JACO CDM

VERIFICATION REPORT

POSCO Engineering and Construction Co., Ltd.
Eurus Energy Holdings Corporation

3rd Periodic Verification of

Taegisan Wind Power Project

CDM Reference No. 2302

Report No. GR12W0036D

1 February, 2013

JACO CDM

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3rd Periodic Verification Report

Date of first issue: 1 February, 2013	
Approved by: Michio HIRUTA, CEO & President, JACO CDM	Project No.: UNFCCC Ref. No. 2302
Client: POSOCO Engineering and Construction Co., Ltd. Eurus Energy Holdings Corporation	

Summary:

JACO CDM has performed a verification of the CDM project “Taegisan Wind Power Project”. The verification is based on the currently valid documentation of the UN Framework Convention on Climate Change (UNFCCC). In this context, the relevant documents are the "Marrakech Accords" and Validation Verification Standard (VVS).

The management of Taegisan Wind Power Co., Ltd. (TWPC) is responsible for the preparation of the GHG emission data and the reported GHG emissions reductions by the “Taegisan Wind Power Project” including the development and maintenance of records and reporting procedures in accordance with the revised Monitoring Plan which is complying with the consolidated methodology ACM0002 version 07 and approved by UNFCCC on 30 March 2011 and registered PDD. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the project.

The verifier confirmed that the project was implemented as planned and described in the validated and registered PDD as well as the revised Monitoring Plan approved by CDM Executive Board on 30, March, 2011 and the project activity is in accordance with the approved methodology ACM0002 version 07. The installed equipments being essential for generating emission reductions run reliably and the relevant meters are calibrated appropriately. The monitoring system is in place and the project is ready to generating GHG emission reductions.

The verifier confirmed that the monitoring was done in accordance with the monitoring plan and the GHG emission reductions stated in the revised CDM Monitoring Report version 1.2 dated 27 December, 2012 were calculated without material misstatements. Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 1 June 2011 to 30 September 2012
Verified emission in the above reporting period:

Baseline emissions:	62,144tCO_2 equivalents
Project emissions:	0 tCO_2 equivalents
Leakage:	0 tCO_2 equivalents
Emission reductions:	62,144tCO_2 equivalents

Report No.: GR12W0036D		
Report title: Verification report Taegisan Wind Power Project		
Work carried out by: Yukio TAKANO Akihide Madenokoji		
Work verified by: Teruo FUKUDA		
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Indexing terms

Climate Change

Kyoto Protocol
Clean Development Mechanism Verification

Abbreviations

CAR	Corrective Action Request
CDM	Clean Develop Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EEHC	Eurus Energy Holdings Corporation
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Green House Gas
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
KEPCO	Korea Electric Power Corporation
KP	Kyoto Protocol
KPX	Korea Power Exchange
MP	Monitoring Plan
MW	Megawatt
O&M	Operation and Maintenance
PDD	Project Design Document
PEA	Preliminary Environmental Assessment
POSCO	POSCO Engineering and Construction Co., Ltd.
PPA	Power Purchase Agreement
TWPC	Taegisan Wind Power Co., Ltd.
UNFCCC	United Nations Framework Convention for Climate Change
VVS	Validation and Verification Standard

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1. INTRODUCTION

Eurus Energy Holdings Corporation has commissioned an independent verification of JACO CDM Co., Ltd. of its CDM project "Taegisan Wind Power Project". The 3rd verification was executed in accordance with Kyoto Protocol requirements, modalities as agreed in Marrakech Accords and decisions of UNFCCC CDM EB, using the Validation and Verification Standard (VVS) (Version03.0)

1.1 Objective

The objective of the verification work is to comply with the requirements of paragraph 62 of the CDM modalities and procedures.
This assessment shall:

(a) Ensure that the project activity has been implemented and operated as per the registered PDD (version 05)* and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
(b) Ensure that the monitoring report and other supporting documents provided are complete in accordance with latest applicable version of the completeness checklist for requests for issuance of CERs and verifiable and in accordance with applicable CDM requirements. The CDM Executive Board provided a standardized format for monitoring report to improve consistency in reporting of the implementation and monitoring of the project activity by project participants;
(c) Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology;
(d) Evaluate the data recorded and stored as per the monitoring methodology

1.2 Scope

Verification scope is defined as an independent and objective review and ex post determination by the Designated Operational Entity of the monitored reduction in GHG emissions. The verification is based on the Monitoring Report provided, the validated project design document (PDD Version 05) including its monitoring plan and validation report, past verification report, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and EB and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against Kyoto Protocol requirements, UNFCCC rules, approved methodology ACM0002 version 07 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" and associated interpretations. JACO CDM, based on the recommendations in the Validation and Verification Standard, employs a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of CERs. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.

The verification shall consider both quantitative and qualitative information on emission reductions. Quantitative data comprises the monitoring report submitted to the verifier by the project entity. Qualitative data comprises information on internal management controls, calculation procedures, and procedures for transfer, frequency of emissions reports, review and internal audit of calculations/data transfers.

The verification is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

The verification team has been provided with the CDM Monitoring Report version 01 dated 26 November, 2012 on 26 November, 2012. This report is covering the period 1 June, 2011 to 30 September, 2012. The version 01 has been made publicly available on 28 November, 2012 on the UNFCCC web site (http://cdm.unfccc.int/Issuance/MonitoringReports) and this monitoring report serves as the basis for the assessment presented herewith. There was no comment received.

* Regitered date: 15 May, 2009

Based on the this Monitoring Report and other related documents provided, a document review and a fact finding mission in the form of an on-site assessment has taken place.

JACO CDM has conducted the 3rd periodic verification for the CDM project "Taegisan Wind Power Project" based on the Kyoto Protocol requirements, modalities as agreed in Marrakech Accords and decisions of UNFCCC CDM EB, using the Validation and Verification Standard (VVS) version 03.0 /37/.

Verification team

The verification team was formed considering the needs of competence for the team in the following aspects:

- Knowledge of the Kyoto Protocol and the Marrakech Accords
- Environmental and Social Impact Assessment
- Skills in environmental auditing
- Quality assurance
- Technical aspects of wind power project
- Monitoring concepts
- Political, economical and technical conditions in host country

According to these requirements JACO CDM has composed following verification team in accordance with the appointment rules of the JACO CDM QC Manual. The task given to each member and the designated team leader are regulated as follows.

Designated team leader

(a) Plan and make effective use of human resources during the function;
(b) Represent the validation/verification team in communications with CDM PPs and organize and direct team members;
(c) Understand the validation/verification functions and lead the team to reach conclusions on various aspects of validation/verification process; and
(d) Prevent and resolve conflicts, if any, prepare and complete the validation/verification report and handle all the possible follow-up actions, as appropriate

Validation/verification team member

(a) Plan and organize the work effectively and conduct the work within the agreed time schedule, to prioritise and focus on matters of significance;
(b) Collect information through effective interviewing, listening, observing and reviewing documents, records and data;
(c) Verify accuracy of collected information and confirm the sufficiency and appropriateness of gathered evidence to support audit findings and conclusions and prepare audit reports; and
(d) Communicate effectively, either through personal knowledge of the language or through help of an interpreter

Yukio TAKANO	JACO CDM	Team Leader (SS1, TA.1.2 qualified)
Akihide MADENOKOJI	JACO CDM	Team Member (SS1, TA.1.2 qualified)

The results of verification team activity were reviewed by the internal verifier.

Internal Verifier

Teruo FUKUDA Lead Auditor of JACO CDM (SS1, TA.1.2 qualified)

Duration of verification

3rd Periodic Verification

Document Review:	From November, 2012 to January, 2013
On-site Assessment:	17, 18 December 2012
Reporting:	1 February, 2013

1.3 GHG Project Description

The Taegisan Wind Power Project (the "Project") is a wind power generation plant in Republic of Korea with the total capacity of 40 MW by 20 units of wind turbines. The project site is located between Hoengseong-gun and Pyeongchang-gun in Gangwon Province area in Republic of Korea. Taegisan is the highest mountain in Hoengseong-gun and rises 1,261 meters above the sea level. The project is interconnected with the grid by the22.9kV transmission line at the KEPCO's substation which is 33km away from the project site.

The Project was registered as a CDM project on 15 May, 2009 with the reference number of 2302, and has a fixed crediting period of 10 years with the starting date of 15 May, 2009.

According to the Monitoring Report version 1.2 /1b/, the duration of the monitoring period 01/06/2011 to 30/09/2012, the calculated CERs 62,144tCO_2e is 78.1% of the expected amount 79,558tCO_2e (59,669 x 16/12) in the registered PDD /32/.

The proposed project contributes to sustainable development in the following ways:

- The CDM project is jointly supported by Gangwon-do, POSCO E&C, Eurus Energy Holdings and it will stimulate the local economy and promote welfare of the residents. Also the regional development effects such as development of local human resources, long-term employment and building local infrastructure can be expected.

- Transfer the advanced wind power technologies and building infrastructure through technical cooperation, construction & operation of the plant. Also expansion of the localized lines and development of domestic wind power generation industry can be expected.

- The proposed project will contribute to reduce emissions of the air pollutants. It replaces electricity generated by fossil fuel in the grid and thus prevents discharge of the pollutants such as greenhouse gas, particles, SO_X and NO_X etc.

This 3rd verification (monitoring period: 1/06/2011 to 30/09/2012) covers the period directly follows the last verification period (1/06/2010 to 31/05/2011) which was verified by JACO CDM in January to March 2012. There is no change in the project since 1st verification.

Project participant name of "Eurus Energy Japan Corporation" was change to "Eurus Energy Holdings Corporation". MoC form was submitted to UNFCCC on 12/04/2012. The verification team confirmed it by UNFCCC website (http://cdm.unfccc.int/Projects/DB/KFQ1226904451.62/view).

2. METHODOLOGY

The proposed assessment aims at being a risk based approach and is based on the methodology developed in the Validation and Verification Standard version 03.0 /37/, an initiative for all Applicant Entities, which aims to harmonize the approach, and quality of all such assessments.

In order to ensure transparency, a verification checklist was customized for the project, according to the Validation and Verification Manual. The checklist shows, in a transparent manner, criteria (requirements), means of verification and the results. The verification checklist serves the following purposes:

- It organizes, details and clarifies the requirements a CDM/JI project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been proved and the result of verification.

