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Verification Report

Danish Energy Agency

First Periodic Verification of the JI Track 1 Project

"Boiler efficiency improvement at
Holboca CET Iasi II, Romania"

Monitoring period: 01-01-2008 to 31-12-2008

Report No. 600500085

09 June 2010

TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstrasse 199 - 80686 Munich - GERMANY

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Report No.	Date of first issue	Version:	Date of this revision	No. of pages
600500085	09-09-2009	3	09-06-2010	17
Subject:			First Periodic Verification	
Executing Operational Unit:				
TÜV SÜD Industrie Service GmbH, Carbon Management Service Westendstrasse 199 - 80686 Munich, Federal Republic of Germany				
Project Participants (client and project owner):				
Client: Ministry of Climate and Energy Danish Energy Agency, Amaliegade 44 DK-1256; Copenhagen K; Denmark Project Owner: S.C. C.E.T. Iasi S.A., Calea Chişinăului nr.25 700265 - Iaşi, ROMANIA				
Registration number / Project Title			Project: "Boiler efficiency improvement at Holboca CET Iasi II, Romania"	
Scope/Technical Area (TA)			1/1.2	
Monitoring period:			01-01-2008 to 31-12-2008	
First Monitoring Report (version/date)			Version 01 / 23-01-2009	
Final Monitoring Report (version/date)			Version 02 / 04-05-2009	

Summary:

TÜV SÜD Industrie Service GmbH has performed the first periodic verification of the: "Boiler efficiency improvement at Holboca CET Iasi II, Romania" as a JI Track 1 project. A verification for the pre-JI period of 2006 and 2007 was already conducted by TÜV SÜD Industrie Service GmbH (report no: 1100242 from 04.03.2009) which covered the initial verification as well.

The project consists of 2 high pressure boilers with a capacity of 420 t/h each and turbo-generators with a capacity of 50 MW each. The combined heat and power plant is fuelled by hard coal and for start-up and transient periods, with fuel oil and produces heat and hot water that supply the Iasi town - Primary Network of District Heating System.

The management of SC C.E.T. IASI SA Centrala de Termoficare is responsible for the data acquisition, collection and for the preparation of the GHG emissions data as well the reported GHG emission reductions.

A document review, followed by a site visit was conducted to verify the information submitted by the project participant regarding the present verification period. Based on the assessment carried out, the verifier confirms:

- that the project has been implemented and operated in accordance with the description given in the registered PDD (version 4, 24-09-2008)
  http://ji.unfccc.int/JIITLProject/DB/P0TQKX18ZWNH3BO84RICO3WBQX5HDI/details
- that the project is not completely implemented as described in registered PDD. The Ash removal system is not installed yet. The main components of the system were installed. It can be accepted due to the fact the ash removal system has no influence on efficiency and on emission reduction. However FAR was issued requesting final installation of the ash removal system.
- that the monitoring plan complies with the applied methodology (described in PDD) and the monitoring has been carried out exactly following the monitoring plan.

The equipment which is essential for generating emission reductions are installed exactly following the registered PDD, they run reliably and the meters are calibrated appropriately. The operation of the equipment does not deviate from the description in the registered PDD. The project is generating emission reductions as a JI Track 1 project, which are in a reasonable range compared with the figures as given in the registered PDD.

The verifier can confirm that the GHG emission reductions are calculated without material misstatements. Our opinion refers to the project's GHG emissions and resulting GHG emission reductions reported, both determined due to the valid and registered project's baseline, its monitoring plan and its associated documents.

Based on the information we have seen and evaluated we confirm that the implementation of the project resulted in 25,253 t CO_{2e} of emission reductions during the JI Track 1 verification period 01-01-2008 to 31-12-2008.

TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstraße 199
80686 München
Tel.: 089 5791-2246
Fax: 089 5791-2756

Verification team: • ATL Thomas Kleiser (Assessment Team Leader) • Auditor Madis Maddison • Expert Cristian Delamarian • Trainee Laura Vaida • Trainee Georgios Agrafiotis (Project manager)	Internal Quality Control: Rachel Zhang Deputy Head of Certification Body

Abbreviations

AAU	Assigned Amount Unit
ACM	Approved Consolidated Methodology
AIE	Accredited Independent Entity (also verifier)
CO_{2e}	Carbon dioxide equivalent
CR / CL	Clarification Request
CAR	Corrective Action Request
ER	Emissions reduction
ERU	Emission Reduction Unit
EPA	Environmental Protection Agency
FAR	Forward Action Request
GHG	Greenhouse Gas
IRL	Information Reference List
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
PP	Project Participant
PVC	Periodical Verification Checklist
SD	Sustainable Development
TÜV SÜD	TÜV SÜD Industrie Service GmbH, Carbon Management Service
UNFCCC	UN Framework Convention on Climate Change
VER	Verified Emission Reductions
VVM	Validation and Verification Manual
VP	Verification Protocol

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Main Documents (referred to in this report)

Methodology (name / version)	N/A	
Final PDD:	Version 4, 24-09-2008	
Revised Monitoring Plan:	N/A	
	Version	Date
Published Monitoring Report	01	23-01-2009
Revised Monitoring Report	02	04-05-2009
Project documentation link:	http://ji.unfccc.int/JIITLProject/DB/P0TQKX18ZWNH3BO8 4RICO3WBQX5HDI/details	

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1 INTRODUCTION

1.1 Objective

Danish Energy Agency has commissioned an independent verification by TÜV SÜD Industrie Service GmbH (TÜV SÜD) of its registered JI Track 1 project: "Boiler efficiency improvement at Holboca CET Iasi II Iasi, Romania".
The objective of the verification work is to comply with the JI rules, the national requirements and the requirements of paragraph 62 of the CDM Modalities and Procedures and to Decision 9 (JI Guidelines) issued in COP/MOP 1 Montreal 2005. According to this assessment TÜV SÜD shall:

- ensure that the project activity has been implemented and operated as per the registered PDD "Boiler efficiency improvement at Holboca CET Iasi II, Romania" Version 04. 24-09-2008, and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place,
- ensure that the published MR and other supporting documents provided are complete and verifiable and in accordance with applicable JI requirements,
- ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology,

1.2 Scope

The verification scope is defined as an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Accredited Independent Entity. The verification is based on the submitted monitoring report, the validated project design documents including its monitoring plan and determination report, initial and first periodic verification report, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the JISC and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, JI rules, national requirements, the CDM Modalities and Procedures and related rules and guidance.
TÜV SÜD has applied, based on the requirements in the VVM, a rule-based approach. The CDM VVM is used due to the fact that a relevant manual for JI projects did not exist at the time when the verification was started. Nevertheless all aspects as addressed and indicated in the recently issued DVM are covered in this report and protocol. . The principles of accuracy and completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.
The verification considers both quantitative and qualitative information on emission reductions.
The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

1.3 GHG Project Description

Project activity:	"Boiler efficiency improvement at Holboca CET II Iasi, Romania"
UNFCCC registration number:	RO1000132

Project Participants:	SC C.E.T. IASI SA Centrala de Termoficare- project owner represented by the General Director COSTICA NECULAI Danish Energy Agency (former Danish Environmental Protection Agency) represented by MIHAI BRASOVEANU
Location of the project:	47° 08' 50", 019 North, 27° 43' 03",734 East
Date of registration:	The project is still not officially registered to the national registry of Romania due to non accreditation of AIE that conducted the determination.
Starting date of the crediting period:	01-10-2006. Until 31-12-2007 AAUs were verified by TÜV SÜD (Pre-JI Verification Report no: 1100242 from 04.03.2009) and transferred. From 01-01-2008 onwards begins the official JI crediting period of ERUs.

