the monitored data in the MRS with the monthly electricity data and daily data manually recorded by the PPs that the quantities of electricity generation in the MRSs are fully consistent with the sum of its monthly data and daily data respectively, and further reference emissions (RE_p), project emissions (PE_p) and emission reductions (ER_p) in the MRS are correctly calculated. Since electricity consumption by any solar PV system is negligibly small, the value of project emissions is defined to be zero as per the methodology BD_AM002.

(d) Any assumptions used in emission calculations have been justified;

Through the review of the MRS and the interview with the PPs, it is confirmed that no assumption has been used in the calculations of emission reductions and hence no justification is required.

(e) Appropriate emission factors, default values, and other reference values have been correctly applied.

It is confirmed through the review of relevant documents, on-site inspection and the interview with the PPs that the fastening manufacturing facilities in Phase 2 building consumes only electricity from the hybrid solar-diesel power generation system and does not use any grid electricity. Therefore, as per the methodology BD_AM002, the conservative emission factor for a captive diesel power generator, which is calculated by applying the heat efficiency of 49% (default value), is set to be 0.533 tCO_2/MWh. For the registered project, the default value of 0.533 tCO_2/MWh as the reference CO_2 emission factor for the project solar PV system ($EF_{RE,i}$) is applied in the calculation of reference emissions.

The verification team concludes that reference CO_2 emission factor for the project solar PV system has been correctly applied in the calculation of emission reductions.

Regarding the calculation of electricity generation in the Monthly Monitoring Data Record and the lower value of *ex-post* emission reductions, the verification team raised CAR 01, CL 03 and CL 04 and these issues were resolved as explained in “Findings”.

<Findings>

< *CAR 01* >

The PPs are requested to clarify why the data of June and July 2016 are not included in the summation of electricity generation for 2016 in Monthly Monitoring Data Record, in spite that the project operation started on 01/06/2016 as described in A.5 of the PDD.

< Comments from the PPs >

As data monitoring has actually commenced since June 1, 2016, data of Jun 2016 (24,761 kWh) and July 2016 (23,358 kWh) have been included in the calculation of emission reductions.

< Assessment by the TPE >

It is confirmed through the review of the revised MRS that the quantity of electricity generation in June and July 2016 are appropriately included in the calculation of emission reductions. Thus, CAR 01 is closed.

< *CL 03* >

The PPs are requested to clarify why the amount of electricity generation in April 2017, June 2018 and March 2019 were significantly smaller than others in Monthly Monitoring Data Record.

< Comments from the PPs >

During the period of April 2017, June 2018 and March 2018, the PPs have faced some technical troubles that the monitoring system could not read properly. To solve this trouble, the PPs have communicated with the supplier of the monitoring system and fixed it. Accordingly, the monitored data in these months are significantly smaller than others due to the lack of data.

< Assessment by the TPE >

It is confirmed through the review of trouble-shooting records and the interview with the PPs that much smaller amounts of electricity generation in these months were caused by the electricity meter reading errors. The PPs have fixed these troubles by themselves or with the manufacturer's suggestion. Thus, CL 03 is closed.

< *CL 04* >

The PPs are requested to clarify why the ex-post values of emission reductions are much less than the ex-ante estimated one.

< Comments from the PPs >

Ex-ante value of emission reductions was calculated based on the solar PV manufacturer (Kyocera)'s simulation result with METEONORM which refers to solar irradiation data nearby Dhaka area. The solar PV system at the project site has been properly operated during the monitoring period, but smaller amounts of power generation might be caused by less irradiation than expected during the monitoring period.

< Assessment by the TPE >

Compared to the *ex-ante* value of 226 tCO_2e, the *ex-post* value of the emission reductions by the full operation of the solar PV system in 2017 is 112 tCO_2e, which equals to *ca.* 50%. It is confirmed through the review of the monitored data and the interview with the PPs that the solar PV system has been normally operated, except some meter reading errors, during the monitoring period. Therefore, the main cause for the large gap between the *ex-ante* and the *ex-post* values of re reductions seems to be attributed to less solar irradiation than expected and/or some overestimation in the *ex-ante* simulation of electricity generated by the project solar PV system. As a result, the verification team concludes that the registered project has been implemented in accordance with the applied methodology and the registered monitoring plan in spite of the smaller emission reductions than planned. Thus, CL 04 is closed.

<Conclusion based on reporting requirements>

The verification team concludes that the monitored data and the project-specific parameter fixed *ex-ante* are appropriately and correctly applied in the calculation of GHG emission reductions achieved by the project activity, in accordance with the applied methodology BD_AM002 and the monitoring plan of the registered PDD.

C.5. Assessment of avoidance of double registration

<Means of verification>

The verification team received a written confirmation dated 17/02/2020 from the PPs which is signed by the primary authorized signatory of YKK Corporation. It declares that the registered JCM project is not registered under any other international climate mitigation mechanisms other than the JCM, therefore, the project will not result in double counting of GHG emission reductions. It also declares that the same registered JCM project will not be registered under other international climate mitigation mechanisms.