The verification checklist consists of 2tables. The different columns in these tables are described in Figure 1 below. The completed checklist is enclosed in Appendix 1 to this report.

Figure 1: Verification Checklist Tables

Table 1: Implementation Status and Operation Checklist			
OBJECTIVE	**Ref.**	**COMMENTS**	**Conclusion (incl. FARs/CARs)**
The requirements	Gives reference	Description of	This is either acceptable based on

the project must meet	to the sources of evidences for the comments and conclusions.	circumstances and further commendation to the conclusion.	evidence provided **(OK)**, or a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Verification report. **Clarification Request (CL)** is used when the verification team has identified a need for further clarification. **Forward Action Requests (FAR)** is used when there is an issue concerning monitoring and reporting. FAR indicates essential risks for further verifications.

Table 2: Resolution of CAR, CL and FAR

Draft report clarifications and corrective action requests by verification team	Ref. to checklist question at Table 1	Summary of project owner response	Verification team conclusion
Detailed FAR, CL and/or CAR pointed at previous table.	Item at the table where FAR/CL/CAR were found.	Answer of the project owner	Analysis and conclusion of the verification team

2.1 Review of Documentation

The monitoring reports submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is shown in References (chapter 5 of this report).

2.2 On-site inspections

Verification team (Yukio TAKANO) visited TWPC office and project sites in Taegi-ri, Dunnae-myun, Hoengseong-gun and Mui-ri, Bongpyeong-myun, Pyeongchang-gun, Republic of Korea on 17 and 18 December, 2012. Interviewed organizations and topics are summarized in Table 1 below.

Table 1: Interviewed Organization and Topics at Periodic Verification

Interviewed organizations/ visited sites	Interview topics/ Inspected items
TWPC Office	Monitored data Data uncertainty and residual risks Management & operational systems GHG calculation and reporting procedures Compliance with National laws and regulations
TWPC Wind Power Site	Implementation of facilities (Wind turbines, Monitoring equipments & system) Operation of facilities Observation of operators

2.3 Resolution of CAR, CL and FAR

The objective of this phase of the verification was to resolve the requests for corrective actions and any other outstanding issues which needed to be clarified for JACO CDM's positive conclusion on the GHG emission reduction calculation.
Findings established during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CAR) is raised, where:

i) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

ii) Modification to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;

iii) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reduction.

iv) Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants

Clarification Request (CL) is raised, where:

v) If information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) are raised, where:

vi) The monitoring and reporting are required attention and/or adjustment for the next verification period.

All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.
To guarantee the transparency of the verification process, the concerns raised and responses that have been given are summarized in chapter 3 below and documented in more detail in the verification checklist in Appendix 1.

2.4 Internal Quality Control and Assurance

The draft verification report including the verification findings underwent a technical review before submitted to the project participants. The final verification report underwent the assessment by Internal Technical Review by JACO CDM lead auditor and JACO CDM Certification Determination Committee to ensure independence, impartiality, transparency, credibility and indiscrimination of assessments. Two-third of the CDC members is selected from outside of JACO CDM. It was concluded on 1 February 2013

3. PERIODIC VERIFICATION FINDINGS

The verification team assessed and verified the followings in line with the 3rd Verification Checklist as Appendix 1.

3.1 Remaining issues, CARs, FARs from previous Validation or Verification

3.1.1 Discussion

Based on the validation report and previous verifications, the verification team identified no missing steps and no remaining issues /33/,/38/, /39/.
The project has been registered under the CDM reference number 02302, on 15 May 2009 and the start date of project was 15 May 2009.

3.1.2 Findings

None

3.1.3 Conclusion

The project complies with the requirements.

3.2 Implementation of the Project

3.2.1 Discussion

The project has been implemented as defined in the registered PDD /32/ and there is no change in the major equipment specifications.

(1) Physical Components

The Project is the wind power generation by 20 turbines with each capacity of 2 MW. The total capacity of 20 turbines is 40 MW. Based on the completion documents and the site visit, the verification team identified that all required facilities were installed and being operated as described in the registered PDD /32/. They were installed during the period of 25-07-2007(construction start date) to 26-12-2008(last commissioning date) as follows;

- Wind Turbine (V80) manufacturer: VESTAS Wind System (Denmark)
- Plant design: Hyundai Engineering CO., Ltd. (Korea)
- Installation work: POSCO Engineering and Construction Co., Ltd. (Korea)

The verification team confirmed that the construction start date was 25/07/2007 based on the document by POSCO and the approval of The Ministry of Commerce (/17/, /18/) as the planned date1/5/2007 was described in PDD and the commercial operation start date was 28/01/2009 based on the report to Ministry of Knowledge Economy. (/19/, /20/)

The verification team also confirmed that the 20 wind turbine generators were divided into 4 groups and 2 groups had the same transmission lines to the central control panel of the site.

And also the watt-hour meters (export and import), checking system by PC and 2 transmission lines (22.9 kV 33km) were operated. The physical components of the plant have been satisfactorily implemented.

Table 2 Taegisan Wind Turbine Specification

Rated output		2,000 kW
Design Wind Speed	Start up wind speed (m/s)	4
	Nominal wind speed (m/s)	15
	Stop wind speed (m/s)	25
Generator		Asynchronous Three Phase Generator
Rotor	Diameter (m)	80
	Hub Height (m)	80

(2) Project boundaries

The electricity generated by the project is transmitted to the grid, KEPCO Pyeongchang transformer substation, through 22.9kV of transmission lines. It is in accordance with the description in the registered PDD. Actual project boundary is in compliance with the condition described in the registered PDD.

(3) Change in operation

The accuracy of meters and calibration frequency of meters were changed based on the Act on operation of electricity in Korea. The revised monitoring plan was approved by CDM-EB on 30 March 2011 /31/. There was no change in operation during this monitoring period.

(4) Post registration changes

(a) Temporary deviations from registered monitoring plan or applied methodology

It was verified by provided evidence and on-site assessment that there was no temporary deviation identified during this monitoring period.

(b) Corrections

There were no corrections to the project information or parameter approved or applied during this monitoring period.

(c) Permanent changes from registered monitoring plan or applied methodology

The accuracy of meters and calibration frequency of meters were changed based on the Act on operation of electricity in Korea. The revised monitoring plan was approved by CDM-EB on 30 March 2011 /31/.

There were no permanent changes approved or applied during this monitoring period.

(d) Changes to project design of registered project activity

It was verified by interview to the PO and on-site assessment that there was no changes during this monitoring period.

(e) Changes to start date of crediting period

The start date of crediting period is 15/05/2009. It remains unchanged.

(f) Types of changes specific to afforestation or reforestation project activity

This project is not A/R project.

The verification team visited the electricity room to inspect meters and the wind turbine No.2, 6, 9, 12, 15 and 19 during on site assessment. The verification team confirmed that all equipments were under operation.

3.2.2 Findings

Clarification Request 1

Te events of power failure are to be clarified in the monitoring report.

Response

The power failure occurred in May was described in the revised monitoring report /1b/.
It was occurred on 19/05/2012 and the system was recovered on 23/05/2012.

Conclusion

The verification team confirmed that it was explained during on-site assessment and described in the revised monitoring report.

3.2.3 Conclusion

CL1 was clarified.
It was confirmed at on-site assessment that the implementation of project was not changed during this monitoring period and the operation was in accordance with the revised monitoring plan of PDD.
The project complies with the requirements.

3.3 Compliance of the monitoring Plan with the monitoring methodology

3.3.1 Discussion

The verification team verified the monitoring plan of the registered PDD /32/ and revised Monitoring Plan /31/ against the methodology ACM0002 Version 07 /34/ applied by the project, including the data and parameters required to be monitored, measurement procedures, monitoring frequency and QA/QC procedures as described in the monitoring plan, and is able to confirm that the monitoring plan of the registered PDD and the revised Monitoring Plan are in accordance with the applied methodology, ACM0002 Version 07 /34/.

3.3.2 Findings

None

3.3.3 Conclusion

It was verified by provided evidences and on-site assessment that the revised Monitoring Plan was in accordance with the applied methodology, ACM0002 Version 07 /34/.
The project complies with the requirements.

3.4 Compliance of monitoring with the monitoring plan

3.4.1 Discussion

(1) Monitoring plan and methodology

The PP implemented and followed the registered PDD /32/, the revised monitoring plan approved by EB on 30 March, 2011 /31/ and applied methodology, ACM0002 Version 07 /34/.

- ACM0002 Version 07 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"
- "Tool to calculate the emission factor for an electricity system" Version 01 /35/
- "Tool for the demonstration and assessment of additionality" Version 4 (EB36) /36/

(2) Project emission parameters

Since the project is grid-connected electricity generation from renewable energy sources, there are no GHG emissions from the project activity, so that the project emissions (PE_y) are zero, according to the approved methodology ACM0002 Version 07 /34/. PE_y=0

(3) Leakage parameter

It was verified during on-site assessment that there was no energy generating equipment transferred from another activity and no existing equipment transferred to another activity. Therefore the leakage emissions are zero, L_y=0 according to ACM0002 Version 07 /34/.

(4) Baseline emission parameters

According to the registered PDD, the annual electricity supplied by the project to the grid (EG_y) is calculated as the Electricity Delivered minus the Electricity Obtained. Baseline emissions are calculated in accordance with the applied methodology ACM0002 Version 07 /34/.

$$BE_y = EG_y * EF_y$$

Where:
EG_y is net electricity supplied by the project activity to the grid in year y, in MWh
EF_y ($EF_{grid,CM,y}$) is baseline emission factor in year y, 0.6426 tCO_2e/MWh(according to the registered PDD)

$$EG_y = EG_{output,y} - EG_{import,y}$$

Where;
EG_y -Net electricity supplied to the grid during the monitoring period (MWh);
$EG_{output,y}$ –Electricity supplied to the grid (MWh);
$EG_{import,y}$ – Electricity purchased from the grid (MWh).

As verified during site visit, the Electricity Delivered by the project to the grid and the Electricity Obtained by the project are continuously measured by KPX Meters and KEPCO Meters. There are 1 Main meter and 1 Backup- meter per each group x2 groups, total 4 meters for the Electricity derivered by the project to the grid. And there are 1 Main meter per each group x2 groups, total 2 watt-hour meters for the Electricity imported to the project. They are installed on the transmission line at the project site.