Holboca CET II Iasi is a combined heat and power plant owned by SC CET Iasi SA, the municipal owned energy supply company. The power plant is equipped with two high pressure boilers with a capacity of 420 t/h each and turbo-generators with a capacity of 50 MW each. The combined heat and power plant is fuelled by hard coal and for start-up and transient periods, with fuel oil and produces heat and hot water that supply the Iasi town - Primary Network of District Heating System. It is operated on full capacity approximately 6 month per year, during the heating season, which usually lies between the months November – April Rest of the year it is operated in smaller extent for production of hot water.

The JI Track 1 Project activity involves the utilization of fire - side cleaning technology under the trademark Therma Chem. Therma - Chem represents an on-load fire side treatment for large industrial boilers and process heaters in order to eliminate and prevent the deposition of slag and ash deposits on various heat exchange surfaces along the flue gases route, inside boilers radiant section, super-heaters, economisers, air pre-heaters, flue gases ducts, etc.

Consequently the effects of the Therma - Chem technology are the following:

- It increases the boiler efficiency and capacity, thus decreasing fuel consumption and hence the associated greenhouse gas emissions and the quantity of ash and other materials released
- It maintains the normal boiler operating parameters over prolonged operating periods, eliminating the shutdowns for boiler cleaning and condition restoration,
- Through better efficiency, it will help the power plant to reduce the cost of compliance with emissions regulations, taking into account the reduction of SOx and NOx emissions as well as other particulates due to reduced fuel consumption per ton of steam produced. The implemented measures exceed the regulations.

2 METHODOLOGY

2.1 Verification Process

The verification process is based on the approach depicted in the CDM Validation and Verification Manual and in the recently published Determination and Verification Manual for JI.

Standard auditing techniques have been adopted. The verification team performs first a desk review, followed by an on-site visit which results in a protocol including all the findings. The next step is to close out the findings through direct communication with the PPs and finally prepare the verification report. This verification report and other supporting documents then undergo an internal quality control by the CB "climate and energy" before submission to the Danish Environment Agency (DEA).

2.2 Verification Team

The appointment of the team takes into account the coverage of the technical area(s), sectoral scope(s) and relevant host country experience for verifying the ER achieved by the project activity in the relevant monitoring period for this verification.

The verification team was consisting of the following members:

Name	Qualification	Coverage of scope	Coverage of technical area	Host country experience
Thomas Kleiser	**ATL**	☑	☑	
Madis Maddison	GHG-A	☑	☑	
Cristian Delamarian	E	☑		☑
Laura Vaida	GHG-T	☑		☑
Georgios Agrafiotis	GHG-T	☑		

Thomas Kleiser is a lead auditor for CDM and JI projects at TÜV SÜD Industrie Service GmbH and head of CDM/JI division within TÜV SÜD. In this position he is responsible for the implementation of validation and certification processes for GHG mitigation projects. He has participated in more than 90 CDM and JI project assessments.

Madis Maddison is specialized in auditing of greenhouse gas emission reduction projects. This experience he has gained (in co-operation with TÜV Süd Industrie Service) in determination and verification of Joint Implementation (JI) projects in Estonia, Lithuania, Poland, Romania and Bulgaria. He has received training in the JI determination as well as CDM validation and verification process and applied successfully as GHG Auditor.

Cristian Delamarian – is a GHG- Expert for the sectoral scope 1, with a background as a Technical Expert in boilers and pressure vessels according to German and American codes, and ISO 9000 Auditor. He is located in TUV SUD Romania since 2000 with a period of 2.5 years between 2005 and 2007 of activity with TUV SUD Philippines. He received training in the JI determination as well as CDM validation process and applied successfully as GHG Auditor for the scopes energy industries.

Laura Vaida - is engineer with B.Sc. in Engineering and Management of Production Systems. She has work experience in the field of mechanical engineering and quality assurance. As GHG trainee she has been appointed scopes 4 and 9 as per UNFCCC definition.

Georgios Agrafiotis is environmental engineer. He has work experience in the field of industrial environmental technology and protection and also in technical environmental projects. As GHG trainee he has been appointed scopes 1,5 and 13 as per UNFCCC definition.

2.3 Review of Documents

The aim of the assessment in the desk review was to verify the completeness of the data and the information presented in the MR. The compliance check of the MR with respect to the monitoring plan depicted in the registered PDD and the applied methodology was carried out. Particular attention to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures was paid. The evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions was also carried out. A complete list of all documents reviewed is available in Annex 2 of this report.

2.4 On-site Assessment and follow-up Interviews

During 25-03-2009, TÜV SÜD performed a physical site inspection and on-site interviews with project stakeholders to:

- confirm the implementation and operation of the project,
- review the data flow for generating, aggregating and reporting the monitoring parameters,
- confirm the correct implementation of procedures for operations and data collection,
- cross-check the information provided in the MR documentation with other sources (raw data),
- check the monitoring equipments against the requirements of the PDD, including calibrations, maintenance, etc.,
- review the calculations and assumptions used to obtained the GHG data and ER,
- identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

A list of the persons interviewed during this verification activity is included in Annex 2.

2.5 Quality of Evidence to Determine Emission Reductions

Among many others the following relevant and reliable evidences have been used by the audit team during the verification process:

1. Monitoring report for 2008
2. Fuel invoices
3. Electricity and heat invoices
4. Electricity and heat production
5. Training evidences
6. Personnel licenses
7. Calibration and Checking Certificates
8. Failure Register
9. Quality assurance procedures

Sufficient evidence covering the full verification period in the required frequency is available to validate the figures stated in the final MR. The source of the evidences will be discussed in chapter 3 of this report. Specific cross-checks have been done in cases that further sources were available. All figures in the monitoring report were cross-checked by the audit team against the raw data. The data collection system meets the requirements of the monitoring plan as per the methodology.

