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Verification Report

Second Periodic Verification

of the JI track 1

“Pecs Gas and Biomass Cogeneration Project”, Hungary

Monitoring period :

01-01-2008 to 31-12-2008

Report No. 600500225

29 April 2009

**TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstr. 199 - 80686 Munich - GERMANY**

**Second Periodic Verification of the JI Project:
“Pecs Gas and Biomass Cogeneration Project”, Hungary**



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Page 1 of 17

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Subject:	Second Periodic Verification of a JI track 1 Project			
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Client:	The World Bank 1818 H Street , NW Mail Stop MC3-309 Washington DC 20016 USA			
Contract approved by:	Thomas Kleiser			
Report Title:	Second Periodic Verification of the “Pecs Gas and Biomass Cogeneration Project”			
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Summary:	<p>The certification body “Climate and Energy” of TÜV SÜD Industrie Service GmbH has been ordered by The World Bank to carry out the second periodic verification of the determined JI track 1 project “Pecs Gas and Biomass Cogeneration Project”.</p> <p>The project that has been registered by the Hungarian DFP is listed under the project ID HU1000008 in the JI folder of the UNFCCC webpage.</p> <p>The verifier confirms that the project is implemented as planned and described in determined project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project does generate GHG emission reductions.</p> <p>The verifier can confirm that the GHG emission reduction for the whole monitoring period is calculated without material misstatements. Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported and related to the valid project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated we confirm the following statement:</p> <p>Reporting period: from 01-01-2008 to 31-12-2008 (both days included).</p> <p>Verified emission reductions to be issued as ERUs in the above reporting period:</p> <p style="text-align: center;">293 307 t CO₂equivalent</p> <p>Issues indicated by the verification team as “Forward Action Request” should be submitted as indispensable information to the verification team of the next periodic verification.</p>			
Work carried out by:	Thomas Kleiser (Assessment Team Leader) Robert Mitterwallner (GHG Auditor) Dr. Nuri Mol (GHG Auditor) Constantin Zaharia (GHG Auditor trainee) Andrey Atyakshev (GHG Auditor trainee)		Internal Quality Control by: Rachel Zhang	



Abbreviations

Abbreviations that have been used in the report here:

AIE	Accredited Independent Entity
CAR	Corrective Action Request
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO_{2e}	Carbon dioxide equivalent
CR / CL	Clarification Request
DFP	Designated Focal Point
EF	Emission Factor
ER	Emission Reduction
ERU	Emission Reduction Unit
FAR	Forward Action Request
GDN	Gas Distribution Network
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
JI	Joint Implementation
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
PP	Project Participant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual



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1 INTRODUCTION

The World Bank has commissioned an independent verification by TÜV SÜD Industrie Service GmbH of its determined JI track 1 project “Pecs Gas and Biomass Cogeneration Project”. The order includes the second periodic verification of the project.

Verification is the periodic independent review and ex post determination by the Independent Entity of the monitored reductions in GHG emissions during the defined verification period.

This report summarizes the findings of the second periodic verification. It is based on the CDM Validation and Verification Manual (VVM) published in 2008 by the UNFCCC.

The second periodic verification consisted of a desk review of the project documents including Determination Report of KPMG from August 2003, PDD from September 2004, Emission Reductions Monitoring Report for 2008, Emission Reduction calculation excel workbook, verification report of DNV for 2007 and further documentations.

The verification team consists of the following personnel:

Thomas Kleiser	TÜV SÜD, Munich	Assessment Team Leader
Robert Mitterwallner	TÜV SÜD, Munich	GHG Auditor
Dr. Nuri Mol	TÜV SÜD, Istanbul	GHG Auditor
Constantin Zaharia	free lancer	GHG Auditor trainee
Andrey Atyakshev	TÜV SÜD, Moscow	GHG Auditor trainee

1.1 Objective

The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; furthermore the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is free of material misstatements; and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records.

The verification shall consider both quantitative and qualitative information on emission reductions.

Quantitative data comprises of the monitoring reports 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 based on criteria set by UNFCCC, the Kyoto Protocol and modalities for JI projects.



1.2 Scope

Verification scope is defined as an independent and objective review and ex post determination by the Independent Entity of the monitored reductions in GHG emissions. The verification is based on the submitted monitoring report and the determined project design documents including its monitoring plan. The monitoring report and associated documents are reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TÜV SÜD has, based on the recommendations in the VVM employed a risk-based approach in the verification, focusing on the identification of significant risks of the project implementation and the generation of ERUs.

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 monitoring activities.

The audit team has been provided with a Monitoring Report (V03, 27 April 2009) and underlying data records, among others:

- ER calculation excel workbook from February 2009 (IRL No. 11),
- MP from August 26, 2003 (as published on the unfccc web site) (IRL No. 45)
- Guideline for implementation of the monitoring system of emission reduction project from 10-03-2009 (IRL No. 25)
- Project Design Document from September 2004 (IRL 2).

covering the period 01-01-2008 until 31-12-2008 (both days included). These documents serve as the basis for the assessment presented herewith. The verified crediting period will start 01-01-2008.

Studying the existing documentation belonging to this project, it was obvious that the competence and capability of the audit team performing the verification have to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Skills in environmental auditing (ISO 14000)
- Quality assurance
- Technical aspects of heat and power generation from natural gas and biomass
- Monitoring concepts
- Political, economical and technical random conditions in host country

According to these requirements TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body “climate and energy”.

In order to have an internal quality control of the project, a team of the following person has been composed by the certification body “climate and energy”:

- Rachel Zhang (deputy head of the certification body “climate and energy”)



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1.3 GHG Project Description

The project aims at the reduction of greenhouse gases by a fuel switching process. PANNONPOWER HOLDING, the owner and operator of the Pecs power plant since 1962, is an energy company located in southern Hungary, near the city of Pecs. The power plant provides the district heat supply for the region of Pecs. As a means of keeping the limits of EU air pollution legislation to be implemented by 2005, PANNONPOWER implemented in 2004 a comprehensive fuel switch and refurbishment project by conversion of 2 combined heat and power units (CHP) (block III and IV) from coal to gas, and the conversion of 1 CHP unit (block VI) from coal to biomass (wood chips). The biomass project (block VI) was implemented by PANNONGREEN, a separate legal entity and affiliate of PANNONPOWER HOLDING. The capacity of the biomass project is 65 MWh_{th} and 49 MWh_{el} respectively. The annual biomass consumption was set to 300.000 t, the expected nominal electricity generation was 353 GWh at 7200 working hours. The reliable district heat supply is provided by the 2 gas fuelled units (block III and IV) for base loading and the biomass fired unit (block VI) for peak loads and as capacity reserve. The heat supply is managed by PETAV, a company with 49 % share of PANNONPOWER and 51 % share of Pecs Municipality. The electricity generated by the biomass unit is supplied via regional grid (operated by E.ON) to the national grid (operated by MAVIR). The project boundary is confined to block VI. The emission reductions generated by this project are calculated as the difference of baseline emissions of the Hungarian electricity grid and the project emissions (with carbon neutral biomass). The project is operational since November 2004.

In 2008, DALKIA (an affiliate of Veolia Group) has taken over 100% shares of PANNONPOWER HOLDING.



2. METHODOLOGY

Starting the second periodic verification the verifier's first task has been to familiarize with the project and its operational management. Based on the received documents (see Annex 1) a Periodic Verification Checklist (PVC) has been prepared according to the VVM from 2008.