Electricity generation data of the main watt-hour meter monitored by KPX is transferred daily from KPX (Korea Power Exchange) to TWPC through KPX web system after checking in KPX side. TWPC's designated operators are daily comparing the previous day's KPX data with the main watt-hour meter reading installed in the TWPC site /3/.
The measured amount of electricity is crosschecked with receipt to ensure quality of the data. If the two variables compared are different, KPX checks its data base to compare the receipt with its data base. And the electricity meters and other equipment are checked if they are working properly by internal investigation and procedures regulated in the related laws. Then the results will be reported to the CDM project manager for appropriate follow-up measures.

The electricity imported from KEPCO is measured automatically by the meters. The measured data is recorded monthly and checked out against receipts provided monthly by KEPCO for accuracy and reliance. The data is obtained by the KEPCO's watt-hour meters installed in the TWPC /4/.

The verification team has verified the values reported in the Monitoring Report /1/ and CER calculation spreadsheet /5/ against the Monthly Power Trading Record during this monitoring period (1 Jun., 2011 to 30 Sep, 2012) of Taegisan Wind Power Co., Ltd. by Korea Power Exchange /3/ and the Monthly Used Electricity Amount during this monitoring period (1 Jun., 2011 to 30 Sep, 2012) by KEPCO /4/, and found that they are consistent with each other after excluding the impact of the transmission line loss.

3.4.2 Findings

Clarification Request 2
It is to be checked by the evidences during on-site assessment, whether the monitoring is being carried out in accordance with the procedures established.

Response
Monitoring procedures were explained and demonstrated with monitoring data (daily operation log book, monthly reading records and other CDM related records /22/).

Conclusion
It was verified by demonstrated documents and by interview with operation staff during on-site assessment that monitoring has been implemented in their operation in accordance with the revised monitoring plan.

3.4.3 Conclusion

CL2 was clarified.

It was verified by relevant documents and by on-site assessment that actual monitoring of project has been implemented in their operation in accordance with the revised monitoring plan /31/ and applied methodology ACM0002 Version 07 /34/. The monitoring mechanism is effective and reliable. The Verification team confirmed that parameters and monitoring approach described in the monitoring report were in compliance with the revised monitoring plan /31/.
The project complies with the requirements.

3.5 Management and Operational System

3.5.1 Discussion

Procedures for measurement, recording and archiving are confirmed as complying with the revised Monitoring Plan /31/ approved on 30 March, 2011 and registered PDD /32/.

The CDM Monitoring Manual /2/ stipulates the establishment of the file management system and data management to keep the relevant documents under the responsibility of the CDM Project Manager. The key parameters are measured by calibrated meters. It was confirmed that the calibration of meters are controled properly by the revised monitoring paln. The monitored data are stored in the shelf cabinet in the project office and controlled by the Project Manager. Condition of document archiving was confirmed well during on-site assessment.

(1) Reporting procedures

The responsibility of measuring, checking and reporting the amount of electricity is defined, and the qualification and training for the personnel are established and implemented. The amount of export electricity was being reported daily, monthly and yearly in the established formats and checked by responsible persons including the president with their signatures.

Reporting procedures have been already established in the CDM Monitoring Manual /2/.

(2) Documented instructions

The organization chart, detail responsibility, qualification of CDM operational staff and procedure are stipulated in the CDM Monitoring Manual /2/.

The personnel training have been established for CDM monitoring operation.

(3) Qualification and training

The qualification and training for the personnel are established and implemented. It was confirmed that the reporting was being conducted in accordance with the CDM Monitoring Manual /2/ established based on the approved revised Monitoring Plan and the registered PDD. The training record /12/ was provided and verified.

(4) Responsibilities

Roles and responsibilities are clearly stipulated in the CDM Monitoring Manual /2/ and the Monitoring Report Section C /1/. They are in line with the Monitoring Plan of the registered PDD /32/.

(5) Trouble shooting procedures

Emergency procedure for monitoring meters is stipulated in the CDM Monitoring Manual /2/ and the Monitoring Report Section C /1/.
Although the CDM Monitoring Manual stipulates that internal investigation and corrective actions are taken if the two variables are different, no cases have occurred in this period.

(6) Data archiving

The key parameters are being measured and recorded in the respective documents / registers in paper and electronic form. Data protection measures are adequately implemented under the Project manager.

(7) Monitoring report

The Monitoring Report to be submitted to UNFCCC is prepared by TWPC, checked by external consultant and approved by President of TWPC.

(8) Internal audit

Internal audit was conducted every 3 months (01/06/2011, 01/09/2011, 01/12/2011, 01/03/2012, 01/06/2012 and 01/09/2012). Audit reports /26/ were provided and the verification team confirmed that there was no issue in these audits.

3.5.2 Findings

Clarification Request 3

It is to be checked by the evidences during on-site assessment, whether the auditing of data and system is being carried out in accordance with the procedures established.

Response

Sample of daily data sheet and monthly data sheet were provided, that had confirmation signature by management on them /22/.

Conclusion

The verification team confirmed by signatures on the data records that all data was confirmed by the person in charge in accordance with the procedure of monitoring.

Clarification Request 4

It is to be checked by the evidences during on-site assessment, whether the qualification and training for personnel are carried out in accordance with the procedures established.

Response

The training record in this monitoring period and the certificate of electric engineer were provided /12a/,/12b/.

Conclusion

The training record and the certificate were provided. The verification team confirmed the training was conducted in accordance with the procedures established.

Clarification Request 5

Archiving condition of CDM related data is to be verified during on-site assessment.

Response

The electric data stored in PC had limited access, and the file of documents was kept in the office cabinet.

Conclusion

It was confirmed during on-site assessment that the CDM data was organized and stored in the cabinet.

3.5.3 Conclusion

CL3, CL4 and CL5 were clarified.

The verification team confirmed during on-site assessment that the management system of the project was implemented and operated in accordance with the CDM monitoring manual /2/ which was in line with the revised monitoring plan /31/.

The project complies with the requirements.

3.6 Accuracy of Equipment

3.6.1 Discussion

(1) Monitoring equipments

The main and backup meters with accuracy class of 0.5S for electricity generated (KPX meters) were installed at the project site. 2 main meters with accuracy class of 0.5S for electricity imported (KEPCO meters) were also installed at the project site. KEPCO meters were replaced on 25/06/2012 because vality of meters has expired according to the Measures Act of Korea /25/. Detail information of meters are shown in Table 3.

Table 3 Detail information of meters

Meter	Manufacturer	Type	Accuracy	Validity of Calibration	S/N
Main for export (A&B lines)	Seochang Electric Communication Co., Ltd.	SCE8711	0.5S	Calibration:10/09/2008 (10/09/2008~10/09/2012) Calibration:21/08/2012 (21/08/2012~20/08/2016)	46026112
Backup for export (A&B lines)	Seochang Electric Communication Co., Ltd.	SCE8711	0.5S	Calibration:10/09/2008 (10/09/2008~10/09/2012) Calibration:21/08/2012 (21/08/2012~20/08/2016)	46026111
Main for export (C&D lines)	Seochang Electric Communication Co., Ltd.	SCE8711	0.5S	Calibration:10/09/2008 (10/09/2008~10/09/2012) Calibration:21/08/2012 (21/08/2012~20/08/2016)	46026114
Backup for export (C&D lines)	Seochang Electric Communication Co., Ltd.	SCE8711	0.5S	Calibration:10/09/2008 (10/09/2008~10/09/2012) Calibration:21/08/2012 (21/08/2012~20/08/2016)	46026113
Old Main for import (A&B lines)	LS Industrial System Corp.	LGRW34-05	0.5S	Calibration:10/09/2008 (10/09/2008~10/09/2012)	067477
New Main for import (A&B lines)	PSTEC Co., Ltd.	MPI-G-09-3	0.5S	Calibration:21/10/2011 (21/10/2011~21/10/2015)	02112005008
Old Main for import (C&D lines)	LS Industrial System Corp.	LGRW34-05	0.5S	Calibration:10/09/2008 (10/09/2008~10/09/2012)	0067467
New Main for import (C&D lines)	PSTEC Co., Ltd.	MPI-G-09-3	0.5S	Calibration:21/10/2011 (21/10/2011~21/10/2015)	02112004932

(2) Calibration of meters

According to the revised Monitoring Plan approved by EB on 30 Mar, 2011, calibration should be done in accordance with the Korean laws.
The actual calibration of the KPX Meters and the KEPCO Meters were conducted based on the "Act on operation of electricity market" /24/, which requires 3 years 6 months ± 6 months (3 years to 4 years) interval of calibration for watt-hour meter for capacity of larger than 1 MW.
The previous calibration of the KPX Meters and the KEPCO Meters were conducted on 10 Sep, 2008 /6a/, /7a/. The last calibration of KPX Meters were conducted on 21 Aug, 2012 /6b/. KEPCO Meters were replaced to new ones on 25 June, 2012 because vality of meters has expired according to the Measures Act of Korea /25/. Therefore the validity of meters coveres this monitoring period.
The calibration records of KPX main and backup meters, the confirmation letter of meter replacement from KEPCO and the calibration records of KEPCO meters were provided for verification /6/,/7/,/27/.

3.6.2 Findings

Clarification Request 7
Details of replaced meter and calibration records for KEPCO meter are to be provided.
Response
KEPCO meters were replaced to new meters on 25/06/2012. The calibration of new meters was conducted on 21/10/2011 when they were manufactured. The confirmation letter of meter replacement from KEPCO and the calibration confirmation report were provided /7/, /27/.
Conclusion
The verification team confirmed by evidences that KEPCO meters were replaced appropriately and they were calibrated on 21/10/2011 and valid in this monitoring period. And also the verification team confirmed that all meter was installed at the project site correctly by on-site assessment.

3.6.3 Conclusion

CL7 was clarified.
It was verified by visiting the project site that the accuracy of monitoring equipments was in accordance with the description in the revised monitoring plan /31/. The verification team confirmed that KPX meters were the original since the beginning of operation and KEPCO meters were replaced to new meters on 25/06/2012. The calibration was conducted in line with the revised monitoring plan /31/.
The project complies with the requirements.

3.7 Assessment data and Calculation

3.7.1 Discussion

A complete set of data is available, i.e. operation log, meter readings records, monthly reading records, Monthly Power Trading Record by KPX and Monthly Impoted Electricity Amount from KEPCO which can cover the monitoring period. The verification team confirmed that all data recorded is in compliance with the revised monitoring plan /31/ and applied mothodology ACM0002 Version 07 /34/.