2.6 Resolution of Clarification and Corrective and Forward Action Requests

The objective of this phase of the verification process was to resolve any outstanding issues which needed to be clarified for TÜV SÜD's positive conclusion on the GHG emission reduction calculation. The findings raised as Forward Action Requests (FARs) (if any) indicated in previous reports (validation/verification) were clarified during communications between the PP and TÜV SÜD.

To guarantee the transparency of the verification process, the concerns raised, based on the desk review and subsequent on-site audit assessment and follow up interviews, together with the responses given are documented in Annex 1 (verification protocol).

A Corrective Action Request is raised where TÜV SÜD identifies:

- non-conformities in monitoring and/or reporting with the monitoring plan;
- that the evidence provided is not sufficient to prove conformity;
- mistakes in assumptions, data or calculations that impair the ER;
- FARs stated during validation that are not solved until the on-site visit.

A Clarification Request is raised where TÜV SÜD does not have enough information or the information is not clear in order to confirm a statement or data.

A Forward Action Request is raised where TÜV SÜD identifies that monitoring and/or reporting required special attention or adjustments for the next verification period.

Information or clarifications provided as response to a CAR, CL or FAR could also lead to a new CAR.

2.7 Internal Quality Control

As an ultimate step of verification the final documentation including the verification report and the protocol have to undergo an internal quality control by the Certification Body (CB) "climate and energy", i.e. each report has to be finally approved either by the Head of the CB or the Deputy. In case one of these two persons is part of the assessment team the approval can only be given by the other one.

3 VERIFICATION RESULTS

In the following sections the results of the verification are stated. The verification results relate to the project performance as documented and described in the final Monitoring Report (04-05-2009, Version 2). The verification findings for each verification subject are presented below:

3.1 FARs from Previous Verification

The verification team confirms that all FARs (FARs ## 1, 2, 4 and 5) presented in the initial and first verification report has been solved by the PPs during the verification Audit.

3.2 Project Implementation in accordance with the registered Project Design Document

The JI project as determined is not completely implemented yet. The part that is not implemented (ash removal system) has no influence on efficiency and on emission reductions. The 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 does generate GHG emission reductions.

No data and/or variables presented in the MR differ significantly from the stated in the registered PDD, which could cause an increment of the ER in this period or in future periods in relation to the estimates in the registered PDD. The annual ERs are in compliance with the figures as presented in the determined and approved PDD.

3.3 Compliance of the Monitoring with the Monitoring Plan

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PDD. All parameters were monitored and determined as per the Monitoring Plan.
The verification of the parameters required by the monitoring plan are provided as follows:

Data / Parameter:	Quantity of coal consumed in boiler 1
Data unit:	Tonnes
Description:	Total quantity of coal consumed in boiler 1
Source of data used:	Monitoring is based on meters (coal volume and belt velocity) readings. The data is read and documented hourly in respective log book according to the procedure JI 005. The district heating operator reads the coal meters at every 8 hours (hours 8, 16 and 24) and records the readings of the coal meters in the form "Reading of Damatic coal consumption meters in the boilers" form code F JI 005 – 02. All meters are fully functional and properly calibrated.
Means of verification/Comments:	The quantity of coal consumed in boiler 1 was verified by comparing the values from the "Registration sheet for the main operational parameters of boiler no.1 and boiler no 2 running on hard coal" (IRL 24) with the Monitoring Report 2008. Section II. Version 2.xls (IRL 55)
Cross-check	

Data / Parameter:	Quantity of coal consumed in boiler 2
Data unit:	Tonnes
Description:	Total quantity of coal consumed in boiler 2
Source of data used:	Monitoring is based on meters (coal volume and belt velocity) readings.

	The data is read and documented hourly in respective log book according to the procedure JI 005. The district heating operator reads the coal meters at every 8 hours (hours 8, 16 and 24) and records the readings of the coal meters in the form "Reading of Damatic coal consumption meters in the boilers" form code F JI 005 – 02. All meters are fully functional and properly calibrated.
Means of verification/Comments:	The quantity of coal consumed in boiler 1 was verified by comparing the values from the "Registration sheet for the main operational parameters of boiler no.1 and boiler no 2 running on hard coal" (IRL 24) with the Monitoring Report 2008. Section II. Version 2.xls (IRL 55)
Cross-check	

Data / Parameter:	Quantity of fuel oil consumed in boiler 1
Data unit:	Tonnes
Description:	Total quantity of fuel oil consumed in boiler 1
Source of data used:	Monitoring is based on pressure meter readings (serial number 4707, 2755-83, 2506, 2434-83). Oil quantity is established based on metered pressure drop in the supply pipe. The data is read and documented hourly in respective log book according to the procedure JI 005, JI 008. All meters are fully functional and properly calibrated.
Means of verification/Comments:	The quantity of fuel oil consumed in boiler 1 was verified by comparing the values from the "Registration sheet for the main operational parameters of boiler no.1 and boiler no 2 running on hard coal" (IRL 24) with the Monitoring Report 2008. Section II. Version 2.xls (IRL 55)
Cross-check	

Data / Parameter:	Quantity of fuel oil consumed in boiler 2
Data unit:	Tonnes
Description:	Total quantity of fuel oil consumed in boiler 2
Source of data used:	Monitoring is based on pressure meter readings (serial number 2317; 3680-83;135; 3681-83). Oil quantity is established based on metered pressure drop in the supply pipe. The data is read and documented hourly in respective log book according to the procedure JI 005,JI 008 . All meters are fully functional and properly calibrated.
Means of verification/Comments:	The quantity of fuel oil consumed in boiler 2 was verified by comparing the values from the "Registration sheet for the main operational parameters of boiler no.1 and boiler no 2 running on hard coal" (IRL 24) with the Monitoring Report 2008. Section II. Version 2.xls (IRL 55)
Cross-check	

Data / Parameter:	Quantity of steam produced in boiler 1
Data unit:	Tonnes
Description:	Total quantity of steam produced in boiler 1
Source of data used:	Monitoring is based on meter readings. The amount of steam produced is established based on metered pressure difference. The data is read and documented hourly in respective log book according to the procedure JI 005; JI 007. All meters are fully functional and properly calibrated.
Means of verification/Comments:	The quantity of steam produced in boiler 1 was verified by comparing the values from the "Registration sheet for the main operational parameters of

	boiler no.1 and boiler no 2 running on hard coal" (IRL 24) with the Monitoring Report 2008. Section II. Version 2.xls (IRL 55)
Cross-check	