During the verification a special focus was given to:

- the correct implementation of the project
(installations, monitoring equipment and procedures, quality assurance procedures)
- the correctness of assumptions with impacts on the monitoring and verification process
(e.g. baseline assumptions)
- training programs
- allocation of responsibilities
- the day-to-day operation of the system
- the data flow, data storage and security measures against mistakes.

After the document review the audit team conducted

- an on-site inspection at the installations of the CHP plant
- interviews with the members of the owner and the operator in their offices and the project developer.

The findings are the essential part of the verification checklists, which is based on the verification protocols of the VVM. Those checklists consist of three tables from the PVC. The completed checklists are enclosed in Annex 1 and Annex 2 to this report. The structure of the tables is shown in the following:



Periodic Verification Checklist		
Table 1: Data Management System/Controls		
Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table.	<p>A score is assigned as follows:</p> <p>Full all best-practice expectations are implemented.</p> <p>Partial a proportion of the best practice expectations is implemented</p> <p>Limited this should be given if little or none of the system component is in place.</p>	Description of circumstances and further commendation to the conclusion. This is either acceptable based on 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. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications

Periodic Verification Checklist		
Table 2: GHG calculation procedures and management control testing		
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
<p>Identification of potential reporting risks based on an assessment of the emission estimation procedures.</p> <p>Identification of key source data. Focus on those risks that impact the accuracy, completeness and consistency of the reported data.</p>	<p>Identification of the key controls for each area with potential reporting risks. Assessment of adequacy of the key controls and eventually test that the key controls are actually in operation.</p> <p>Internal controls include, Understanding of responsibilities and roles, Reporting, reviewing and formal management approval of data; Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc.</p>	<p>Identification of areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks</p> <p>Areas where data accuracy, completeness and consistency could be improved are highlighted.</p>



Periodic Verification Checklist		
Table 3: Detailed audit testing of residual risk areas and random testing		
Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including FARs)
<p><i>List of residual areas of risks of Periodic Verification Checklist Table 2 where detailed audit testing is necessary.</i></p> <p><i>In addition, other material areas may be selected for detailed audit testing.</i></p>	<p><i>The additional verification testing performed is described. Testing may include:</i></p> <ul style="list-style-type: none"> ▪ <i>Sample cross checking of manual transfers of data</i> ▪ <i>Recalculation</i> ▪ <i>Spreadsheet ‘walk throughs’ to check links and equations</i> ▪ <i>Inspection of calibration and maintenance records for key equipment</i> ▪ <i>Check sampling analysis results</i> <p><i>Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</i></p>	<p><i>Having investigated the residual risks, the conclusions are noted here. Errors and uncertainties are highlighted.</i></p>

No CARs were raised. CRs were encountered during the verification process, which were resolved by additional information by the project owner and project developer; nevertheless adjustments of the figures in the Monitoring Report were not necessary.

Further, the verification team has defined FARs, whenever

- the current status requires a special focus on this item for the next consecutive verification, or
- an adjustment of the MVP is recommended.

All FARs have to be reported to the verification team of the next Periodic Verification, which has to take into account all such findings.

Duration of the verification

Preparations: from February 13 to March 06, 2009

On-site verification: March 09 to March 11, 2009



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2.1 Review of Documentation and Site Visits

The verification was performed as a desk review of the project documents including PDD, Emission Reduction Monitoring Report 2008 (version V03 from 27 April 2009 and final version V02 from 25 March 2009) and further documentations as listed in Annex 2.

The site visit included an on-site inspection of the plant, the plant operation and control centre, , energy distribution unit, further a focus on the QM system (mainly data processing, work instructions etc.), interviews with the management as well as operators and workers and with a representative of the project developer, the World Bank (Carbon Finance Unit).

2.2 Resolution of Corrective and Forward Action Requests

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 TÜV SÜD's positive conclusion on the GHG emission reduction calculation. Quality and accuracy of the data and documents presented during the on site visit was high, despite of the fact that many CRs have been reported. No Forward Action Request is defined for issues which do not effect the generation of emission reduction in the verified period, but shall be improved in order to ensure the reliability of future data. To guarantee the transparency of the verification process, the FAR raised and responses that have been given are summarized in chapter 3 below and documented in more detail in the verification protocol in Annex 1.

3 PERIODIC VERIFICATION FINDINGS

In the following sections the findings of the periodic verification are stated. The verification findings for each verification subject are presented as follows:

The findings from the desk review of the final monitoring report, excel sheet calculation and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Periodic Verification Checklist in Annex 1.

3.1 Remaining issues, FARs from previous verification

The task of verification is to check the remaining issues from the previous verification. There has been no Forward Action Request (FAR) reported from the last verification. .

3.2 Project Implementation

3.2.1 Discussion

The biomass fired CHP unit VI was designed as a reserve for the gas-fired CHP units III and IV for electricity and heat supply in peak operation periods. The project design data is indicated in chapter 1.3 as 300.000 t wood chips/a and 7200 hours/a. The biomass use exceeded the design value by 50% in the monitoring period 2008. This increasing trend was also evident for the previous years back to 2005. In parallel, the operation time of the biomass unit VI was raised to 8034 hours in the monitoring period 2008. This issue was raised during the audit. According to the project owner, the initial installed technical equipment of the biomass unit VI (boiler, turbine) has not been modified or replaced. The plant operator was expecting lower operational times and performance of the biomass unit VI at the beginning, as this was a new concept. The experiences showed, that the operation time of the plant could be raised and this was implemented. Furthermore an improvement was achieved by the optimization of the specific process parameters. Consequently, the generated heat and electricity amounts are higher. At a maximum possible operation time of 8100 hour/a, the biomass unit can generate heat up to 600 TJ and electricity of up to 397 GWh annually.

The project design data is indicated in chapter 1.3. The biomass (wood) consumption exceeded the initial design capacity by approx. 50% (450.000 t for 2008). Due to a sharp increase in gas prices, the plant operator decided to stop the gas consumption and switched to more biomass use. The working hours increased by ca. 11 % (from 7200 to 8034 hours). No negative effects on the biomass units operation safety were reported. The operation of the biomass plant is in line with the PDD.

3.2.2 Findings

OBJECTIVE	COMMENTS	Concl.
Methods used (PVC 1)	Clarification Request CR#1 : Technical details on the refurbishment works have to be provided.	CR#1



OBJECTIVE	COMMENTS	Concl.
	<u>Clarification Request CR#2 :</u> “Certificate of Acceptance” for the biomass unit operation has to be provided. .	CR#2
	<u>Clarification Request CR#3 :</u> A “Declaration on Double Counting” has to be submitted. A Declaration on Double Counting has to be submitted.	CR#3

3.2.3 Conclusion

A process flow scheme showing the components of the refurbished block VI was provided to the audit team. The project participant submitted corresponding documents on the remaining CRs, the issues were closed (see PVC, Annex 2). As for CR#3 a written declaration that no double counting occurs is available. The project complies with the requirements.

3.3 Completeness of Monitoring

3.3.1 Discussion

The reporting procedures reflect the monitoring plan completely. All parameters were determined as prescribed. Issues on the reproducibility, consistency of the meter data and data management were raised during the onsite audit.