According to the methodology ACM0002 Version 07 /34/ and registered PDD, emission reductions of the project are calculated by:

$$ER_y = BE_y - PE_y - L_y$$

$$= 62{,}144\ tCO_2e - 0\ tCO_2e - 0\ tCO_2e$$

$$= 62{,}144\ tCO_2e$$

Where:

ER_y is emission reductions by the project activity in year y;

BE_y is baseline emissions in year y

PE_y is project emissions in year y; zero

L_y is leakage in year y; zero

The baseline emission is calculated by:

$BE_y = EG_y \times EF_y$ = ((Electricity exported in year y) – (Electricity imported in year y)) $\times EF_y$

Where:

EG_y is net electricity supplied to the grid in year y;

EF_y is baseline emission factor of Korea, calculated ex-ante and fixed during the first crediting period, the value is 0.6426tCO_2e/MWh.

The 22.9kV Substation owned by KEPCO between the project and the grid is located in Pyengchang which is approximately 33km away from the project site. The watt-hour meters are installed in the Taegisan Wind Power Co., Ltd. and not in the interface substation. Therefore in order to determine accurate amount of net electricity supplied to the grid, transmission loss between the project site and the substation was considered.

$LEy = I^2 R_3 \times T$

kWh Loss = $(Ip/PF)^2 R_3 \times T$

$I = Ip / PF$

$Ip = P / (1.732 \times 22.9 \times T)$

Where:

P : Electricity generation / import (measured)

T : Time (period) = 24x days

I : Current on the transmission line (A)

PF : Power Factor of electricity generation **(97%)**

R_1 : The phase resistance (ohm) 1 phase resistance

R_3 : The phase resistance (ohm) of 3 transmission lines $R_3 = 3 \times R_1$

22.9 : Voltage of power line from Teaegisan Wind Park to Substation (kV)

Determination of amount of parameter;

EF_y: Baseline Emission Factor of Korea is calculated ex-ante and fixed during the crediting period. The value is 0.6426tCO_2e/MWh;

R_1 : The Wire Resistance of transmission line is based on the transmission cable specifications by manufacturer, Daeil Wire Co., Ltd., Conmolink Co., Ltd. and Taihan Electric Wire Co., Ltd /9/.

1) Underground Transmission Line:
   Cable Length: 8km (2 parallel lines)
   Test Result of Resistance (per km): 0.07215
   Total Resistance for underground T/L: 0.07215 x 8 / 2 = 0.2886

2) Overhead Transmission Line 1:
   Cable Length: 22km
   Test Result of Resistance (per km): 0.1183
   Total Resistance for overhead T/L: 0.1183 x 22 = 2.6026

3) Overhead Transmission Line 2:
   Cable Length: 3km
   Test Result of Resistance (per km): 0.183

Total Resistance for overhead T/L: 0.183 x 3 = 0.549

Thus overall resistance is calculated sum of underground transmission line resistance and overhead transmission line resistance, which is 0.2886 + 2.6026 + 0.549 ≒ 3.4402.

R_3 : = 3 x R_1 = 10.3206

Table 4 Baseline Emission Reduction

Month	(a) $EG_{output,y}$ (MWh)	(b) $EG_{import,y}$ (MWh)	(c) $TL_{y,supply}$ (MWh)	(d) $TL_{y,import}$ (MWh)	NE (MWh) (a-b-c-d)	EF (tCO_2e/MWh)	BE (tCO_2e) (NE*EF)
6/2011	6,196	32	372	0.010	5,792	0.6426	3,722
7	4,968	33	231	0.010	4,704	0.6426	3,023
8	5,025	40	237	0.015	4,748	0.6426	3,051
9	6,775	34	444	0.011	6,297	0.6426	4,046
10	4,604	48	199	0.021	4,357	0.6426	2,800
11	6,881	25	459	0.006	6,397	0.6426	4,111
12	8,056	14	608	0.002	7,434	0.6426	4,777
1/2012	7,972	19	596	0.003	7,357	0.6426	4,728
2	7,105	21	506	0.005	6,578	0.6426	4,227
3	9,989	24	935	0.005	9,030	0.6426	5,803
4	10,132	15	994	0.002	9,123	0.6426	5,862
5	4,360	33	178	0.010	4,148	0.6426	2,666
6	4,401	53	188	0.027	4,160	0.6426	2,673
7	5,937	31	330	0.009	5,576	0.6426	3,583
8	6,904	36	447	0.012	6,422	0.6426	4,127
9	4,855	42	228	0.017	4,584	0.6426	2,946
Total	**104,159**	**500**	**6,951**	**0.167**	96,707	0.6426	**62,144**

3.7.2 Findings

Clarification Request 6

Description of the combined emission factor is to be clarified in the monitoring report (D.1).

Response

Description of combined emission factor was revised in the revised monitoring report /1b/.

Conclusion

The revised monitoring report was provided. The verification team confirmed that the description of combined emission factor was clarified in the revised monitoring report.

3.7.3 Conclusion

CL6 was clarified.

The monitoring and the measurement of electricity generation and consumption are done diligently every month as core business of the company and hence a permanent control of the figures in finalizing the amount of electricity generation and consumption takes place.

Quality assurance procedures are in place as for example the double checking of the electricity generation in KPX and TWPC, and comparison with the bill.

The verification team verified the following parameters;

- Daily generation records and “weekly” records
- Monthly record by TWPC and monthly bills by KPX and KEPCO /3/, /4/

The verification team confirmed that daily and monthly record for electrical generation at TWPC site is correct. The monthly data is identical with the monthly bill issued by KPX (Electricity generation) and KEPCO (Electricity consumption).

The data for the electricity consumption is recorded based on the bill for electricity consumption provided monthly by KEPCO. The data is obtained by the KEPCO’s watt-hour meters installed in the TWPC.

All parameters stated in the revised monitoring plan /31/ have been sufficiently monitored and correctly listed. The monitored data for required parameters have been verified and found complete and consistent by checking the whole procedure for information aggregation.
The interface between the project and the grid is located in the Pyeongchang substation owned by Korea Electrical Power Corporation (KEPCO) which is approximately 33km away from the project site.
The watt-hour meters are installed in the project site and not in the interface.

The losses in the transmission line (approx. 33 km) were estimated properly by using the resistance data of the power cable of the transmission line provided by the cable manufacturer and the daily fluctuating wind power current /5/, /9/.

There was no missing data for the emission reductions calculation for the monitoring period.

It was verified by provided various evidences that data used for calculation, method of calculation and result of calculation emission reductions by the project for the monitoring period was in accordance with the revised Monitoring Plan /31/, the registered PDD /32/ and the applied methodology ACM0002 Version 07 /34/.

The emission factor determined ex-ante in the registered PDD is applied in the monitoring report and the calculations have been justified.

The achievement of this monitoring period (1 Jun., 2011 to 30 Sep, 2012) was approximately 21.9% less than the estimate of the PDD.
The project complies with the requirements.

Table 5: CERs of PDD and actual values in the monitoring period

	Estimated value based on PDD (59,669 x 16/12)	**Actual value of this monitoring period (01/06/2011 to 30/09/2012)**
CERs (ton CO_2 eq.)	**79,558**	**62,144**
% to PDD	**100**	**78.1**

4. VERIFICATION STATEMENT

JACO CDM has performed a verification of the CDM project "Taegisan Wind Power Project". The verification is based on the currently valid documentation of the UN Framework Convention on Climate Change (UNFCCC). In this context, the relevant documents are the "Marrakech Accords".

The management of Taegisan Wind Power Co., Ltd. (TWPC) is responsible for the preparation of the GHG emission data and the reported GHG emissions reductions by the "Taegisan Wind Power Project" including the development and maintenance of records and reporting procedures in accordance with the revised Monitoring Plan which is complying with the consolidated methodology ACM0002 version 07 and approved by UNFCCC on 30 March, 2011 and registered PDD Ver.05 registered on 15 May, 2009.

The verifier confirms that the project is implemented as planned and described in the validated and registered PDD as well as the revised Monitoring Plan approved by CDM Executive Board on 30, March, 2011. The project activity is in accordance with the approved methodology ACM0002 version 07. The installed equipments being essential for generating emission reductions run reliably and the relevant meters are calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions.

The verifier confirmed that the monitoring was done in accordance with the monitoring plan and the GHG emission reductions in the revised Monitoring Report version 1.2, dated 27 December, 2012 are calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 1 June 2011 to 30 September 2012

Verified emission in the above reporting period:

Baseline emissions:	62,144 tCO_2 equivalents
Project emissions:	0 tCO_2 equivalents
Emission reductions:	62,144 tCO_2 equivalents

Date: 1 February, 2013

Michio Hiruta

Michio HIRUTA
CEO, President of JACO CDM

5. References

Category 1 Documents:

List documents provided by the Client that relate directly to the GHG components of the project. These should have been used as direct sources of evidence for the verification conclusions, and are usually further checked through interviews with key personnel.