Data / Parameter:	Quantity of steam produced in boiler 2
Data unit:	Tonnes
Description:	Total quantity of steam produced in boiler 2
Source of data used:	Monitoring is based on meter readings. The amount of steam produced is established based on metered pressure difference. The data is read and documented hourly in respective log book according to the procedure JI 005; JI 007. All meters are fully functional and properly calibrated.
Means of verification/Comments:	The quantity of steam produced in boiler 2 was verified by comparing the values from the "Registration sheet for the main operational parameters of boiler no.1 and boiler no 2 running on hard coal" (IRL 24) with the Monitoring Report 2008. Section II. Version 2.xls (IRL 55)
Cross-check	

Data / Parameter:	Calorific value of coal
Data unit:	Kcal/kg
Description:	Calorific value of coal used in the boilers
Source of data used:	Monitoring is based on analyzing the coal used in the boilers. The analyzed sample is documented daily in a report "Chemical analysis report for hard coal" (IRL 38 ÷IRL 44). All meters used in analyzing are fully functional and properly calibrated. The personnel are properly trained.
Means of verification/Comments:	The calorific value of coal was verified by comparing the values from the "Chemical analysis report for hard coal" with the values from "Registration sheet for the main operational parameters of boiler no.1 and boiler no 2 running on hard coal" (IRL 24) and with the values with the values from the Monitoring Report 2008. Section II. Version 2.xls (IRL 55)
Cross-check	

Data / Parameter:	Calorific value of fuel oil
Data unit:	Kcal/kg
Description:	Calorific value of fuel oil used in the boilers
Source of data used:	Monitoring is based on analyzing the fuel oil used in the boilers. The analyzed sample is documented weekly in a report "Analysis certificate for fuel oil (IRL 45 ÷IRL 46). All meters used in analyzing are fully functional and properly calibrated. The personnel are properly trained.
Means of verification/Comments:	The calorific value of coal was verified by comparing the values from the "Analysis certificate for fuel oil" with the values from "Registration sheet for the main operational parameters of boiler no.1 and boiler no 2 running on hard coal" (IRL 24) and with the values with the values from the Monitoring Report 2008. Section II. Version 2.xls (IRL 55)
Cross-check	

3.4 Assessment of Data and Calculation of Greenhouse Gas Emission Reductions

All data has been available and all the parameters have been monitored in accordance with the registered monitoring plan The parameters and units mentioned in the PDD fits the requirements for ER calculation. The calculation method is correct .

The reported data has been cross checked against other sources when available as explained above in chapter.3.2.

The verifier confirms that the methods and formulae used to calculate the baseline, project and leakage emissions are appropriate. The same have been done in accordance with the methods and formulae described in the registered monitoring plan and applicable methodology.

The verifier confirms that all the emission factors and default values (ex-ante values from PDD) have been correctly justified.

4 SUMMARY OF FINDINGS

The verifier can confirm that the published MR and related documents are complete and verifiable in accordance with the JI requirements. All the findings raised by the verification team, the responses by the PPs and the conclusion from the team are presented in Annex 1.

All together 4 Corrective Action Requests and 11 Clarification Requests were issued.

All the CAR's were about correction in the Monitoring Report and Procedures and were resolved and closed.

All the CR's were about provision of missing/additional information, data or documents and were resolved and closed.

CAR#1, means of verification
Protection measures in the gathering data and at the calculation tool is necessary to avoid unintentional errors or data losses
The formulae cells in gathering data and the calculation tool are protected according to the updated procedure "Operational Procedure JI 011 – Electronic Data Integrity and Security for JI Project "Boiler efficiency improvement at Holboca CET II Iasi" (IRL 14),
CAR#1, changes in the MR or related documents
The relevant cells were protected. No other change was required.

CAR#2, means of verification
Cells with calculation formulas shall be protected to avoid unintentional errors.
The formulae cells in the calculation tool are protected in the calculation tool and cannot be changed.
CAR#2, changes in the MR or related documents
The document "Monitoring Report 2008. Section II. Version 2.xls" (IRL 55) is secured and was provided. The relevant cells were protected in the calculation tool. No other change was required.

CAR#3, means of verification
Correct the formulae of baseline emissions from boiler I from "INPUT DATA BOILER I" calculation sheet in the excel document "090201_IASI Monitoring Report 2008" (writing mistake)
The formulae of baseline emissions from boiler I from "INPUT DATA BOILER I" calculation sheet in the excel document "090201_IASI Monitoring Report 2008" was corrected.
CAR#3, changes in the MR or related documents
The formula was corrected. The corrected "Monitoring Report 2008. Section II. Version 2.xls" (IRL 55) was provided

CAR#4, means of verification
The monitoring report has to be revised according to CAR#3
The revising of the MR was done according to **CAR#3.** The corrected "Monitoring Report 2008. Section II. Version 2.xls" (IRL 55) was provided
CAR#4, changes in the MR or related documents
The MR was corrected. No other change was required.

CR#1, means of verification
Please provide information of installing the ash removal system

The information regarding the ash removal system was reviewed (IRL64; IRL 65).
CR#1, changes in the MR or related documents
No change was required in MR or any other document, however FAR#1 was issued (see below).

CR#2, means of verification Provide the new procedures added to the project
The new procedures added to the system "Operational Procedure JI 010 – Settlement of the Main Parameters in Case the Boilers Measurement Devices Afferent to the Project are Out of Order"(IRL 13), and Operational Procedure JI 011 – "Electronic Data Integrity and Security for JI Project, Version 2" (IRL 14) were reviewed.
CR#2, changes in the MR or related documents
No change was required in MR or any other document.

CR#3, means of verification Provide description of this new standard procedure in the revised work instruction JI-006
The Version 2 of the Operational Procedure JI 006 –" Coal Flow Checking and Calibration in the DCS Damatic System" (IRL 9) which presents how the coal supplying system is checked and recalibrated if necessary was reviewed.
CR#3, changes in the MR or related documents
No change was required in MR or any other document.

CR#4, means of verification Provide information of the person responsible for data transfer from manually to calculation tool.
The person responsible for data transfer from manually to calculation tool is presented in the JI – 003 Procedure " Monitoring of the Greenhouses Gases Emission Reductions at CET Iasi II – Version 2" (IRL 6).
CR#4, changes in the MR or related documents
No change was required in MR or any other document.

CR#5, means of verification *Provide the last calibration certificate for the meters referring to fuel oil*
The calibration certificates for the meters referring to fuel (IRL 56; IRL 57; IRL 58; IRL 59; IRL 60; IRL 61; IRL62) were reviewed.
CR#5, changes in the MR or related documents
No change was required in MR or any other document.

CR#6, means of verification Provide information of what is happening in case of an error from the procedure.
The information regarding of what is happening in case of a procedure error was presented.
CR#6, changes in the MR or related documents
No change was required in MR or any other document.