3.3.2 Findings

OBJECTIVE	COMMENTS	Concl.
	<u>Clarification Request CR#4 :</u> Operational procedures on data management and safety by the IT department have to be submitted in English English (summary).	CR#4
	<u>Clarification Request CR#5 :</u> Manual data records of the plant electricity consumption have to be provided.	CR#5
	<u>Clarification Request CR#6 :</u> Digital records of all meter data transferred via modem to a remote computer have to be provided for balance cross check.	CR#6
	<u>Clarification Request CR#7 :</u> Missing MAVIR (Hungarian grid operator) invoice for May 2008 have to be provided.	CR#7



OBJECTIVE	COMMENTS	Concl.
	<p><u>Clarification Request CR#8 :</u></p> <p>It has to be proved by the PP that the power grid emission factors of Hungary published as Baseline Carbon Emission Factor of Hungarian Energy Offices (HEO) have been calculated according to the rules of the UNFCCC and are more recent and conservative.</p>	CR#8
	<p><u>Clarification Request CR#9 :</u></p> <p>The reading and calculation procedure of manual data records of the meter at the generator has to be explained.</p>	CR#9
	<p><u>Clarification Request CR#10 :</u></p> <p>The deviation of manual and digital records of fuel oil consumption has to be explained.</p>	CR#10
	<p><u>Clarification Request CR#11 :</u></p> <p>Evidence on the calibration of wood weight balance has to be provided..</p>	CR#11
	<p><u>Clarification Request CR#12 :</u></p> <p>Further evidence on the calibration of auxiliary meters has to be provided.</p>	CR#12
	<p><u>Clarification Request CR#13 :</u></p> <p>The ID numbers of meters have to be linked with their internal A-K codes.</p>	CR#13
	<p><u>Clarification Request CR#14 :</u></p> <p>Evidence on the electro-filter operation and performance has to be submitted.</p>	CR#14

3.3.3 Conclusion

The issue of Emission Factors was checked by the audit team. The baseline emission factors provided by the Hungarian Energy Office (HEO) are described in the GHG Inventory Report 2008 submitted to UNFCCC. Emission Factors were calculated in accordance with the Revised IPPC Guidelines. In all cases the emission factors were taken from IPCC 2006 data or IPCC1996 NIR (National Inventory Report, table 3.4, Annex 2, Table A.2.3) if these figures are consistent with those of IPCC 2006. The emission factor for lignite was adjusted following the EU-ETS approach of carbon content of the fuel. A specific emission factor for lignite was derived as 112 t/TJ in IPPC 2006 (instead 101.2 t/TJ in IPPC 1996). The emission factor for the Hungarian lignite is determined as 113 t/TJ according EU_ETS measurements. Corresponding documents and information to other CRs were submitted. Nevertheless, the more conservative emission factor of 100 t/TJ have been applied here (see excel sheet calculation, IRL 11). Details are described in the Periodic Verification Protocol (PVC) in Annex 1.

The biomass amount that has been consumed by the project (see summary table 2008 of the excel sheet calculation) has been crosschecked by the audit team. The calorific values of wood loads supplied to Pannongreen were measured in the integrated plant laboratory, the results were consistent. Furthermore the invoices issued by Pannon Trading for the supplied wood to Pannon-green were checked, the monthly invoice quantities were consistent with the the data in the monitoring report. The wood weight balance was checked and the calibration certificates by OVIT (authorized entity for calibration).

Based on the submitted documents and information, the project complies with the requirements.

3.4 Accuracy of Emission Reduction Calculations

3.4.1 Discussion

Due to the determined methodology there is no need to make corrections for data uncertainty. The audit team confirms that emission reduction calculations have been performed according to the Monitoring Plan and to the calculation methodology reported in the Monitoring Report.

3.4.2 Findings

None.

3.4.3 Conclusion

The project complies with the requirements.

3.5. Quality of Evidence to Determine Emission Reductions

3.5.1 Discussion

Concerning verification the calculation of emission reductions is based on internal data (the external fuel switch emission reduction factor was calculated agreeing with the PDD and the belonging excel sheet). The origin of those data was explicitly checked (see comments in chapter 3.3.3). Further on, entering and processing of those data in the monitoring workbook Excel sheet was cross-checked, where predefined algorithms compute the annual value of the emission reductions. All equations and algorithms used in the different workbook sheets were checked. Inspection of calibration and maintenance records for key equipment was performed for all relevant meters.

The manual transfer of data was cross-checked on a random basis. Net electricity supplied to the grid was cross-checked against meter values and the invoices and monthly protocols, issued to the grid operator MAVIR (Hungarian grid operator).

The observations of the auditing team left no doubt that the monitoring process, defined in the Monitoring Plan and the Monitoring Report, has been followed and is being followed.

3.5.2 Findings

None.

3.5.3 Conclusion

The project complies with the requirements.

3.6 Management System and Quality Assurance

3.6.1 Discussion

Due to the straightforward approach for calculating GHG emission reductions the existing management system is appropriate and quality assurance is guaranteed. There are some areas where improvement is needed.

3.6.2 Findings

OBJECTIVE	COMMENTS	Concl.
Methods used (PVC 1.3)	Forward Action Request FAR#1 (link to CR#4): The QM / QC operational procedures implemented within the project boundaries have to be documented explicitly. An integration in to the existing QM (ISO 9001) and Environmental Management (ISO 14001) systems is to be introduced and implemented. An English summary of the operational procedures (OP) has to be prepared.	FAR#1

3.6.3 Conclusion

For this FAR, the QM system of PANNONGREEN will be revised.

The project complies with the requirements, assuming appropriate handling of FAR #1, in the ongoing verification period.



4. PROJECT SCORECARD

The conclusions on this scorecard are based on the monitoring report.

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Emission Reductions	
Completeness	Source coverage/ boundary definition	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently.
Accuracy	Physical Measurement and Analysis	✓	✓	✓	State-of-the-art technology is applied in an appropriate manner. Appropriate back-up solutions are provided. Correction of the actual Fuel Oil measuring should be applied for the next verification periods.
	Data calculations	✓	✓	✓	Emission reductions are calculated correctly. The electricity based for the invoice is approx. 5% less than the supplied net electricity, this is due to transmission losses of the total grid and adjusted by the grid operator MAVIR. The participant accepted this reduced final data
	Data management & reporting	✓	✓	✓	Data management and reporting were found to be satisfying. Potential for improvement is indicated by FAR#1.
Consistency	Changes in the project	✓	✓	✓	Results are consistent to underlying raw data.



5 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed a second periodic verification of the determined JI track 1 project: "**Pecs Combined Gas and Biomass Cogeneration Project**" in Hungary. The verification is based on requirements of the UN Framework Convention on Climate Change (UNFCCC). In this context, the relevant documents are the "Marrakech Accords".

The management of PANNONGREEN is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the document "Monitoring Report on the Emission Reductions in 2008 for the project "**Pecs Combined Gas and Biomass Cogeneration Project**" under track 1 Joint Implementation mechanism" (final version V02, March 2009).

The verifier confirms that the project is implemented as planned and described in the determined project design document. Some changes concerning timing of connected end-users have no impact on the method to calculate emission reductions. Installed equipment being essential for generating emission reduction and for metering the data defined in the monitoring plan runs reliably and is calibrated appropriately. The monitoring system is in place and the project generates GHG emission reductions according to the validated methodology.

The verifier can confirm that the GHG emission reduction is calculated without material misstatements for the whole monitoring period.

Our opinion relates to the project's GHG emissions reductions reported and related to the valid project baseline and monitoring, and its associated documents.

Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: 01-01-2008 to 31-12-2008.

The Emission Reduction Units (ERU) are herewith 293 307 t CO₂equivalent.

The verification team also determined some areas of risks for the project in the context of the management system. Those issues indicated as "Forward Action Request" and should be submitted as indispensable information to the verification team of the next periodic verification.

Munich, 29-04-2009

A handwritten signature in blue ink that reads "Thomas Kleiser".

Thomas Kleiser
Assessment Team Leader

Munich, 29-04-2009

A handwritten signature in black ink that reads "Rachel Zhang".

Rachel Zhang
Deputy head of certification
body „Climate and Energy“

**Second Periodic Verification of the JI Project:
“Pecs Gas and Biomass Cogeneration Project” in Hungary**



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Annex 1: Periodic Verification Checklist

Verification Protocol

Project Title: 2nd Verification, Pecs Gas and Biomass Co
generation Project, Hungary
Date of Completion: 28.04.2009
Number of Pages: 1 of 32



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Verification Protocol

Project Title: 2nd Verification, Pecs Gas and Biomass Co generation Project, Hungary
 Date of Completion: 28.04.2009
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1. Project Activity Implementation

1.1. Technology

PDD	Verified Situation	Conclusion
Location (s)		
Description / Address:	Pannonpower is a power generation company with a plant near Pecs, a city in southern Hungary. Due to strict air pollution legislation set by the European Union the management of Pannonpower decided to refurbish the pulverized coal fuelled Combined Heat Power (CHP) units III, IV, V and VI. In November 2004 the refitting operation was completed by stopping the operation of unit V, switching units III and IV to natural gas, and unit VI to biomass (wood chips). The "Pecs Gas and Biomass Cogeneration Project" ("Project") considers only the operation within the boundaries of unit VI.	<input checked="" type="checkbox"/>
GSP coordinates:	The Pannonpower plant is situated near Pecs, a city in southern Hungary.	<input checked="" type="checkbox"/>
Technical Equipment – Main Components		
<i>Component 1: Unit VI</i>	The modified unit VI is designed for a capacity of 65 MWth and 49MWe respectively. The energy turnout is expected to be 162 TJ and 338 GWh accordingly. The turbine unit is delivered and maintained by ALSTHOM.	<input checked="" type="checkbox"/>
<i>Component 1: Unit VI</i>	The refurbishment of the unit VI has been completed in September 2004.	<input checked="" type="checkbox"/>

Verification Protocol

Project Title: 2nd Verification, Pecs Gas and Biomass Co generation Project, Hungary
 Date of Completion: 28.04.2009
 Number of Pages: 3 of 32



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PDD	Verified Situation	Conclusion
	<p>Clarification Request #1 (=CR#1) : Please provide technical details on the refurbishment works.</p> <p>Clarification Request #2 : Please submit a process diagram with details on material and energy (heat, electricity) flow. resolved</p> <p>Clarification Request #3 : Please submit a process diagram with details on energy flow for various purchasers (heat, energy) resolved</p>	
<p>Operation Status during verification</p>		
<p>Approvals / Licenses N/A</p>	<p>The refurbishment and conversion of the biomass fuelled unit VI was implemented in 2004. The test phase was between 10 July 2004 and 25 November 2004. The new operation was certified ("Functional Acceptance Certification")</p> <p>Clarification Request CR#4 (= CR#2) Please provide the certificate of acceptance.</p>	<p>CR#2</p>
<p>Actual Operation Status</p>	<p>Under construction <input type="checkbox"/></p>	<p><input checked="" type="checkbox"/></p>

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PDD	Verified Situation	Conclusion
N/A	In operation <input checked="" type="checkbox"/> Out of operation <input type="checkbox"/> Reason (when out of operation):	
Remarks to Special Operational Status During the Verification Period	At the time of the onsite assessment (10.03.2009), the unit VI was in its routine operation. No extraordinary circumstances were observed. This will be checked onsite. Resolved	<input checked="" type="checkbox"/>

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1.2. Organization

PDD	Verified Situation	Conclusion
Project Participant (s)		
Entity / Responsible person:	<p>The audit has been completed as scheduled : 09.03.2009 (desk review), the onsite assessment has been completed on 10.03.2009. The intention and the target of the audit are illustrated to the all participants of the audit.</p> <p>Dalkia, an affiliate of Veolia Group, is the shareholder of Pannonpower Holding. Pannonpower manages it operations with the following enterprises :</p> <p>Pannon Höerömü Inc. : In charge of the operation of the total electricity and heat generation (e.g. UNIT III, IV, and other corresponding facilities). It manages the production and sale of heat and electricity.</p> <p>Pannon Green Ltd : In charge of the operation of the UNIT VI only, it manages the sale of heat and electricity generated at UNIT VI only.</p> <p>Pannon Trading Ltd. : In charge of purchasing wood, JI carbon trade</p> <p>Petav Ltd : In charge for the heat distribution operation, it is owned by Pannonpower (49% share) and City of Pecs (51% share).</p> <p>The enterprises are partly linked with each other, e.g. Pannon Trading supplies the necessary raw material (wood) for Pannon Green Ltd.</p> <p>Participants at the audit on the part of Pannongreen and other the shareholder are :</p> <p style="text-align: center;">Mr. Istvan Erdös, Pannongerren, Commercial Manager, JI Management Mr. Romuala Szawer, Pannon Höreömü, Heat Department</p>	<input checked="" type="checkbox"/>

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	<p>Mr. Karoly Meszaros, Pannon Höreözü, Electricity Department Mr. Tibor Skutnik, Pannon Höerözü, Technical Operation Department Mr. Peter Gallai, Pannon Trading, Wood Supply Dept. Mrs Eva Banoine, Pannon Höreözü, Laboratory</p> <p>Participants at the audit on the part of World Bank : Mr. Kari Haemekoski</p> <p>Participants at the audit on the part of TÜV SÜD Dr. Nuri Mol, GHG auditor Mr. Constantin Zaharia, GHG auditor Mr. Andrey Atyakshev, GHG auditor</p>	
<p>JI Project management:</p>	<p>Mr. Istvan Erdös is the commercial manager at Pannon Trading Ltd and responsible for Carbon Managemant issues of this JI project.</p> <p>Clarification Request CR#5 Please name the expert responsible for carbon management and marketing issues. Mr. Istvan Erdös is the responsible manager in JI management. Resolved</p> <p>Clarification Request CR#3 : Please submit the "Declaration on the Exclusion of Double Counting" . Resolved</p>	<p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p>

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1.3. Quality Management System

PDD	Verified Situation	Conclusion
Quality Management Manual:	<p>The management and sale of generated energy (heat, electricity) to various external suppliers and for internal consumption purposes is controlled by the Pannongreen Ltd, with the GM Mr. Attila Peterffy, who is also the GM of Pannonpower Holding. An organigram with responsibilities and a Quality Management Manual has been presented to the audit team.</p> <p>Clarification Request CR#6 : Please provide the Quality Management manual and evidence on its implementation. Resolved</p>	<input checked="" type="checkbox"/>
Responsibilities:	<p>See remarks above</p> <p>Clarification Request CR#7 : Please provide an organigram with respective responsibilities. Resolved</p>	<input checked="" type="checkbox"/>
Qualification and Training:	<p>The company implements Quality Management (ISO 9001:2000) and Environmental Management Systems (ISO 14001:2004). Corresponding documents on internal audits and training & qualification have been presented to the audit team. The data management is partly covered by ISO 9001:2000. The management of Pannon Green implements additional operational procedures (OP) for data management.</p> <p>Clarification Request#4 : Please provide documentation on the implemented operational procedures for data management by the IT department (acquisition, safety). Relevant documents have been submitted to the audit team.</p>	<input checked="" type="checkbox"/> See FAR#1