/1a/	CDM Monitoring Report (1 June, 2011 to 30 Sep, 2012) Version 1.1< dated 26/11/2012>
/1b/	CDM Monitoring Report (1 June, 2011 to 30 Sep, 2012) Version 1.2< dated 27/12/2012>
/2/	Monitoring Manual (Version 2.1, dated 24/12/2012)
/3a/	Monthly exchange amount of electric power for Taegisan Wind Power Co., Ltd. by KPX (period:1/06/2011 to 30/09/2012) (Original)
/3b/	Monthly exchange amount of electric power for Taegisan Wind Power Co., Ltd. by KPX (period: 1/06/2011 to 30/09/2012) (Translation)
/4a/	Monthly electric power usage for Taegisan Wind Power Co., Ltd. by KEPCO (period: 1/06/2011 to 30/09/2012) (Original)
/4b/	Monthly electric power usage for Taegisan Wind Power Co., Ltd. by KEPCO (period: 1/06/2011 to 30/09/2012) (Translation)
/5/	Calculation of Emission Reduction & Transmission Loss for Taegisan WP (period: June 2011 to Sep 2012)
/6a/	Calibration Report of watt-hour meters< Main/Sub meters> (Initial calibration for KPX meters) (10/09/2008)
/6b/	Calibration Report of watt-hour meters< Main/Sub meters> (calibration for KPX meters) (21/08/2012)
/7a/	Calibration Report of watt-hour meter < Import meters> (Initial calibration for KEPCO meters) (10/09/2008)
/7b/	Calibration Report of watt-hour meter < Import meters> (Initial calibration for KEPCO meters) (calibrated:21/10/2011)
/8/	Completion of construction inspection (30/01/2009)
/9a/	The Result of performance test （Certificate of Resistance (ACSR-AW/OC 240sq)
/9b/	The Result of performance test （Certificate of Resistance (RP-ABC-W 150sq)
/9c/	The Result of performance test （Certificate of Resistance (CNCV-W 250sq)
/10/	Map of transmission line to the substation
/11/	WTG Record of Maintenance (2011-2012)
/12a/	Training Record
/12b/	Certificate of electric engineer
/13/	Contract for joint development (decision as CDM PJ)
/14/	ENGINEERING,PROCUREMENT AND CONSTRUCTION CONTRACT FOR HOENGSEONG WIND POWER PROJECT
/15/	The Service Contract
/16/	Wind Turbine Purchase Agreement (12 Mar. 2007)
/17/	The approval of the construction (13/06/2007)
/18/	The Statement for Starting Construction Work (20/08/2007)
/19a/	Taking-Over Certificate (Phase 1) (20/11/2008)
/19b/	Taking-Over Certificate (Phase 2) (26/12/2008)
/20/	Starting Commercial Operation for Wind Power (28/01/2009)
/21/	Wind Turbine Description (04/03/2005) VESTAS
/22/	Samples of actual reporting of monitoring results(daily, monthly)
/23/	Brochure of Taegisan Wind Power Co., Ltd.
/24/	Act on Operation of Electricity Market (December 2011)
/25/	Law regarding Measurement Act. No.9496 (18 Mar. 2009)
/26/	Record of Internal Audits
/27/	Letter of replacement meters from KEPCO (09/11/2012)

Category 2 Documents:

List background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents should have been used to cross-check project assumptions and confirm the validity of information given in the Category 1 documents and in verification interviews.

/31/ Revised Monitoring Plan (approved 30 Mar. 2011)
/32/ PDD Version 05 (20 Feb. 2009)
/33/ Validation Report (by Korean Foundation for Quality, 25/12/2009)
/34/ Methodology ACM0002 Version 07
/35/ "Tool to calculate the emission factor for an electricity system" Version 01
/36/ "Tool for the demonstration and assessment of additionality" Version 4 (EB36)
/37/ UNFCCC VVS version 03.0
/38/ 1st Periodic Verification Report (15 May, 2009 to 31 May, 2010) GR10W0018D
/39/ 2nd Periodic Verification Report (1 June, 2010 to 31 May, 2011) GR11W0035D

Persons interviewed:

List persons interviewed during the initial verification, or persons contributed with other information that are not included in the documents listed above.

/41/ Mr. Jae-Oh Lim (Vice President, Taegisan Wind Power Co., Ltd.)
/42/ Mr. Jin-Seon Oh (Senior Clerk, Taegisan Wind Power Co., Ltd.)
/43/ Mr. Chan-Hee Lee (Engineer, Taegisan Wind Power Co., Ltd.)
/44/ Mr. Akira Amano (Director, Eurus Energy Korea Corporation.)
/44/ Ms. Eun-Young Yoo (Manager, Eurus Energy Korea Corporation.)
/45/ Mr. Sung-Hyun Jang (Assistant Manager, Eurus Energy Korea Corporation.)
/46/ Mr. Hye-Jun Kim (CDM Development Team, RCC Co., Ltd.)

Appendix 1: Verification Checklist

3rd Periodic Verification Checklist

for

Taegisan Wind Power Project
(CDM Ref. 2302)

Monitoring Period: 01 June 2011 to 30 September 2012

Based on VVS Version 03.0

Table 1: Periodic Verification Checklist

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
0. Cover page			
0.1. Project title, reference number, monitoring period and version of the baseline and monitoring methodology applied to the project activity: Are they consistent with the Monitoring report spread sheet and the registered PDD?		- Project title : Taegisan Wind Power Project - Reference No. : 2302 - Monitoring period : 01/06/2011 – 30/09/2012 - Methodology : ACM0002 (Version 07) "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" - Project Participants : POSCO Engineering and Construction Co., Ltd. Eurus Energy Holdings Corporation - Host party : Republic of Korea - Other party : Japan - Consultant Company : RCC Co., Ltd. Project participant name of "Eurus Energy Japan Corporation" was change to "Eurus Energy Holdings Corporation". MoC form was submitted to UNFCCC on 12/04/2012. The verification team confirmed by UNFCCC website.	OK
0.2. Registration date of the project activity Is the registration date is consistent with the monitoring period?		Registration date : 15/09/2009 Crediting period : 15/05/2009 – 14/05/2019 fixed 10 years 1st monitoring period : 15/05/2009 – 31/05/2010 2nd monitoring period : 01/06/2010 – 31/05/2011 3rd monitoring period : 01/06/2011 – 30/09/2012	OK
A. Description of project activity			
A.1 Brief description of the project activity		Taegisan Wind Power Project activity involves construction and operation of 20 numbers of 2MW capacity wind mills at south western area of Gangwon-	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
Does the Monitoring report describe a brief summary of the project as below? - The purpose of the project activity and the measures taken to reduce greenhouse gas emissions; - Brief description of the installed technology and equipments; - Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.) - Total emission reductions achieved in this monitoring period		Do, Republic of Korea. The type of technology being employed in this project is wind power generation technology thus the proposed project is a renewable energy project that utilizes wind power energy, a renewable energy releasing no greenhouse gases. The generated electricity from the project has been displacing the electricity from existing grid from fossil fuel based power plants. Total installed capacity of the proposed project is 40MW (2MW x 20). And the project is composed of 20 generators (wind power turbines) each with 2MW. 20 Units are classified as two ways which is the administrative district and the measuring electricity supplied to the grid. For the administrative district, the project site is located between Hoengseong-gun and Pyeongchang-gun in Gangwon Province area. Therefore, 9 units are located in Hoengseon-gun and 11 units are located in Pyeongchang-gun. • Hoengseong-gun, Gangwon-do: 2MW × 9 units = 18 MW (5,6,8,9,11~15-the number refers to below figure) • Pyeongchang-gun, Gangwon-do:2MW × 11 units = 22 MW (1~4,7,10,16~20-the number refers to below figure) On the other hands, For the measuring electricity supplied to the grid, units are divided into two groups (A, B and C, D). The electricity generated from each group is measured by meters and supplied to the grid through two lines each with 20MW. Unit's number included in A, B, C and D are A: 14~20 / B: 5~7 / C: 8~13 / D: 1~4 Taegisan is the highest mountain in Hoengseong-gun and rises 1,261 meters above the sea level, thus the sites of the project have favorable conditions of location as a wind farm. Annual electric generation was 104,159 MWh. The electricity generated from the wind turbine is transmitted to the grid, KEPCO Pyeongchang transformer substation, through 22.9kV of transmission lines. And the whole transmission lines reach 33km (Underground 8km and Overhead 25km).Among the whole lines; the 8 km block which goes through rural communities will be constructed underground and make the maximum use of existing roads for environmentally friendly development.	

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
		The date of decision as CDM project 03/02/2006 Project starting date (contract for turbine purchase) 12/03/2007 Construction start date 25/07/2007 Commissioning date 06/10/2008 - 26/12/2008 Completion of the construction 30/01/2009 Commercial Operation date 28/01/2009 Total emission reductions achieved in this monitoring period: 62,144 tCO_2e.	
A.2 Location of the project activity Is complete information of the location of the project activity: town, city, country and GPS coordinates described?		Taegi-ri, Dunnae-myun, Hoengseong-gun and Mui-ri, Bongpyeong-myun, Pyeongchang-gun in Gangwon Province in Republic of Korea GPS coordinates: E128°20' and N37°32'	OK
A.3 Parties and project participant(s) Are the project participants consistent with the registered project activity?		Project Participants: POSCO Engineering and Construction Co., Ltd. Eurus Energy Holdings Corporation Project participant name of "Eurus Energy Japan Corporation" was change to "Eurus Energy Holdings Corporation". MoC form was submitted to UNFCCC on 12/04/2012. The verification team confirmed it by UNFCCC website.	OK
A.4 Reference of applied methodology Are the exact reference (number, title, version) indicated? (a) The applied methodology (b) Tools and other methodologies to which the applied methodology(ies) refers.		(a) ACM0002 (Version 07) "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (b) Tools - Tool to calculate the emission factor for an electricity system (version 01) - Tool for the demonstration and assessment of additionality (Version 4 (EB36))	OK
A.5 Crediting period of the project activity and related information If applicable, does the report include changes to the start date of the crediting period post-		Registration date : 15/09/2009 Crediting period : 15/05/2009 – 14/05/2019 fixed 10 years 1st monitoring period : 15/05/2009 – 31/05/2010 (issued CER)	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
registration that have been accepted by the Board?		2nd monitoring period : 01/06/2010 – 31/05/2011 (issued CER) 3rd monitoring period : 01/06/2011 – 30/09/2012	
A.6 Open issue by the validation or previous verification.		Based on the validation report and previous verification reports, the verification team identified no missing steps. There is no open issue.	OK
B. Implementation of the project This part is covering the essential checks during the on-site inspection at the project's site, which is indispensably for 1st verification			
B.1 Description of implemented registered project activity Determine whether the project activity has been implemented and operated as per the registered PDD or any approved registered PDD, and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place			
B.1.1. Implementation status of the project - The starting date of the project: consistent with the registered PDD? - Is the information described regarding the actual operation of the project activity during the monitoring period, including information on special events? (ex.: overhaul times, downtimes of equipment, exchange of equipment, etc.) - Is a brief explanation described; (i) events or situations that occurred during the monitoring period, which may impact the applicability of the methodology?		- The starting date of the project: 12/03/2007 (the contact date of turbine purchase) - Wind, the energy source of wind power generation mostly depends on the terrain. So the project developers considered weather conditions and chose Mt. Taegi area as the plant site, which is the highest mountain of Hoengseong area in Gangwon Province. And total installed capacity of the project is 40MW (2MW x 20), which is composed of 20 generators (wind power turbines) with 2MW. The project uses the turbine technology with OptiSpeed ™1 and OptiTip®2 and these generator facilities were imported from Denmark. The turbine model is VESTAS V80-2.0MW, which has already been installed around the world for large scale wind power generation projects and it was	**CL1 →OK**