CR#7, means of verification Provide information of the measurement range and the uncertainty level of the calorimetric bomb system - IKA LABORTECHNIK-C 5000
The Calibration Certificates about the measurement range and the uncertainty level of the calorimetric bomb system - IKA LABORTECHNIK-C 5000 (IRL 63) were reviewed.
CR#7, changes in the MR or related documents
No change was required in MR or any other document.

CR#8, means of verification Provide information on the responsible persons/departments for the accounting documents regarding the bought fuel.
The responsible department for the accounting documents regarding the bought fuel was presented.
CR#8, changes in the MR or related documents
No change was required in MR or any other document.

CR#9, means of verification Provide information on the responsible persons/departments for the accounting documents regarding the *electricity and heat sold to the customers*
The responsible department for the accounting documents regarding the electricity and heat sold to the customers is presented.
CR#9, changes in the MR or related documents
No change was required in MR or any other document.

CR#10, means of verification Provide information on the responsible person/department for verification of heat and electricity sold.
The responsible department for verification of heat and electricity sold to the customers is presented.
CR#10, changes in the MR or related documents
No change was required in MR or any other document.

CR#11, means of verification *Provide EPA report.*
The last EPA Report was presented to the audit team.
CR#11, changes in the MR or related documents
No change was required in MR or any other document.

FAR#1, means of verification *The ash removal system shall be installed as it was the part of the Project described in PDD. In case PP will reconsider to install it, the deviation from the Project Design Document will be mentioned*
The issue will be checked during next verification
FAR#1, changes in the MR or related documents
No change was required in MR or any other document.

Industrie Service

VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed the first periodic verification for 2008 of the JI track 1 project: "Boiler efficiency improvement at Holboca CET II Iasi, Romania". The verification is based on the currently valid documentation of the UN Framework Convention on Climate Change (UNFCCC). Previously TÜV SÜD conducted the verification of ERs from 2006 and 2007 and thus there was no need for initial verification for the ERs of 2008.

The management of SC C.E.T. IASI S.A. is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project's Monitoring Plan indicated in the latest version of determined PDD version 4, dated 24-09-2008.

The verifier can confirm that:

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the project is operated as planned and described in the validated and registered project design document;
- that the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- that the monitoring system is in place and generates GHG emission reductions data;
- that the GHG emission reductions are calculated without material misstatements;
- that the monitoring plan in Monitoring Report is as per the registered PDD;
- that the monitoring plan in latest determined PDD is in accordance with the approach taken regarding baseline setting and monitoring (please see Appendix B of the JI Guidelines – Decision 9 COP/MOP).

Our opinion refers to the project's GHG emissions and resulting GHG emission reductions reported both determined due to the valid and registered project's baseline, its monitoring plan and its associated documents.

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

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

Verified emissions in the above reporting period:

Baseline emissions:	259,843	t CO_{2e}
Project emissions:	234,590	t CO_{2e}
Leakage emission:	0	t CO_{2e}
Emission reductions:	25,253	t CO_{2e}

Munich, 09-06-2010

Rachel Zhang
Deputy Head of Certification body "climate and energy"

Munich, 09-06-2010

Thomas Kleiser
Assessment Team Leader

Industrie Service

Annex 1: Verification Protocol

Verification Protocol

Project Title: Boiler efficiency improvement at Holboca CET Iasi II Iasi, Romania

Date of Completion: 2010-06-09

Number of Pages: 59

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Input by audit team in blue colour

Template text in black colour

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1. Project Activity Implementation

1.1. Technology

PDD	Verified Situation	Conclusion
Location (s) *add additional sites if necessary*		
Description / Address:	Holboca, 707250 Iasi, Romania	☑
GSP coordinates:	47° 08' 50",019 North, 27° 43' 03",734 East	☑
Technical Equipment – Main Components *add additional components if necessary*		
Component 1: Description	*Boiler 1*	☑
Component 1: Technical Features	Capacity of 420 t/h	☑
Component 2: Description	*Boiler 2*	☑
Component 2: Technical Features	Capacity 420 t/h	☑
Component 3: Description	Turbo-generator 1	☑
Component 3: Technical Features	Capacity 50 MW	☑
Component 4:	Turbo-generator 2	☑

PDD	Verified Situation	Conclusion
Description		
Component 4: *Technical Features*	Capacity 50 MW	☑
Component 5: *Description*	Therma Chem FS 12 injection system	☑
Component 5: *Technical Features*	Two injection pistols for each boiler and one dosing system for each boiler.	☑
Component 6: *Description*	Ash removal system CR # 1. Please provide information of installing the ash removal system	CR # 1
Component 6: *Technical Features*	Ash removal system is installed partially: only electrostatic precipitation of ash was installed in 2007 (boiler #1) and 2008 (boiler #2). For the rest of the system additional funding is required. The application for EU Structural Fund is under preparation by Rambøll Romania. The ash removal system has no influence on efficiency and on emission reduction	☑ FAR#1
Operation Status during verification *add additional sites if necessary*		
Approvals / Licenses N/A	Licences regarding the functioning of the project issued on the beginning of the project are valid. ISO 14001 Certificate – is monitored/reviewed annually.	☑
Actual Operation Status N/A	Under construction ☐ In operation ☒ Boiler 1, Boiler 2 Out of operation ☐ Reason (when out of operation):	☑

PDD	Verified Situation	Conclusion
Remarks to Special Operational Status During the Verification Period	*The boilers operate one at a time in order to enable cleaning of another boiler at the mean time.*	☑

1.2. Organization

PDD	Verified Situation	Conclusion
Project Participant (s) *add additional participants if necessary*		
Entity / Responsible person:	*SC C.E.T. IASI SA Centrala de Termoficare- project owner represented by the General Director COSTICA NECULAI and* *Danish Energy Agency (former Danish Environmental Protection Agency) represented by MIHAI BRASOVEANU*	☑
JI Project management:	Dana-Luminita Dulan – *Responsible for Environmental Protection,* Project. Manager CET Iasi	☑

1.3. Quality Management System

PDD	Verified Situation	Conclusion
Quality Management Manual:	*There is a Quality Assurance System implemented and certified in CET Iasi Holboca Power Plant. - ISO 14000 Certificate for Environment Management System for electricity production and supply and for thermal energy production* *Two new procedures related to this project were added last year. JI010, JI011.* CR # 2. Provide the new procedures added to the project in the Quality Manual.	CR # 2
Responsibilities:	*General Director COSTICA NECULAI,* *Mrs. Dana-Luminita DULAN – Responsible for Environmental Protection CET IASI II*	☑
Qualification and Training:	*The personnel involved in this project are properly qualified and trained as presented in the attached documents. (IRL 33; IRL 34; IRL 35; IRL 36)*	☑
Implementation of QM-system	*The System is implemented and properly running.*	☑