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	<p>Clarification Request CR#8 : Please provide corresponding documentation on qualification and training of staff responsible for the operation. Resolved. Corresponding training certificates have been presented to the audit team.</p>	<input checked="" type="checkbox"/>
Implementation of QM-system	<p>Clarification Request CR#9 : Please provide evidence on the implementation of quality management efforts linked with the data acquisition and safety (e.g. ISO 9001). Resolved, but see CR#4</p>	<input checked="" type="checkbox"/>

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1.4. Remaining FARs from previous Verifications (or forwarded issues of validation report)

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team conclusion
Not applicable		

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2. Data Management System

2.1. Description

Structure of raw data archiving				
Describe all the different data collection systems				
Type	Name	Responsible	Procedures	Comments
<p>Manual recording of the meter data on excel spreadsheet (1 x daily)</p> <p>The data management includes following steps as to ensure the reproducibility and reliability. The meters as the main data acquisition device installed and controlled by thenational accredited institution, OVIT. The calibration and validation of the meters are checked by OVIT (national</p>	<p>Excel spread sheets recorded by the operator</p>	<p>Operator</p>	<p>Clarification Request#10 : Please provide evidence on manual data acquisition and storage. Resolved</p> <p>Clarification Request#5 : Please submit monthly (12x in 2008) manual records on MAIN and AUXILIARY meter at 3KV (symbol : H), which monitors the overall internal electricity consumption in various units. Main Meter : Landis : 651 53 390 (A-K code: OSP01E013) Aux. Meter : Landis : 651 53 495 (A-K code: not listed / missing)</p>	<p style="text-align: center;"><input checked="" type="checkbox"/></p> <p>Corresponding documents have been submitted to the audit team.</p> <p style="text-align: center;"><input checked="" type="checkbox"/></p>

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<p>Testing Laboratory Organization) who is also responsible for their maintenance. The data, which is the basis for the invoice is recorded and stored by by MAVIR and EON externally. The data (generated electricity) is checked monthly and summarised in a protocol, as mutually agreed by MAVIR, EON and the plant operator.</p>			<p>Resolved</p>	
	<p>Personnel Computers utilized by the plant operator</p>	<p>The plant manager</p>	<p>Clarification Request#11 : Please provide evidence on digital data acquisition and storage. Resolved</p>	<p><input checked="" type="checkbox"/></p>
<p><i>PLC 2</i></p>	<p>SCADA system Data transfer by the installed MODEM system, to a remote PC, maintained by IT Department of Pannon</p>	<p>-</p>	<p>Clarification Request#12 : Please provide evidence on data acquisition and storage with the SCADA system (if implemented) Resolved.</p>	<p><input checked="" type="checkbox"/></p>

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	Green Ltd.		<p>Clarification Request#6 : Please submit all monthly (12x in 2008) digital records on MAIN and AUXILIARY meters simultaneously transferred via MODEM to the PC. Resolved</p> <p>a. Meters at the generator 10kV Landis 651 53 390 (main) (A-K code : 6SP01E011) Landis 651 53 491 (auxiliary) (A-K code : 6SP01E021) Resolved</p> <p>b. Meters at the 120 KV (E) Actaris 35006716 (main) (A-K code: 6SP01E901) Actaris 35006717 (auxiliary) (A-K code : not listed/missing) Resolved</p> <p>c. Meters at 3kV (H)</p>	<p style="text-align: right;"><input checked="" type="checkbox"/></p> <p style="text-align: right;"><input checked="" type="checkbox"/></p> <p style="text-align: right;"><input checked="" type="checkbox"/></p>
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			<p>submitted to the audit team :</p> <ul style="list-style-type: none"> a. Steam sold at 100 bar b. Steam sold at 11bar c. Hot water sold to Petav Ltd <p>Heat (hot water, steam) is sold to Petav Ltd, who sells it to the City of Pecs and other industry sectors.</p> <p>Further receipts on wood purchase by Pannon Trading Ltd have been submitted to the audit team.</p>	
External data	The data (generated electricity) is recorded monthly ?)		<p>Clarification Request#14 :</p> <p>Please provide evidence on Acquisition and management of the metered (external) data.</p> <p>This includes all purchasers of energy (electricity, heat).</p> <p>The data recording and storage frequencies should be presented to the audit team.</p> <p>Resolved, see remarks above.</p>	<input checked="" type="checkbox"/>

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2.2. Raw Data Archiving and Protection measures

Name	Description of data archiving and protection measures	Risks and comments	Concl.
<i>Form a</i>	Raw data is stored as described in the previous chapter 2.1. By multi – storage alternatives, the risk of data loss is reduced. The raw data recorded is crosschecked by the grid operator MAVIR (and EON) online. Any discrepancies in data values would be identified immediately and countermeasures taken respectively. The risk of data deviation is reduced, as both (buyer) and the plant operator (seller) handle with data using the same meters.	Clarification Request#15 : Please describe the procedure for electricity supply (and purchase) to the regional grid and show evidence of mutual agreed electricity supply protocols (monthly). Please also show evidence on the data storage measures. Resolved. See remarks in chapter 2.1	<input checked="" type="checkbox"/>
<i>Computer a</i>	The monthly recorded data by grid operator MAVIR is also stored in personal computers of the plant operator.	Yes. See remarks in chapter 2.1	<input checked="" type="checkbox"/>
<i>Computer b</i>	The SCADA (“MODEM”) system data is managed by the plant operator.	Yes. See remarks in chapter 2.1	<input checked="" type="checkbox"/>
<i>Invoice</i>	The sold electricity data recorded manually is consistent with the data referred to in the invoices (see chapter 2.1).	Yes. See remarks in chapter 2.1	<input checked="" type="checkbox"/>
<i>Form e</i>	The raw data recorded by the plant operator is used for system consistency / plausibility by grid operator.	Yes. See remarks in chapter 2.1	<input checked="" type="checkbox"/>

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2.3. Data transfer

Description of data transfer from raw data archiving to calculation tool			
Name	Description and responsibilities	Risks and comments	Concl.
<i>Form a</i>	A reliable data transfer is integrate in to the IT management system.	Clarification Request#16 : Please give evidence on the procedures regarding a reliable data transfer. Resolved, see remarks in 2.1.	<input checked="" type="checkbox"/>
<i>Computer a</i>	The raw data is transferred online to MAVIR (and EON) for plausibility check	.	<input checked="" type="checkbox"/>
<i>Computer b</i>	The SCADA ("MODEM") data is transferred to a remote PC control center. See CR#16	Resolved, see remarks in 2.1	<input checked="" type="checkbox"/>
<i>Invoice</i>	The monthly recorded and crosschecked data is used for the invoice considerations.	Yes.	<input checked="" type="checkbox"/>
<i>Form e</i>	The data is read and recorded both by plant operator and the grid operator MAVIR.	Clarification Request#17 : Please give evidence on who is responsible for the calibration and maintenance of meters utilized for Electricity generation. Resolved. The accredited institute OVIT is responsible for the calibration and validation of various meters onsite, evidence have been submitted to the audit team.	<input checked="" type="checkbox"/>