<table>
<tr><th>OBJECTIVE</th><th>Ref.</th><th>COMMENTS</th><th>Concl.(incl FARs/CARs)</th></tr>
<tr><td>(ii) how the issues resulting from these events or situations are being addressed?</td><td></td><td>chosen through bids.
- Power failures were happened during this monitoring period (28/11/2011 and 21/05/2012)
- Electric meters for electricity imported from the grid were replaced on 25/06/2012
<u>Clarification request 1</u>
The events of power failure are to be clarified in the monitoring report.</td><td></td></tr>
<tr><td>B.1.2. Physical components
Check the installation of all required facilities and equipment as described by the PDD. (VVS227)</td><td></td><td>- V80 wind turbine generators made by Vestas Wind Systems (2MW × 20units) were installed during the period of 25-07-2007 to 26-12-2008(last Commissioning date). The total capacity of project is 40MW.
- As the evidences of completion of the installation, the takeover certifications were provided.
- During the on-site verification, the verification team visited 6 wind turbine generators (No.2,6,9,12,15 and 19), and also checked the related meters (export and import) and checking system by PC, transformers (22.9 kV), etc. It was confirmed that all equipments were under operation and they had same capacity since the operation started. Generated electricity by the project is delivered by 22.9kV transmission line to the Grid, KEPCO Pyeongchang transformer substation.
Specification of Wind Turbine Generator;
<table>
<tr><td>Turbine model</td><td>V80</td></tr>
<tr><td>Generation Capacity</td><td>2MW</td></tr>
<tr><td>Operation data</td><td>50Hz/60Hz 690V</td></tr>
<tr><td>Rotator diameter</td><td>80m</td></tr>
<tr><td>Manufacturer</td><td>Vestas Wind System</td></tr>
</table></td><td>OK</td></tr>
<tr><td>B.1.3. Project boundaries
Check whether the project boundaries are still in compliance with the ones indicated by the PDD.</td><td></td><td>The electricity generated by the Project is supplied to Grid of KEPCO through 2 transmission lines (22.9kV) as described in the Monitoring Report. Actual project boundary is in compliance with the condition described in the PDD.</td><td>OK</td></tr>
</table>

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
(VVS227)			
B.1.4. On-site visit Was on-site visit conducted? If not, justify the rational of decision. (VVS227)		The verification team, Yukio Takano of JACO visited the project site on 17 and 18 of Dec. 2012. During on-site visit, interview was conducted with PP.	OK
B.2. Post registration changes The DOE shall determine whether the changes do not require prior approval by the Board in accordance with appendix 1 of Project Standard.			
B.2.1. Temporary deviations from registered monitoring plan or applied methodology Check whether there are deviations from the registered monitoring plan and/or methodology.		No. It was verified by interview to the PO, calibration records and relevant data that there was no temporary deviation occurred during the monitoring period which can affect the accuracy of monitoring the calculation of emission reductions.	OK
B.2.2. Corrections Check whether there are any corrections to project information or parameters fixed at validation, as described in the registered PDD, made by project participants in a revised PDD comply with the requirements of the Project Standard.		No. There was no correction to the project information or parameters required from the registered PDD and approved revised PDD.	OK
B.2.3. Permanent changes from registered monitoring plan or applied methodology Check whether there are permanent changes from the registered monitoring plan and/or methodology.		No. It was verified by onsite assessment and interview to the PO that there was no permanent change occurred from the registered PDD and approved revised PDD during the monitoring period. The Monitoring Plan was revised during the 1st Verification and it was approved by EB on Mar. 2011 - Meter accuracy 0.2S → 0.5S - Frequency of meter calibration: every 2 years → 3 years +/- 6 months	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
B.2.4. Changes to project design of registered project activity Check whether there are proposed or actual changes to the project design of a registered CDM project activity.		No. It was verified by onsite assessment and interview that the project design in the implementation and operation of the project activity is in accordance with the registered PDD and approved Monitoring Plan.	OK
B.2.5. Changes to start date of crediting period If the project participants wish to change the start date of the crediting period in accordance with section H of the Project Standard, the DOE shall determine whether the proposed changes result in a less conservative baseline.		No. The start date of the crediting period remains unchanged.	OK
C. Description of monitoring system Verification of the monitoring plan of the project complies with the applied monitoring methodology.			
C.1. Monitoring plan & monitoring methodology			
C.1.1. Monitoring Plan Check whether the monitoring plan of the project in accordance with the approved methodology applied by the proposed CDM project activity. (VVS230)		According to the document review and on-site visit, it was verified that the PP implemented and followed the approved monitoring plan of the registered PDD and applied methodology AM0002 Version 07.	OK
C.1.2. Request for revision of Monitoring Plan In case if the monitoring plans of the project is not in accordance with the monitoring methodology, was the request for revision of the monitoring plan done? (VVS250)		There is no request for revision of monitoring plan required since the monitoring plan of the project is in accordance with the applied methodology during this monitoring period. The monitoring plan was revised during the 1st Verification and it was approved by EB on 30 Mar, 2011.	OK
C.1.3. Monitoring activities & Monitoring plan Check whether the PP implemented monitoring		According to the document review and on-site visit, It was verified that the PP implemented and followed the approved revised monitoring plan and applied methodology, AM0002 Version 07.	**CL2 →OK**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
activities in accordance with the approved monitoring plan.(VVS 234, 235)		**Clarification Request 2** **It is to be checked by the evidences during on-site assessment, whether the monitoring is being carried out in accordance with the procedures established.**	
C.1.4. Monitoring Aspect Are there any monitoring aspects of the project activity that are not specified in the methodology (e.g. additional monitoring parameters, monitoring frequency and calibration frequency)? (VVS231)		No. There is no monitoring aspect which is more than 1% of the total annual emission reduction that is no specified in the applied methodology.	OK
C.2. Management and Operational System In order to ensure a successful operation of a Client project and the credibility and verifiability of the ERs achieved, the project must have a well defined management and operational system. (VVS234 (b))			
C.2.1. Reporting procedures Check how reports with relevance for the later determination of emission reductions will be generated		The responsibility of measuring, checking and reporting the amount of electricity is defined, and the qualification and training for the personnel are established and implemented. The amount of export electricity was being reported daily, monthly and yearly in the established formats and checked by responsible persons including the president with their signatures. Reporting procedures have been already established in the CDM Monitoring Manual. **Clarification Request 3** **It is to be checked by the evidences during on-site assessment, whether the auditing of data and system is being carried out in accordance with the procedures established.**	**CL3 →OK**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
C.2.2. Documented instructions Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions have access and knowledge of documented instructions, forming a part of the project's management system.		The organization chart, detail responsibility, qualification of CDM operational staff and procedure are stipulated in the CDM Monitoring Manual. The personnel training have been established for CDM monitoring operation.	**OK**
C.2.3. Documentation The system should be documented by manuals and instructions for all procedures and routines with relevance to the quality of emission reductions. The accessibility of such documentations to persons working on the project has to be secured.		The Monitoring Manual has been established in detail based on the PDD and implemented regarding the main subject (1)Definition of Monitoring,(2) Purpose of Monitoring, (3) Organization for Monitoring, (4) Monitoring equipment, (5)Power Transmission, (6)Data acquisition and Storage, (7)Internal data verifying procedure, (8)Quality Assurance / Quality Control,(9)Audit, (10)Taking action against emergency, (11)Monitoring report, (12) Calibration, (13)Training. All the data and documents are kept in archives by the project manager. The simplified Manual is easy to be accessed by the persons working on the project.	**OK**
C.2.4. Qualification and training The system should describe the requirements on qualification and the need of training programs for all persons working on the emission reduction project. Performed training programs and certificates should be archived by the system.		The qualification and training for the personnel are established and implemented. It was confirmed that the reporting was being conducted in accordance with the CDM Monitoring Manual of established based on the approved revised Monitoring Plan and the PDD. Training of CDM monitoring was conducted on 13/01/2012 and 7 staffs were attended it. **Clarification Request 4** **It is to be checked by the evidences during on-site assessment, whether the qualification and training for personnel are carried out in accordance with the procedures established.**	**CL4 →OK**
C.2.5. Allocation of responsibilities The allocation of responsibilities should be documented in written manner.		Roles and responsibilities are clearly stipulated in the Manual of CDM Monitoring and the Monitoring Report Section C. They are in line with the Monitoring Plan of the registered PDD.	**OK**
C.2.6. Emergency procedures The system should contain procedures which provide emergency concepts in case of unexpected		- The Emergency procedures has been established in the Monitoring Manual (Taking action against emergency). - If stoppage of monitoring process occurs because of need for calibration,	**OK**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
problems with data access and/or data quality.		every detailed replacement procedures must be recorded in log sheet. (This sheet includes precise record of stoppage time and the reason of the stoppage (based on DD-MMM-YYYY, HH:MM format)). - Follow regulation on electric operation, when the data is omitted from projec t facility failure, calibration, measuring meters failure. - Responsible person is described in "3. Organization for monitoring" of the Monitoring Manual.	
C.2.7. Data archiving The system should provide routines for the archiving of all data which is required for verifying the project's performance in the context of consecutive verifications.		- The system of archiving the relevant data has been established in the Monitoring Manual (Data acquisition and Storage, QA/QC). - Six times a month, monthly data are stored in the folder in charge of data analysis. - Six times a month, monthly data are copied from the computer in charge of data analysis and stored continuously for backup. - Taegisan Wind Power Co. records the electricity supplied to the grid six times a month. The recorded data is double checked with the receipt of it. - The monthly and yearly electricity consumed is recorded in excel sheet and managed by Taegisan Wind Power Co. The electricity consumed is double checked with the receipt of it. **Clarification Request 5** **Archiving condition of CDM related data is to be verified during on-site assessment.**	**CL5 →OK**
C.2.8. Monitoring report The system includes procedures for the calculation of emission reductions and the preparation of the monitoring report.		- The procedures of Monitoring report has been established in the Monitoring Manual (Monitoring report). - CDM monitoring report is written by a person in charge of it and the writing frequency rely on given conditions. 'Issued date', 'Revised version' and 'Monitoring period' should be properly recorded every time. The written monitoring report should be confirmed and approved by both of Shareholders.	**OK**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
C.2.9. Internal QA/QC The system includes internal control procedures, which allow the identification and solution of problems at an early stage.		- The internal audit system is established and documented in the Monitoring Manual (Audit) and implemented. - The internal audit was conducted on 01/06/2011, 01/09/2011, 01/12/2011, 01/03/2012, 01/06/2012 and 01/09/2012. Audit reports were provided and the verification team confirmed that there was no issue in these audits.	**OK**
D. Data and parameters Especially for data of baseline emissions there might be the necessity to include external data sources. The access to such data and a proof of data quality should be part of verification. If it is deemed to be necessary, an entity delivering such data should be audited. (VVS234(b))			
D.1. Data and parameters fixed ex ante or at renewal of crediting period			
D.1.1. Data and parameters Are all the data and parameters fixed ex ante or at renewal of crediting period listed and described properly?		The combined emission factor ($\mathbf{EF}_{grid,CM,y}$ =0.6426) which is fixed ex ante is correctly applied in the monitoring report. **Clarification Request 6** **Description of the combined emission factor is to be clarified in the monitoring report (D.1).**	**CL6 →OK**
D.2 Data and parameters monitored			
D.2.1. Type and sources of internal data Acquire information on type and source of internal GHG data, which is used in calculations of emission reductions. e.g..” continuous direct measurements”, “site-specific correlations”, “periodic direct measurements”, “use of models” and/or “use of default emissions factors”.		According to the methodology ACM0002 (Version 07) and registered PDD, emission reductions of the project are calculated by: $\boldsymbol{ER_y = BE_y - PE_y - LE_y}$ Where: $\boldsymbol{ER_y}$ is emission reductions by the project activity in year y; $\boldsymbol{BE_y}$ is baseline emissions in year y; $\boldsymbol{PE_y}$ is project emissions in year y; $\boldsymbol{LE_y}$ is leakage in year y.	**OK**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
		According to the monitoring plan in the registered PDD section 7.2, the following parameter is monitored. EG_y : net electricity supplied to the grid by the project $EG_y = EG_{output,y} - EG_{import,y}$ $EG_{output,y}$: Electricity supplied to the grid $EG_{import,y}$: Electricity purchased from the grid	
D.2.2. Baseline emission parameter (VVS234(b)) (1) Are all the parameters listed in accordance with the monitoring plan? (2) Is the information flow of each parameter appropriate?		The baseline emission is calculated by: $BE_y = EG_y \times EF_y$ = [(Electricity supplied in year y) – (Electricity purchased in year y)] $\times EF_y$ Where: EG_y is net electricity supplied to the grid during the monitoring period(MWh); EF_y ($EF_{grid,CM,y}$) is baseline emission factor of Korea, calculated ex-ante and fixed during the crediting period, the value is 0.6426tCO2e/MWh. The 22.9kV Substation owned by KEPCO between the project and the grid is located in Gangwon, east of the project site. The whole transmission lines reach 33km(underground 8km and overhead 25km).The watt-hour meters are installed in the Taegisan Wind Park and not in the interface substation. Therefore in order to determine accurate amount of net electricity supplied to the grid, transmission loss between the project site and the substation was considered. kWh Loss = $I^2 R_3 \times T$ kW Loss = $I^2 R_3$ $I = I_p / PF$ $I_p = P / (1.732 \times 22.9 \times T)$ Where: P : Electricity generation (kWh) (measured) T : Time period = 24 x days I : Current on the transmission line (A)	**OK**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
		PF : Power Factor (%)=97 ***R_1*** : the phase resistance (Ω)=3.4402 (one phase resistance) The Wire Resistance of transmission line is based on the transmission cable test report by manufacturers, COSMOLINK Co., Ltd., Daeil wire Co., Ltd. and TAIHAN ELECTRIC WIRE Co., Ltd. 1) Underground Transmission Line: Cable Length: 8km (parallel) Test Result of Resistance (per km): 0.07215 Total Resistance for underground T/L: 0.07215* 8/2 = 0.2886 2) Overhead Transmission Line: Cable Length: 22km Test Result of Resistance (per km): 0.1183 Total Resistance for overhead T/L: 0.1183 * 22 =2.6026 3) Overhead Transmission Line: Cable Length: 3km Test Result of Resistance (per km): 0.183 Total Resistance for overhead T/L: 0.183 * 3 =0.549 Thus overall resistance is calculated sum of underground transmission line resistance and 2 overhead transmission line resistances, which is 0.2886 + 2.6026 + 0.549 = 3.4402 ***R_3*** : the phase resistance (Ω) of three transmission lines ***R_3***=3 x ***R_1*** =10.3206 22.9 : the voltage of power line from Taegisan Wind Park to the Substation (kV)	
D.2.3. Project emission parameter (VVS234(b)) (1) Are all the parameters listed in accordance with the monitoring plan? (2) Is the information flow of each parameter appropriate?		Since the project is grid-connected electricity generation from renewable energy sources, there are no GHG emissions from the project activity, so that the project emissions are zero, according to the approved methodology AM0002 (Version 07)	**OK**
D.2.4. Leakage parameter		According to the applied methodology AM0002 (Version 07), the leakage from the project is zero (LEy=0).	**OK**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
(VVS234(b)) (1) Are all the parameters listed in accordance with the monitoring plan? (2) Is the information flow of each parameter appropriate?			
D.2.5. Quality assurance Does external or internal data collection underlie sufficient quality assurance routines?		- The amount of export electricity monitored by the calibrated KPX meters (main meter and sub-meter) and simultaneously transferred to Taegisan central control system is compared with those of KPX shown on its website. If the two variables compared are different, KPX checks its data base to compare the receipt with its data base. And the electricity meters and other equipment shall be checked if they are working properly by internal investigation and procedures regulated in the related lows. Then the result will be reported to the CDM project manager for appropriate follow-up measures. Even after the internal investigation and procedures in related laws, if the reason why those two variables are different is not found, then data stored in SCADA will be used in the first place according to “Act on operation of electricity market”. - In case of main meter problems (malfunction/inspection and repair works), sub-meter reading will be used according to the Monitoring plan . - The amount of import electricity is daily checked by reading the KEPCO meter and is compared monthly with the KEPCO’s invoice. - If the two variables are different, internal investigation and corrective actions are taken [Monitoring plan]. - The meters were authorized through the formal process to have the allowable error of data within ±0.5% (for main meter) and ±0.5%(for sub-meter) required by the legal regulation. And the meters were calibrated as frequently as required by the related laws and the regulation of KPX (Monitoring plan). - The amount of export electricity is being reported daily, monthly and yearly in the established formats and checked by responsible persons including the president with their signatures.	**OK**