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
Forward Action Request#1: A procedure should be developed how in cases of meter failure or similar problems in a redundant way the emission reductions can be determined.	The standard procedure JI-010 was developed and presented to the Audit Team	☑
Forward Action Request#2: It has to be justified if a suitable internal cross check measure can be implemented for the determination of quantity of coal.	Some measurements were introduced to cross-check the coal measuring process.	CR # 3. Provide description of this new standard procedure in the revised work instruction JI-006. (IRL 9)
Forward Action Request #4: Test and documentation of the IT system used for GHG monitoring as well as data protection measures have to be demonstrated to the audit team during the next verification audit	The standard procedure JI-011 ”Provision of the data integrity and security in electronic format for JI Project at CET Iasi II” was developed	CR # 2
Clarification Request#5: According to the Monitoring Plan the local EPA should prepare an annual Inspection Report. The Inspection Reports should be provided to the audit team.	The semi-annual reports of local EPA were presented to the Audit Team	☑

2. Data Management System

2.1. Description

Structure of raw data archiving				
Describe all the different data collection systems				
Type	Name	Responsible	Procedures	Comments
Manual *Procedure JI 005*	*Form a* Registration sheet for the main operational parameters of boiler running on hard coal.	*Manager CET IASI II*	Monitoring of the GHG emission reductions generated by the project activity is performed by data collection based on the SCADA system installed at the CET facility in Holboca. The displayed values (fuel consumption and heat production) of the SCADA system are read and documented hourly in respective log book, where also daily data of fuel calorific values is registered. The reports of laboratory analysis of fuel calorific value are filled in a registration sheet of the main operational parameters of the boiler (IRL 24).	All the data collected (coal and oil consumption, fuel calorific values and heat production) is required to calculate emission reductions as described in PDD. The used data acquisition and processing system is eligible.
Laboratory results	*Laboratory analysis reports*	*CET IASI II*	*As per IRL 38; IRL 39; IRL 40; IRL 40; IRL 41; IRL 42; IRL 43; IRL 44; IRL 45; IRL 46; IRL 47; IRL 48*	The laboratory analysis are done according to the procedure JI 009
Sampling	*Analysis certificate for*	*CET IASI II*	*As described in the procedure*	The sampling is done according to

	the power mineral coal	*Head of the chemical laboratory*	*JI 009 (Picture "Holboca 26.03.09 Fuel oil sampling point")*	the procedure JI 009
Accounting 1	*Invoices on consumed fuel*	*CET IASI II*	Samples of accounting documents are found in (IRL26; IRL 27)	The invoice is followed by the quality certificate for coal.
Accounting 2	*Invoices on electricity and heat sold to the customers*	*CET IASI II*	Samples of accounting documents are found in (IRL 28)	Monthly
External data	*Invoices and independent laboratory analysis report*	*CET IASI II*	Samples of documents are found in (IRL26; IRL 27) and (IRL 46; IRL 47)	The invoice is followed by the quality certificate for coal from an accredited laboratory.
Cross-check Approach: *One risk could be in gathering data and storage.* *However the protection of calculation tools would result in the safer process, see CAR # 1* **Further Remarks:** *CAR # 1*				

2.2. Raw Data Archiving and Protection measures

Name	Description of data archiving and protection measures	Risks and comments	Concl.
Form a	Data archiving is described in the MP	Data archiving is described in the MP. All relevant reports are archived as hard copy and electronic files. Electronic files are saved on Project Managers computer and on the computer of	☑

		Energy Department as well.	
Cross-check Approach: *One risk could be in gathering data and storage. Protection measures in the gathering data and at the calculation tool is necessary to avoid unintentional errors or data losses* **Risk Classification:** *This risk is significant. CAR # 1* **Further Remarks:** *CAR # 1*			*CAR # 1*

2.3. Data transfer

Description of data transfer from raw data archiving to calculation tool			
Name	Description and responsibilities	Risks and comments	Concl.
Form a	*Data from manual daily forms are transferred manually to calculation tool (excel sheet) according to the attached procedure. See CR # 4. This fuel consumption and heat production data will be documented daily and entered into readymade input data excel sheets for each boiler (Holboca CET IASI II_Monitoring Plan_year.xls). These input data sheets are main part of the Monitoring Report.* CR # 4. *Provide information of the person responsible for data transfer from manually to calculation tool.* *CAR # 1.* *Protection measures in the gathering data and at the calculation tool is necessary to avoid unintentional errors or data losses.* *CAR # 2.* *Cells with calculation formulas shall be protected to avoid unintentional errors.*	A respective procedure which deals with these aspects is attached. Procedure 3 “JI 003 - PROCED. Project Monitoring”, which is attached in the folder “Procedures” addresses specifically these aspects	*CAR # 1* *CAR # 2* *CR # 4*
Cross-check Approach: *One risk could be in gathering data and storage. Protection measures in the gathering data and at the calculation tool is necessary to avoid unintentional errors or data losses* **Further Remarks:** *CAR # 1*			*CAR # 1*

2.4. Data Processing

Description of data processing from transferred data to final results in the calculation tool			
Step	Description	Risks and comments	Concl.
Consistency	*All the abbreviations and units used are consistent with PDD and Methodology and are easily traceable to the raw data*		☑
Calculation Tool description	*The calculation tool in general is clearly described and transparent;* *The issuing date and revision number are indicated* *Are all formulae, intermediate steps and constants described transparently including correct units and in compliance with the methodology and the PDD.* *The data collected are further used for calculation. The calculation is done by means of excel data sheets.* *The calculation tool steps are presented in the document "Boiler efficiency improvement at Holboca CET Iasi II - Monitoring Plan Guidelines and Procedures"*	*CAR # 2*	*CAR # 2*
Transformation from transferred data to useable data	*All the data transferred to the sheet is directly useable*		☑
Elimination of not plausible data	*N/A*		☑
Transformation from useable data to input data for further	*N/A*		☑

calculation			
Ex-ante data	*N/A*		☑
Default parameter	*N/A*		☑
Formulae check	*Yes*		☑
Rounding functions	*N/A, no rounding formulae are included*		☑
Calculation tool changes and protection measures	*No specific protection measures exist.* *See CAR # 1; CAR # 2*	*Test and documentation of the IT system used for GHG monitoring as well as data protection measures were verified at this verification and the implemented measures have to be demonstrated to the audit team during the next verification audit.*	CAR # 1 CAR # 2
Cross-check Approach: *There are significant risks in data processing because there is no protection measures in the calculation tool. The calculation tool is very easy to calculate and formulae are easy to crosscheck on the excel calculation sheet (IRL 55), therefore the risk is low.* **Further Remarks:** *No further remarks.*			*CAR # 2*