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		<p>of emission factors and efficiency factor (33.7% for fossil fuelled plants) and explain , which data source is to be used and adjust the calculations accordingly, if necessary.</p> <p>Further, please check if this possible adjustment may affect the Monitoring Plan (MP), in this case a revised MP should be submitted.</p> <p>The submitted ER calculation table should be reviewed accordingly.</p> <p>Resolved</p> <p><u>Clarification Request#9 :</u> <u>The manual records of the meters at the generator are multiplied with a factor = 1.05. Please explain this operation.</u></p> <p>a. Meters at the generator 10kV Landis 651 53 390 (main) (A-K code : 6SP01E011) Landis 651 53 491 (auxiliary) (A-K code : 6SP01E021)</p> <p>Resolved</p> <p><u>Clarification Request#10 :</u> <u>The manual records of the fuel oil meters differ considerably form the PC records. Please explain this inconsistency.</u></p>	<p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p>
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Transformation from transferred data to useable data		Raw data (excel spreadsheet prepared by the plant operator), transferred data (monthly data protocol prepared by Pannon Green and used data (invoice prepared for MAVIR) were evaluated by different sources. This allowed a transparent review of the data set and crosscheck, where necessary. See remarks in 2.1	<input checked="" type="checkbox"/>
Elimination of not plausible data	This has been done	See CR#10	<input checked="" type="checkbox"/>
Transformation from useable data to input data for further calculation	The emission reductions are calculated by using the input data.	The calculations are summarised in excel sheets submitted with the Emission reduction Report 2008.	<input checked="" type="checkbox"/>
Ex-ante data	Not relevant		-
Default parameter	Not relevant		-
Formulae check	The formulae used was checked	The formulae application is correct	<input checked="" type="checkbox"/>
Rounding functions	Numbers should be rounded down.	This has been done in a conservative manner.	<input checked="" type="checkbox"/>
Calculation tool changes and protection measures	The calculation tool has been followed as per PDD.	No changes in calculation tool	<input checked="" type="checkbox"/>

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2.5. Work Instruction out of protocol Algorithms (that was part of initial verification)

3. Monitoring Plan Implementation (that was the part of initial verification)

4 Data Verification

4.1 Internal Review

Description and performance of internal review			
	Description	Comments	Concl.
Procedure	The project participant implements a Quality – and Environmental Management System. As part of this, internal reviews are done.	<p>Clarification Request#21:</p> <p>We need evidence on internal review of data consistency and reliability (as part of QM manual).</p> <p>The quality (ISO 9001) and Environmental (ISO14001) Management Systems are implemented in Pannon Green since 2008. The data management of the project is partly covered by these system tools.</p> <p>See remarks in CR#4, chapter 1.3</p> <p>See FAR#1</p>	<input checked="" type="checkbox"/>
Documentation	Relevant operational procedures for the implementation	See remarks above	<input checked="" type="checkbox"/>
Responsibilities	The quality manager is in charge of the system implementation.	The responsible staff for the content of the actual Emission Reduction Report 2008 is listed in Appendix II.	<input checked="" type="checkbox"/>

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		<p>Clarification Request#22 : Please indicate the staff in charge of carbon management issue. Resolved. Mr. Istvan Erdős as commercial Manager of Pannon Trading is in charge of the Emission Reduction Report 2008, whereas Mr. Attila Peterffy and Mr. Laszlo Szegö as managing directors of Pannon Green sign responsible for the whole project outcome results.</p>	
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4.2 Usage of default values

Description and performance of internal review			
	Description	Comments and Results	Concl.
Procedure		Not relevant	<input checked="" type="checkbox"/>
Documentation		Not relevant	<input checked="" type="checkbox"/>
Responsibilities		Not relevant	<input checked="" type="checkbox"/>

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4.3 Reproducibility

Description and performance of the assessment			
	Description	Comments and Results	Concl.
Procedure	Relevant cross checks are needed for the reproducibility of the calculated data.	The data recorded at meters for the sale of the electricity to MAVIR were consistent with manual records. Further these data track was stored externally with MAVIR and anytime available.	<input checked="" type="checkbox"/>

4.4 Peculiarities

Description of Peculiarities and unexpected Daily Events during the verification period			
	Description	Comments and Results	Concl.
Performance	Any incidents are registered in the log book.	Some of the findings (CRs) listed in the protocol refer to peculiarities. The project participant's response to these findings.	<input checked="" type="checkbox"/>
Documentation	These are documented according to the QM system.	These findings do not lead to in compliances concerning the Emission Reductions data.	<input checked="" type="checkbox"/>
Measures	Relevant measures are described in product specs or QM procedures.	Nevertheless the project owner should take effort to eliminate / minimize these findings.	<input checked="" type="checkbox"/>

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4.5 Reliability and Plausibility

Description of crosschecks and plausibility checks			
	Description	Comments and Results	Concl.
Performance	The data recorded on generated heat and electricity should be easily available and calculable.	<p>Various data tracks (raw data, data protocol, invoice, external stored data) recorded in different sources were checked on consistency. The complexity of the project (raw material flow, energy output, interaction between affiliated enterprises, e.g. Pannon Trading, Pannon green, Petav) required data from different sources. These were provided to the audit team. The calculation procedure was traceable.</p> <p>Further, data from previous production period were available for necessary plausibility checks.</p> <p>But see (CRs) in previous chapters.</p>	<input checked="" type="checkbox"/>

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4.6 Completeness and Correctness

Description of completeness and correctness			
	Description	Comments and Results	Concl.
Correctness	The calculation procedures should be clear and deliver correct results.	<p>The data tracks (manually recorded data, monthly data summary protocol, invoice data, data in external hard disc) have been checked on correctness and completeness.</p> <p>Clarification Request#11: Please provide evidence on the calibration and operation of weight balance for wood chips. resolved</p> <p>The calibration certificates were presented to the audit team. Two findings :</p> <p>Clarification Request#12: Please provide evidence on the calibration of the auxiliary meters (certificate by OVIT) :</p> <p>a. Meter at the generator 10kV Landis 651 53 491 (auxiliary) (A-K code : 6SP01E021)</p>	<p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p>

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		<p>b. Meter at the 120 KV (E) Actaris 35006717 (auxiliary) (A-K code : not listed/missing)</p> <p>c. Meter at 3kV (H) Landis : 651 53 495 (aux.) (A-K code: not listed/missing)</p> <p>Clarification Request#13 : Please check the meter ID numbers on consistency. Important is the ID number indicated on the metering device and in OVIT certificates. These ID numbers should be added (e.g.in brackets) to the A-K codes. resolved</p>	<input checked="" type="checkbox"/>
Completeness	The data should be recorded according to the monitoring plan.	The data is complete Resolved	<input checked="" type="checkbox"/>
<p>Further Remarks: No missing issues were identified regarding the completeness.</p>			

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5 Additional requirements

Description of additional requirements to be checked			
	Description	Comments and Results	Concl.
<i>Environmental issue</i>	The electro-filter is part of the environmental protection measures.	Clarification Request#14 : Please submit evidence on the operation of the electro-filter at both chimneys and environmental audits. Resolved	<input checked="" type="checkbox"/>
<i>e.g. market price of the product</i>	No further issues raised		<input checked="" type="checkbox"/>