<table>
<tr><th>OBJECTIVE</th><th>Ref.</th><th>COMMENTS</th><th>Concl.(incl FARs/CARs)</th></tr>
<tr><td></td><td></td><td>Receipt of sales of delivered electricity by KPX and Invoice of electricity consumption by KEPCO were provided before on-site assessment.</td><td></td></tr>
<tr><td>Monitoring equipment & Compliance with the calibration frequency requirements for measuring instruments
The accuracy of equipment used for monitoring is in accordance with the relevant guidance provided by the CDM Executive Board and is controlled and calibrated in accordance with the monitoring plan (VVS234 (c), 237 - 243)</td><td></td><td></td><td></td></tr>
<tr><td>D.2.6. Monitoring and metering equipment
Check whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</td><td></td><td>As verified during site visit, the Electricity delivered by the project to the grid and the Electricity purchased by the project are continuously measured by KPX Meters and KEPCO Meters, they are installed on the transmission line at the project site. The KPX Backup Meters are also installed as a back up of KPX Meter on the transmission line at the project site. The frequency of meter calibration is every 3.5 year (+/- 6 month) in accordance with standard of “Act on operation of electricity market”. Calibrations for KPX meters and KEPCO meters were conducted during this monitoring period (01/06/2011~30/09/2012). And the KEPCO meters were replaced on 25/06/2012. Detail information of the meters is as below.
<table>
<tr><th rowspan="2">KPX Meter</th><th colspan="2">A and B Line Meters</th><th colspan="2">C and D Line Meters</th></tr>
<tr><th>Main</th><th>Backup</th><th>Main</th><th>Backup</th></tr>
<tr><td>Model</td><td>SCE8711</td><td>SCE8711</td><td>SCE8711</td><td>SCE8711</td></tr>
<tr><td>Class</td><td>0.5S</td><td>0.5S</td><td>0.5S</td><td>0.5S</td></tr>
<tr><td>Serial No.</td><td>46026112</td><td>46026111</td><td>46026114</td><td>46026113</td></tr>
<tr><td>Calibration Date</td><td>10/09/2008
21/08/2012</td><td>10/09/2008
21/08/2012</td><td>10/09/2008
21/08/2012</td><td>10/09/2008
21/08/2012</td></tr>
<tr><td>Manufactur</td><td>Seochang Electric</td><td>Seochang Electric</td><td>Seochang Electric</td><td>Seochang Electric</td></tr>
</table></td><td>CL7 →OK</td></tr>
</table>

<table>
<tr><th>OBJECTIVE</th><th>Ref.</th><th>COMMENTS</th><th>Concl.(incl FARs/CARs)</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>er</td><td>Communication Co., Ltd.</td><td>Communication Co., Ltd.</td><td>Communication Co., Ltd.</td><td>Communication Co., Ltd.</td></tr>
</table>
<u>Before replaced</u>
<table>
<tr><th>KEPCO Meter</th><th>A and B Line Meter</th><th>C and D Line Meter</th></tr>
<tr><td>Model</td><td>LGRW34-05</td><td>LGRW34-05</td></tr>
<tr><td>Class</td><td>0.5S</td><td>0.5S</td></tr>
<tr><td>Serial No.</td><td>0067477</td><td>0067467</td></tr>
<tr><td>Calibration Date</td><td>10 Sept. 2008</td><td>10 Sept. 2008</td></tr>
<tr><td>Manufacturer</td><td>LS Industrial Systems Co., Ltd.</td><td>LS Industrial Systems Co., Ltd.</td></tr>
</table>
<u>After replaced (25/06/2012)</u>
<table>
<tr><th>KEPCO Meter</th><th>A and B Line Meter</th><th>C and D Line Meter</th></tr>
<tr><td>Model</td><td>MPI-G-09-3</td><td>MPI-G-09-3</td></tr>
<tr><td>Class</td><td>0.5S</td><td>0.5S</td></tr>
<tr><td>Serial No.</td><td>02112005008</td><td>02112004932</td></tr>
<tr><td>Calibration Date</td><td>21/10/2011</td><td>21/10/2011</td></tr>
<tr><td>Manufacturer</td><td>PSTEC Co., Ltd.</td><td>PSTEC Co., Ltd.</td></tr>
</table>
- Calibration data for KPX meters and Certificate of KEPCO meter replacement were provided before on-site visit.