2.5. Work Instruction out of protocol Algorithms

Description of data processing from transferred data to final results in the calculation tool			
Step	Description	Risks and comments	Concl.
Methodology formu-	*ER = BE − PE where:*	*The Methodology is as in the PDD.*	☑

lae	*ER [kg CO_2/day] annual emission reductions* *BE [kg CO_2/day] annual baseline emissions* *PE [kg CO_2/day] annual project emissions*		
Describe the use of each formula in the calculation tool	*Total Emission Reductions cell G23:= G21-G22* *Project Emissions cell G22: =(('INPUT DATA BOILER I'!J375+'INPUT DATA BOILER II'!J375))/1000* *Baseline Emissions: cell G21:=(('ANNEX I - BASELINE DATA'!C6*'INPUT DATA BOILER I'!H375)+('ANNEX I - BASELINE DATA'!C7*'INPUT DATA BOILER II'!H375))/1000*	CAR # 3. Correct the formulae of baseline emissions from boiler I from "INPUT DATA BOILER I" calculation sheet in the excel document "090201_IASI Monitoring Report 2008", due to the fact that it was a typing error See also CAR # 2; CAR # 3	*CAR # 1* CAR # 2 CAR # 3
Report any additional calculation use to obtain values use in the formulae	*No additional calculation is required*		☑
Cross-check Approach: *There are no significant risks in data calculation, but is necessary the protection of calculation cells. The calculation tool is very easy to calculate and formulae are easy to crosscheck on the excel calculation sheet (IRL 55), therefore the risk is low. The crosscheck was done by the audit team.* **Further Remarks:** *No further remarks.*			*CAR # 1* CAR # 2 CAR # 3

3. Monitoring Plan Implementation

3.1. List of Parameter to be monitored

ID-PDD	ID-Meth.	ID-Internal	Description	Conclusion
Instrumentation *insert all components that are metered by instruments as necessary due to PDD and applied methodology version*				
$fP_{a,B1}$	-	-	Quantity of coal consumed in boiler 1	Go to table 3.2.1
$fP_{a,B2}$	-	-	Quantity of coal consumed in boiler 2	Go to table 3.2.2
$fP_{b,B1}$	-	-	Quantity of fuel oil consumed in boiler 1	Go to table 3.2.3
$fP_{b,B2}$	-	-	Quantity of fuel oil consumed in boiler 2	Go to table 3.2.4
qP_{B1}	-	-	Quantity of steam produced in boiler 1	Go to table 3.2.5
qP_{B2}	-	-	Quantity of steam produced in boiler 2	Go to table 3.2.6
Sampling *insert all components that are sampled as necessary due to PDD and applied methodology version*				
CV_a	-	-	Calorific value of coal *Coal sampling is made by operator daily at the output belt from the coal bunker.*	Go to table 3.3.1
CV_b	-	-	Calorific value of fuel oil *Sampling is made by operator daily at the pre-heated oil pumping station.*	Go to table 3.3.2
Accounting *insert all components that are accounted as necessary due to PDD and applied methodology version*				
-	-	-	*Invoices on consumed fuel;* Samples of accounting documents are found in IRL 26; IRL 27	☑

ID-PDD	ID-Meth.	ID-Internal	Description	Conclusion
-	-	-	*Invoices on electricity and heat sold to the customers.* Samples of accounting documents are found in IRL 29	☑
External Data *insert all components that are coming from external data sources as necessary due to PDD and applied methodology version*				
-	-	-	*Invoices and independent laboratory analysis report.* The invoice is followed by the quality certificate for coal from an accredited laboratory IRL 47	☑
Others *insert all miscellaneous components as necessary due to PDD and applied methodology version – not applicable*				

3.2. Monitoring Instrumentation

3.2.1. Instrument i Quantity of coal consumed in boiler 1

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Instrumentation Information *list all different instruments which have been used during the monitoring period; use a separate table for each single instrument*		
ID-PDD:	$fP_{a,B1}$	☑
ID-Internal:	-	☑
Data to be Measured:	Quantity of coal consumed in boiler 1	☑
Data Logging:	*Daily*	☑
Archiving of Raw Data:	*The data is* read and documented hourly in respective log book. Document code FJI – 005 – 001	☑
Measurement Principle:	*According to the procedure JI 005 (IRL 8)* *Direct measurement of coal layer height and the belt velocity.* *The calculation unit calculates the hourly consumption in tones.*	☑
Period of Operating Time:	*The reference period is the year for the verification (01.012008-31.12.2008)*	☑
Instrument Type:	*Frequency/Current Adapter*	☑
Serial Number:	*3XM5H -001; 3XM5H –002; 3XM5H –003; 3XM5H –004*	☑
Manufacturer Model Nr.:	3XM5H TRUCK: *Redller Revolution-Mill no.1, Redller Revolution-Mill no.2, Redller Revolution-Mill no.3, Redller Revolution-Mill no.4*	☑
Specific Location:	*See pictures: "Holboca 26.03.09 Coal belt velocity meter B#1"; "Holboca 26.03.09 Coal belt velocity meter B#1 a"; "Holboca 26.03.09 Coal belt velocity meter B#2"; "Holboca 26.03.09 Coal belt velocity meter B#2 a"*	☑
Measurement Range:	*Measurement range for tones of coal is not defined, however for belt velocity sensor it is 4-20mA and 0-1000rpm*	☑

Measurement Unit:	*Tonnes/hour*	☑
Calibration:	*10.11.2008*	☑
Required Calibration Frequency:	*Yearly, according to the JI 006 procedure*	☑
Uncertainty Level:	*1mHz-10kHz (0,06-600.000imp/min-1)*	☑
Monitoring & Calculation		
Reading Frequency:	The district heating operator reads the coal meters at every 8 hours (hours 8, 16 and 24) and records the readings of the coal meters in the form “Reading of Damatic coal consumption meters in the boilers” form code F JI 005 – 02. The operator of the boilers’ the control panel shall read, hourly, on Damatic monitor, the instantaneous values of the steam flow produced by the boiler, the instantaneous values of the used coal flow and shall register them in the registration sheet of the parameters. (IRL 8)	☑
Recording Frequency:	*Hourly*	☑
Trouble Shooting:	*According to the JI 006 procedure.* *See CR # 3*	CR # 3

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle:	*According to PDD the quantity of coal needs to be recorded continuously*	*The requirements are fulfilled.*	☑
Installation: *Manner of execution*	*The meters were functioning at the starting date of this verification.*	*The meters are installed properly and are working normal.*	☑
Functionality:		*The meters are functioning*	☑
Quality assurance:	*The meters are calibrated.*	*The calibration certificates have been checked and verified on-site. (IRL 17 and IRL 18)* *The operations of coal flow checking and calibration in the DCS Damatic (the automatic control) system are made yearly, within the equipment repair and review activities and any time the devices re-calibration is required*	CR # 3
Maintenance:	-	-	☑
Cross-check Approach: The meters are installed, calibrated and are functioning. The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*			☑