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6 Data Reporting

Description of the Monitoring Report		
	Comments and Results	Concl.
Compliance with UNFCCC regulations	No discrepancies with the methodologies were observed The monitoring report submitted has version no. V1. The verification period has been indicated correctly. The data within this period was submitted to the audit team.	<input checked="" type="checkbox"/>
Completeness and Transparency	Yes, but see remarks in various CRs	<input checked="" type="checkbox"/>
Correctness	The raw data and the monthly data summary protocol online monitored by grid operator MAVIR were checked by the audit team and the total amounts of produced electricity were recalculated. The generated electricity sold to the grid was in conformity with the checked data.	<input checked="" type="checkbox"/>

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7 Compilation and Resolutions of CARs, CRs and FARs

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
Clarification Requests by audit team		
Clarification Request CR#1 (=CR#1) : (1.1) Technical details on the refurbishment works have to be provided.	Please find a presentation in which technical data of the refurbishment works and parameters are available.	☑ The management submitted a short video movie describing the modification concept.
Clarification Request CR#4 (= CR#2) : (1.1) The certificate of acceptance has to be provided.	Attached the certificate of acceptance and the license of power connection from the start of operation of the block.	☑ See Annex 2, IRL
Clarification Request CR#3 : (1.2) The “Declaration on the Exclusion of Double Counting” have to be submitted.	Attached, including the authorization to Mészárosné Bársony Rita to sign on behalf of Mr. Péterfy Attila, managing director of Pannongreen, as he is not available for weeks.	☑
Clarification Request CR#4 : (1.3) Documentation on the implemented operational procedures for data management by the IT department (acquisition, safety) has to be provided.	Attached the document from the IT department, a kind of manual on data management and data safety.	☑ The operational procedure (OP) on data management and safety defined by IT has been provided. See FAR#1
Clarification Request CR#5 : (2.1) Monthly (12x in 2008) manual records on MAIN and AUXILIARY meter at 3KV (symbol : H), which monitors the overall internal electric-	Please find a scanned pdf of the 12 months including the main and aux meter data of the 3KV (symbol:H) measuring the internal consumption. Manual records.	☑

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Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
ity consumption in various units have to be submitted. Main Meter : Landis : 651 53 390 (A-K code: 0SP01E013) Aux. Meter : Landis : 651 53 495 (A-K code: not listed / missing)		
<p>Clarification Request CR#6 : (2.1) All monthly (12x in 2008) digital records on MAIN and AUXILIARY meters simultaneously transferred via MODEM to the PC have to be submitted.</p> <p>a. Meters at the generator 10kV Landis 651 53 390 (main) (A-K code : 6SP01E011) Landis 651 53 491 (auxiliary) (A-K code : 6SP01E021)</p> <p>b. Meters at the 120 KV (E) Actaris 35006716 (main) (A-K code: 6SP01E901) Actaris 35006717 (auxiliary) (A-K code : not listed/missing)</p> <p>c. Meters at 3kV (H) Landis : 651 53 390 (main) (A-K code: 0SP01E013)</p>	Please find the file contains the quarterly data of 2008 reached through the modem. Digital records. It contains the main and the aux meters too, named A,B and C and value 7,2 and 8.	<input checked="" type="checkbox"/>

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Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
Landis : 651 53 495 (aux.) (A-K code: not listed/missing)		
Clarification Request CR#7 : (2.1) The missing invoice of the month May 2008 have to be submitted.	Please find enclosed the 2008 May invoice.	☑
Clarification Request CR#8 : (2.4) Please clarify the issue of actual values of emission factors and efficiency factor (33.7% for fossil fuelled plants). It has to be proved by the PP that the power grid emission factors of Hungary published as Baseline Carbon Emission Factor of Hungarian Energy Offices (HEO) have been calculated according to the rules of the UNFCCC and are more recent and conservative Further, please check if this possible adjustment may affect the Monitoring Plan (MP), in this case a revised MP should be submitted. The submitted ER calculation table should be reviewed accordingly.	Internet file. It shows the correspondence between Pannongreen and HEO (Energy Office) in order to get the up-to-date data available for the calculation of emission reduction. 2007 values are used, considering the values of 2008 are still in progress and will be available officially only in Autumn this year.	☑
Clarification Request#9 : (2.4) The manual records of the meters at the generator are multiplied with a factor = 1.05. This operation has to be explained. a. Meters at the generator 10kV	Please find attached the file from the electric department of our plant in which there is the explanation of the use of this 1,05 multiplier. The text has been translated into English. In the case of high voltages and currents (f.e.:	☑

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Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
Landis 651 53 390 (main) (A-K code : 6SP01E011) Landis 651 53 491 (auxiliary) (A-K code : 6SP01E021)	generator connection point where the voltage is 10.500 V, the current is 5000 A), that cannot be done directly, only through so-called measuring transformers, voltage transformers for measuring voltage and current transformers for measuring current.	
<p>Clarification Request CR#10 : (2.4) The manual records of the fuel oil meters differ considerably from the PC records. Please explain this inconsistency.</p>	Please find attached the explanation from the calorific department. The text has been translated into English.	<input checked="" type="checkbox"/>
<p>Clarification Request CR#11 : (4.5) Evidence on the calibration and operation of weight balance for wood chips has to be provided.</p>	Attached the scanned document of calibration check of weight balance for the woodchips.	<input checked="" type="checkbox"/>
<p>Clarification Request CR#12 : (4.5) Evidence on the calibration of the auxiliary meters (certificate by OVIT) has to be provided</p> <p>a. Meter at the generator 10kV Landis 651 53 491 (auxiliary) (A-K code : 6SP01E021)</p> <p>b. Meter at the 120 KV (E) Actaris 35006717 (auxiliary) (A-K code : not listed/missing)</p> <p>c. Meter at 3kV (H) Landis : 651 53 495 (aux.)</p>	Please find attached the copies of the documentation. Arrows show the requested meters, and it was done by the OVIT. The 3 KV meter is not listed here because the other two determines this.	<input checked="" type="checkbox"/> The table in Appendix IV in the ER Report 2008 has been update accordingly.

Verification Protocol

Project Title: 2nd Verification, Pecs Gas and Biomass Co generation Project, Hungary

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Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
(A-K code: not listed/missing)		
<p>Clarification Request CR#13 : (4.5)</p> <p>Please check the meter ID numbers on consistency. Important is the ID number indicated on the metering device and in OVIT certificates. These ID numbers have to be added (e.g.in brackets) to the, A-K codes.</p>	<p>See attached the updated table of meters. New numbers and codes are included in order to recognize and identify the meters easier. The table became a bit more detailed as we would use this for other purposes too.</p>	<p style="text-align: center;">☑</p> <p style="text-align: center;">See remarks in CR#12</p>
<p>Clarification Request#14 : (5)</p> <p>Please submit evidence on the operation of the electro-filter at both chimneys and environmental audits.</p>	<p>Evidence of operation and the results of the environmental check from 2008 for the electro-filter is attached. The electrofilter is right after the boiler, independently from the chimneys.</p>	<p style="text-align: center;">☑</p>
Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
<p><u>Forward Action Request #1 (link to CR#4):</u></p> <p>The QM / QC operational procedures implemented within the project boundaries should documented explicitly and better integrated in to the existing QM (ISO 9001) and Environmental Management(ISO 14001) systems. An English summary of the operational procedures has to be provided.</p>	<p>For this FAR, the QM system of PANNONGREEN will be revised</p>	<p>This issue must be handled at the next verification period.</p>