<u>Clarification Request 7</u>
Details of replaced meter and calibration records for KEPCO meter are to be provided.
</td><td></td></tr>
<tr><td>D.2.7. Data acquisition and data processing systems
Check the eligibility of applied systems.</td><td></td><td>− The system is established in the Monitoring Manual.
The amount of export electricity measured by KPX meter is also transferred automatically to Taegisan central control system (PC) and archived in electronic way.</td><td>OK</td></tr>
</table>

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
		- The electricity generated is recorded six times a month by Taegisan Wind Power. The person in charge of data acquisition record the electricity generated on 3rd, 8th, 13th, 16th, 27th and last day of every month through KPX's home page. - The monthly and yearly electricity generated is recorded based on the collected data. - The monthly data is double checked with its receipt. - The daily, monthly and yearly electricity generated is confirmed by KPX homepage. - The amount of import electricity is daily recorded by reading the KEPCO meter and is compared with the KEPCO's invoices.	
D.2.8. Calibration and quality assurance Is the calibration conducted in accordance with the frequency as specified by the methodology, monitoring plan of the registered PDD or approved revised monitoring plan?		According to the revised Monitoring Plan approved by EB on 30 Mar, 2011, calibration should be done in accordance with the Korean laws. The actual calibration of the KPX Meters and the KEPCO Meters were conducted based on the "Act on operation of electricity market", which requires 3 years 6 months ± 6 months (3 years to 4 years) interval of calibration for watt-hour meter for capacity of larger than 1 MW. The previous calibration of the KPX Meters and the KEPCO Meters were conducted on 10 Sep, 2008, therefore these meters were calibrated in this monitoring period. See D.2.6. **Clarification Request 7 same as D.2.6** **Details of replaced meter and calibration records for KEPCO meter are to be provided.**	**(CL7) →OK**
D.2.9. Delayed Calibration In case of delayed calibration or the calibration has not been conducted at the time of verification, does the calculation adopt conservative approach? (VVS 238)		There was no delayed calibration for each meter. **Clarification Request 7 same as D.2.6** **Details of replaced meter and calibration records for KEPCO meter are to be provided.**	**(CL7) →OK**
D.3. Implementation of sampling plan			
D.3.1. Sampling procedures Are the sampling procedures in accordance with UNFCCC standard practice?		Not allocable.	**---**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
D.4. Other monitoring issues			
D.4.1. Significance and reporting risks Assess the significance and reporting risks related to the different external or internal data sources. Potential reporting risks may be related to the calculation methods, accuracy of data sources and data collection and/or the information systems from which data is obtained. The significance of and risks associated with the data source indicate the level of verification effort required at a later stage.		The potential reporting risks are considered to be small based on the facts described in D.2.5 above.	**OK**
D.4.2. Emergency procedures Are there any procedures which will be applicable if there is no access to relevant external or internal data?		The procedures applicable in the case of emergency of the KXP meters, KEPCO meter, etc. are established in the Monitoring Manual.	**OK**
E. Calculation of emission reductions GHG emission reductions achieved by/resulting from the proposed CDM project activity shall be calculated applying the selected methodology.			
E.0. Assessment of data for calculation			
E.0.1. Complete set of data Check whether the complete set of data for the specified monitoring period available. If not, was the most conservative assumption taken, or a request of deviation raised? (VVS245 (a))		Yes. A complete set of data is available, i.e. operation log, meter readings records, monthly reading records, Monthly Power Trading Record by KPX and Monthly Consumed Electricity Amount by KEPCO which can cover the monitoring period. The emission reductions calculation spreadsheet and base data were provided. The verification team confirmed that all data recorded is in compliance with the monitoring report. To be checked at on-site visit. → It was checked and confirmed at on-site visit	**OK**
E.0.2. Cross-check Information provided in the monitoring report is to		Yes. The information provided in the monitoring report has been crosschecked with other sources such as bill, reading records, operation log and other	**OK**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
be cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis (VVS245 (b))		relevant documents and found that the information in the monitoring report is consistent with the relevant evidences. To be checked at on-site visit. → It was checked and confirmed at on-site visit	
E.0.3. Emission reduction calculation Check weather the calculations of baseline emissions, proposed CDM project activity emissions and leakage, as appropriate, have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document (VVS245 (c))		Yes. The calculation of baseline emission, project emission and leakage was carried out in accordance with the revised monitoring plan, the registered PDD and applied methodology ACM0002 Version 07. The emission reductions of the monitoring period were correctly calculated.	**OK**
E.0.4. Assumptions in emission calculation Justify any assumptions used in emission calculations. (VVS245 (d))		No. There is no assumption used in emission calculations.	**OK**
E.0.5. Appropriate emission factor Check whether appropriate emission factors, IPCC default values and other reference values have been correctly applied. (VVS245 (e))		Yes. The emission factor in the Monitoring Report is 0.6426tCO_2e/MWh, which is the same as described in the registered PDD.	**OK**
Emission Reduction Calculation			
E.1. Calculation of baseline emissions Check whether the calculations of baseline emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document (VVS245 (c))		The baseline calculation is carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology AM0002 (Version 07). BE = EG x EF =(EG_{output} – EG_{import} – TL_{supply} - TL_{import}) x EF = (104,159 – 500 – 6,951 – 0.167) x 0.6426 = 62,144 tCO_2e	**OK**
E.2. Calculation of project emissions Check whether the calculations of project emissions have been carried out in accordance		Since the project is grid-connected electricity generation from renewable energy sources, there are no GHG emissions from the project activity, so that the project emissions are zero, according to the approved methodology AM0002 (Version 07)	**OK**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
with the formulae and methods described in the monitoring plan and the applied methodology document (VVS245 (c))		PE = 0	
E.3. Calculation of leakage emissions Check whether the calculations of leakage emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document (VVS245 (c))		According to the applied methodology AM0002 (Version 07), the leakage from the project is zero. LE = 0	**OK**
E.4. Summary of calculation of emission reductions Check whether the calculated summary is described in accordance with the monitoring plan and the applied methodology document (VVS245 (c))		The calculation summery is described in accordance with the monitoring plan and the applied methodology AM0002 (Version 07) ER = BE – PE – LE = 62,144 – 0 – 0 = 62,144 tCO_2e	**OK**
E.5. Comparison of actual emission reductions with estimates in registered PDD: Is the comparison provided in the mopnitoring report? (VVS 228)		Yes, the comparison of actual emission reductions with estimates in the registered PDD is provided in the monitoring report E.5. Estimated emission reductions in the PDD: 59,669 tCO_2e/year Monitoring period: 16 months (01/06/2011 – 30/09/2012) Estimated emission reductions during this monitoring period 59,669 tCO_2e x 16 months / 12 months = 79,558 tCO_2e	**OK**
E.6. Remarks on difference from estimated value in registered PDD: Is the description provided in the monitoring report that is different from that stated in the registered PDD or any approved revised PDD, and has caused an increase in estimates of the emission reductions in the current monitoring period or is highly likely to increase the estimates of emission reductions in the future monitoring periods? (VVS 228)		The actual emission reductions are 62,144 tCO_2e. It is 78.1% of 79,558 tCO_2e estimated emission reductions in the registered PDD during this monitoring period.	**OK**

Table 2: Resolution of Corrective Action and Forward Action Requests

Draft report clarifications and forward action request by audit team	Ref. to checklist Table 1 to 3	Summary of project owner response	Audit team conclusion
Clarification request 1 **The events of power failure are to be clarified in the monitoring report.**	**Table 1** **B.1.1**	The power failure occurred in May was described in the revised monitoring report. It was occurred on 19/05/2012 and the system was recovered on 23/05/2012.	OK The verification team confirmed that it was explained during on-site assessment and described in the revised monitoring report.
Clarification Request 2 **It is to be checked by the evidences during on-site assessment, whether the monitoring is being carried out in accordance with the procedures established.**	**Table 1** **C.1.3**	Monitoring procedures were explained and demonstrated with monitoring data (daily operation log book, monthly reading records and other CDM related records).	OK It was verified by demonstrated documents and by interview with operation staff during on-site assessment that monitoring has been implemented in their operation in accordance with the revised monitoring plan.
Clarification Request 3 **It is to be checked by the evidences during on-site assessment, whether the auditing of data and system is being carried out in accordance with the procedures established.**	**Table 1** **C.2.1**	Sample of daily data sheet, monthly data sheet and monthly reports were provided. They had confirmation signature by management on them.	OK The verification team confirmed by signatures on the data records that all data was confirmed by the person in charge in accordance with the procedure of monitoring.
Clarification Request 4 **It is to be checked by the evidences during on-site assessment, whether the qualification and training for personnel are carried out in accordance with the procedures established.**	**Table 1** **C.2.4**	The training record in this monitoring period and the certificate of electric engineer were provided.	OK The training record and the certificate were provided. The verification team confirmed the training was conducted in accordance with the procedures established.

Clarification Request 5 **Archiving condition of CDM related data is to be verified during on-site assessment.**	**Table 1** **C.2.7**	The electric data stored in PC had limited access, and the file of documents was kept in the office cabinet.	OK It was confirmed during on-site assessment that the CDM data was organized and stored in the cabinet.
Clarification Request 6 **Description of the combined emission factor is to be clarified in the monitoring report (D.1).**	**Table1** **D.1.1**	Description of combined emission factor was revised in the revised monitoring report.	OK The revised monitoring report was provided. The verification team confirmed that the description of combined emission factor was clarified in the revised monitoring report.
Clarification Request 7 **Details of replaced meter and calibration records for KEPCO meter are to be provided.**	**Table 1** **D.2.6** **D.2.8** **D.2.9**	KEPCO meters were replaced to new meters on 25/06/2012. The calibration of new meters was conducted on 21/10/2011 when they were manufactured. The confirmation letter of meter replacement from KEPCO and the calibration confirmation report were provided.	OK The verification team confirmed by evidences that KEPCO meters were replaced appropriately and they were calibrated on 21/10/2011 and valid in this monitoring period. And also the verification team confirmed that all meter was installed at the project site correctly by on-site assessment.