It is confirmed through the review of the written confirmation, the check of the relevant website and the interview with the PPs that the JCM project is not registered under any other international climate mitigation mechanisms other than the JCM.

<Findings>

No issues was raised to the requirement.

<Conclusion based on reporting requirements>

The verification team concludes that the project has not been registered under other international climate mitigation mechanisms.

C.6. Post registration changes

<Means of verification>

It is confirmed through the review of relevant documents, on-site assessment and the interview with the PPs that the project has not been changed from the registered PDD and/or methodology.

<Findings>

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

The verification team concludes that the project has not been changed from the registered PDD and/or 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

No issues including FAR from the validation are remained. As this is the first verification, no issues from the previous verification are also remained.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2013	N/A	N/A	N/A
2014	N/A	N/A	N/A
2015	N/A	N/A	N/A
2016	84.47	0	84
2017	112.93	0	112
2018	93.64	0	93
2019	66.63	0	66
2020	N/A	N/A	N/A
2021	N/A	N/A	N/A
2022	N/A	N/A	N/A
2023	N/A	N/A	N/A
2024	N/A	N/A	N/A
2025	N/A	N/A	N/A
2026	N/A	N/A	N/A
2027	N/A	N/A	N/A
2028	N/A	N/A	N/A
2029	N/A	N/A	N/A
2030	N/A	N/A	N/A
Total (tCO_2e)			355

F. List of interviewees and documents received

F.1. List of interviewees

- Kazumichi OCHIAI Factory Manager, YKK Bangladesh Pte Ltd.
- Takuji ARITA Technical Advisor, Dyeing & Factory Maintenance, YKK Bangladesh Pte Ltd.
- Kazi Sayeful KARIM Manager, Factory Maintenance (Utility Maintenance), YKK Bangladesh Pte Ltd.
- Masaru ISHIKAWA Manager, Climate Group, Environmental Science & Engineering Dept., Nippon Koei Co., Ltd.

F.2. List of documents received

1. Monitoring Report Sheet (BD004), 2016-2019
2. Registered PDD (BD004), ver02.0, 19/03/2018, registered on 04/04/2019
3. Validation Report (BD004), 20/03/2018, prepared by JQA
4. JCM Approved Methodology JCM_BD_AM_002_ver01.0, approved on 16/10/2017
5. Monitoring Plan Sheet (BD_AM002)
6. JCM Modalities of Communication Statement Form (BD004)
7. JCM Glossary of Terms (JCM_BD_Glossary_ver02.0)
8. JCM Project Cycle Procedure (JCM_BD_PCP_ver03.0)
9. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_BD_GL_PDD_MR_ver03.0)
10. JCM Guidelines for Validation and Verification (JCM_BD_GL_VV_ver02.0)
11. JCM Verification Report Form (JCM_BD_F_Vrf_Rep_ ver02.0)
12. Implementation report of the JCM model project under the financial support programme for leapfrog development by the Ministry of Environment
13. Outline of the registered project "Introduction of PV-diesel Hybrid System at Fastening Manufacturing Plant"
14. Commissioning report of PV-diesel Hybrid System installed at YKK Bangladesh Pte Ltd.
15. Single line diagram of PV-diesel Hybrid System installed at YKK Bangladesh Pte Ltd.
16. Sample of daily data record of monitoring parameter ($EG_{i,p}$) during the monitoring period (2016-2019)
17. Monthly report of electricity generation by the solar PV system during the monitoring period (2016-2019)
18. Estimated amount of monthly electricity generation by the solar PV system installed at YKK Bangladesh Pte Ltd.
19. Reason of less electricity generation found in Apr 2017, Jan, Feb, Jun 2018, and Mar 2019
20. Reason of the large difference between *ex-ante* and *ex-post* values of electricity generation by the solar PV system installed at YKK Bangladesh Pte Ltd.
21. Specification and number of every type of PV module installed by the registered project
22. Certificates of design qualification (IEC 61215) and safety qualification (IEC 61730-1, 61730-2) of Kyocera PV module installed by the registered project
23. Catalogue and specification of electricity meter (SQLC-110L) installed by the registered project
24. Catalogue and specification of equipment to monitor irradiance installed by the registered project
25. Catalogue and specification of inverter installed by the registered project
26. Catalogue and specification of fuel save controller (FSC) installed by the registered project

27. Operation and maintenance manual of the PV-diesel hybrid system installed at YKK Bangladesh Pte Ltd.
28. Schematic diagram of monitoring structure including information and data flow for the registered project
29. Records and text of project staff training for the PV-diesel hybrid system installed at YKK Bangladesh Pte Ltd., including attendee's list
30. Inspection certificate of electricity meter (SQLC-110L) issued by the manufacturer on 11/12/2015
31. Appendix Table 3 of Measurement Act
32. Cleaning record of the solar PV panels installed at the project site
33. Copy of logbook daily data of electricity generation by solar PV system
34. 2019 Monthly consumption data of electricity from solar PV system and diesel generator in Phase 2 building
35. Declaration of avoidance of double registration signed by Primary authorised signatory of YKK Corporation, dated 17/02/2020.

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.

Statement of competence

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	2015/11/12
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

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	2018/6/22

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 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	-