**Second Periodic Verification of the JI Project:
“Pecs Gas and Biomass Cogeneration Project” in Hungary**



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Annex 2: Information Reference List

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author / Editor / Issuer	Additional Information (Relevance in JI Context)
1		UNFCCC homepage http://www.unfccc.int including the Joint Implementation section http://ji.unfccc.int		
2	02/09/2004	Project Design Document of JI project "Pannonpower Gas and Biomass Cogeneration Project"	WB	
3	26/08/2003	Monitoring plan of JI project "Pannonpower Gas and Biomass Cogeneration Project"	PSE	
4	26/08/2003	Determination Report of JI project "Pécs Gas and Biomass Cogeneration Project", Report No. PNGRE3/EK/TF	KPMG	
5	14/05/2008	VCS Verification / Certification Report of "JI project of Pannongreen Ltd in Pecs, Hungary", Report No: 36001275, Revision No. 01	DNV	The emission reduction has been verified for the period 1 January – 31 December 2007.
6	10/03/2009	Participant list of on-site interviews	TÜV SÜD	
7	10/03/2009	<p>On-site interviews conducted in Pécs, Hungary at Pannonpower Rt. by auditing team of TÜV SÜD</p> <p>Verification Team:</p> <p>Dr Nuri Mol TÜV SÜD Türkiye, GHG auditor Mr Constantin Zaharia TÜV SÜD's external GHG auditor Mr Andrey Atyakshev TÜV SÜD Russland GmbH, GHG auditor</p> <p>Interviewed persons at Pannonpower Rt., Hungary:</p> <p>Mr. Istvan Erdos PannonTrading Ltd., Commercial Manager Mr. Romuald Szawer PannonHöreömmü Inc., Heat Department Mr. Karoly Meszaros PannonHöreömmü Inc., Electricity Department Mr. Tibor Skutnik PannonHöreömmü Inc., Technical Operation Department</p>	TÜV SÜD	

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author / Editor / Issuer	Additional Information (Relevance in JI Context)
		Mr. Peter Gallai Mrs Eva Banoine Mr. Kari Haemekoski Abbreviations: WB World Bank KPMG KPMG Certification BV PSE Power System Engineering Inc. Pannongreen Pannongreen Ltd. Pannonpower Pannonpower Rt. PannonHöreömü PannonHöreömü Inc. OVIT National Testing Laboratory Organization DNV Det Norske Veritas PP Project Participants VCS Voluntary Carbon Standard Rt. Abbreviation translated from Hungarian as stock holding company Kft. Abbreviation translated from Hungarian as limited Ltd. Limited Inc. Incorporated TÜV SÜD TÜV SÜD Industrie Service GmbH		
8	2007	Hungarian Government Decree 323/2007. (XII. 11.) Korm. on the implementation of Act LX of 2007	Hungarian Government	
9	2007	Act LX of 2007 on the implementation framework of the UN Framework Convention on Climate Change and the Kyoto Protocol	Hungarian Government	
10	2008	Emission Reduction Report of Pannongreen Ltd., version V.1	Pannongreen	Emission reduction in 2008 (1 st January – 31 st December)
11	30/01/2009	Emission Reduction calculations of Pannongreen Ltd.	Pannongreen	
12	22/04/2004	Calibration certificate for the main electricity meter for sold electricity. Type	National Calibration	Valid until 31 st December

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author / Editor / Issuer	Additional Information (Relevance in JI Context)
		SL761B071, No. 35006716.	Office	2014
13	22/04/2004	Calibration certificate for the auxiliary electricity meter for sold electricity. Type SL761B071, No. 35006717.	National Calibration Office	Valid until 31 st December 2014
14	07/10/2004	Calibration certificate for the main electricity meter for generator. Type 2MA405C.2cr14e, No. 65153490.	National Calibration Office	Valid until 31 st December 2014
15	06/10/2004	Calibration certificate for the auxiliary electricity meter for generator. Type 2MA405C.2cr14e, No. 65153491.	National Calibration Office	Valid until 31 st December 2014
16	07/10/2004	Calibration certificate for the main electricity meter for internal consumption. Type 2MA405C.2cr14e, No. 65153390.	National Calibration Office	Valid until 31 st December 2014
17	06/10/2004	Calibration certificate for the auxiliary electricity meter for internal consumption. Type 2MA405C.2cr14e, No. 65153495.	National Calibration Office	Valid until 31 st December 2014
18	2008	Invoices for electricity supplied to the grid (MAVIR)	Pannongreen	Invoices issued in 2008
18b	2008	Monthly report concerning electricity supplied to the grid by Block VI. (E)		
19	12/2008	Monthly report concerning electricity generated by Block VI. (T)	Pannongreen	Manual records 2008
20	10/03/2009	Yearly fuel oil consumption by Pannonpower in 2008.	Pannonpower	
21	10/03/2009	List of standards used by Pannonpower's laboratory for testing of wood chips quality.	Pannonpower	
22	01/01/2009	Daily test report of wood chips quality for 31 st December 2008.	Pannonpower	
23	26/05/2004	Diagram of connection to the grid for Block VI.	Pannongreen	
24	10/03/2009	Procedure for counting of generated electricity. Ref. No. MU 823-02.	Pannongreen	
25	10/03/2009	Guideline for implementation of the monitoring system of emission reduction project.	Pannongreen	
26	2008	Daily manual records of gas and oil fuel consumption in 2008 of Block VI.	Pannongreen	
27	10/03/2009	Print screen of gas and oil fuel consumption parameters for Block VI.	Pannongreen	
28	10/03/2009	List of control equipment used for monitoring.	Pannongreen	
29	10/03/2009	Calibration certificates of the control equipment.	National Calibration Office	
30	02/06/2004	The certificate of acceptance.	Pannongreen	
31	15/06/2004	The license of power connection from the start of operation of the block.	Pannongreen	

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author / Editor / Issuer	Additional Information (Relevance in JI Context)
32	13/03/2009	Declaration on the Exclusion of Double Counting	Pannongreen	
33	26/01/2005	The manual on data management and data safety from IT department.	PannonHöreömü	
34	2008	Manual records of internal electricity consumption (the main and aux meters) (H)	Pannongreen	Monthly records 2008
35	20/03/2009	The quarterly data of 2008 reached through the modem.	Pannongreen	
36	05/06/2008	Invoice for electricity supplied to the grid in May 2008.	Pannongreen	
37	01/2009	The correspondence between Pannongreen and HEO (Energy Office).	Pannongreen and Energy Office	
38	13/03/2009	Explanation from the electric department concerning measurement of electric energy (multiplier : 1.05)	PannonHöreömü	
39	18/03/2009	Explanation from the caloric department concerning differences between the manual records of the fuel oil meters form the PC records.	PannonHöreömü	
40	02/04/2008	Calibration check of weight balance for the woodchips.	National Calibration Office	
41	26/06/2008	Calibration of the auxiliary meters.	OVIT	
42	20/03/2009	Updated list of meters.	Pannongreen	
43	20/03/2009	Evidence of operation and the results of the environmental check from 2008 for the electrofilter.	Pannongreen	
44	27/04/2009	Updated Emission Reduction Report of Pannongreen Ltd., version V.3	Pannongreen	
45	26/08/2003	Monitoring Plan (Final Report)	Unfccc web site	