Back to 3.1. List of Parameter to be monitored

3.2.2. Instrument ii Quantity of coal consumed in boiler 2

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Instrumentation Information *list all different instruments which have been used during the monitoring period; use a separate table for each single instrument*		
ID-PDD:	$fP_{a,B2}$	☑
ID-Internal:	-	☑
Data to be Measured:	Quantity of coal consumed in boiler 2	☑
Data Logging:	*Daily*	☑
Archiving of Raw Data:	*The data is* read and documented hourly in respective log book. Document code FJI – 005 – 001	☑
Measurement Principle:	*According to the procedure JI 005 (IRL 8)* *Direct measurement of coal layer height and the belt velocity.* *The calculation unit calculates the hourly consumption in tones.*	☑
Period of Operating Time:	*The reference period is the year for the verification (01.012008-31.12.2008)*	☑
Instrument Type:	*Frequency/Current Adapter*	☑
Serial Number:	*3XM5H -001; 3XM5H –002; 3XM5H –003; 3XM5H –004*	☑
Manufacturer Model Nr.:	3XM5H TRUCK: *Redller Revolution-Mill no.1, Redller Revolution-Mill no.2, Redller Revolution-Mill no.3, Redller Revolution-Mill no.4*	☑
Specific Location:	*See pictures: "Holboca 26.03.09 Coal belt velocity meter B#1"; "Holboca 26.03.09 Coal belt velocity meter B#1 a"; "Holboca 26.03.09 Coal belt velocity meter B#2"; "Holboca 26.03.09 Coal belt velocity meter B#2 a"*	☑
Measurement Range:	*Measurement range for tones of coal is not defined, however for belt velocity sensor it is*	☑

	4-20mA and 0-1000rpm	
Measurement Unit:	*Tones /hour*	☑
Calibration:	*16.11.2008*	☑
Required Calibration Frequency:	*Yearly, according to the procedure JI 006*	☑
Uncertainty Level:	*1mHz-10kHz (0,06-600.000imp/min-1)*	☑
Monitoring & Calculation		
Reading Frequency:	The district heating operator reads the coal meters at every 8 hours (hours 8, 16 and 24) and records the readings of the coal meters in the form “Reading of Damatic coal consumption meters in the boilers” form code F JI 005 – 02. The operator of the boilers’ the control panel shall read, hourly, on Damatic monitor, the instantaneous values of the steam flow produced by the boiler, the instantaneous values of the used coal flow and shall register them in the registration sheet of the parameters. (IRL 8)	☑
Recording Frequency:	*Hourly*	☑
Trouble Shooting:	*According to the JI 006 procedure.* *See CR # 3*	CR # 3

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle:	*According to PDD the quantity of coal needs to be recorded continuously*	*The requirements are fulfilled.*	☑
Installation: *Manner of execution*	*The meters were functioning at the starting date of this verification.*	*The meters are installed properly and are working normal.*	☑
Functionality:	*The meters are functioning.*		☑
Quality assurance:	*The meters are calibrated.*	*The calibration certificates have been checked and verified on-site. (IRL 17 and IRL 18)* *The operations of coal flow belt checking and calibration in the DCS Damatic (the automatic control) system are made yearly, within the equipment repair and review activities and any time the devices re-calibration is required*	CR # 3
Maintenance:	-		
Cross-check Approach: The meters are installed, calibrated and are functioning. The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*			☑

Back to 3.1. List of Parameter to be monitored

3.2.3. Instrument iii *Quantity of fuel oil consumed in boiler 1*

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Instrumentation Information *list all different instruments which have been used during the monitoring period; use a separate table for each single instrument*		
ID-PDD:	$fP_{b,B1}$	☑
ID-Internal:	-	
Data to be Measured:	*Quantity of fuel oil consumed in boiler 1*	☑
Data Logging:	*Daily*	☑
Archiving of Raw Data:	*The data is* read and documented hourly in respective log book. Document code FJI – 005 – 001	☑
Measurement Principle:	*According to the procedure JI 008 and JI 005* *Oil flow is measured based on metered pressure difference in the feeding pipe.*	☑
Period of Operating Time:	*The reference period is the year for the verification (01.012008-31.12.2008)*	☑
Instrument Type:	Pressure Transducer / Metering Device	☑
Serial Number:	4707, 2755-83, 2506, 2434-83	☑
Manufacturer Model Nr.:	Boiler 1 FE1GM Forward Fuel Oil Pressure / AI 96 Forward Fuel Oil Pressure Boiler 1 FE1GM Return Fuel Oil Pressure / AI 96 Return Fuel Oil Pressure	☑
Specific Location:	*See pictures: "Holboca 26.03.09 Fuel oil pressure gauge1"; "Holboca 26.03.09 Fuel oil pressure gauge2"; "Holboca 26.03.09 Fuel oil pressure gauge3"; "Holboca 26.03.09 Fuel oil pressure gauge4"*	☑
Measurement Range:	For pressure gauges 0-50 bar / 4-20mA	☑
Measurement Unit:	*Tonnes*	☑

Calibration:	CR # 5. *Provide the last calibration certificate for the meters referring to fuel oil*	CR # 5
Required Calibration Frequency:	*Yearly*	☑
Uncertainty Level:	*0.5/1.5*	☑
Monitoring & Calculation		
Reading Frequency:	*Continuously*	☑
Recording Frequency:	*Hourly. Registration sheet of the operational hours – form code F – 204 -01.*	☑
Trouble Shooting:	CR # 6. Provide information of what is happening in case of an error from the procedure.	CR # 6

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle:	*According to PDD the quantity of fuel oil needs to be recorded continuously*	*In compliance with the procedure JI-008.* *The requirements are fulfilled.*	☑
Installation: *Manner of execution*	*The meters were functioning at the starting date of this verification.*	*The meters are installed properly and are working normal.*	☑
Functionality:	*The meters are functioning.*		☑
Quality assurance:	*Calibration*	See CR # 5	CR # 5
Maintenance:			☑
Cross-check Approach: The meters are installed, calibrated and are functioning. The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*			

Back to 3.1. List of Parameter to be monitored

3.2.4. Instrument iv *Quantity of fuel oil consumed in boiler 2*

PDD	Verified Situation	Conclusion
Instrumentation Information *list all different instruments which have been used during the monitoring period; use a separate table for each single instrument*		
ID-PDD:	*$fP_{b,B2}$*	☑
ID-Internal:	-	☑
Data to be Measured:	*Quantity of fuel oil consumed in boiler 2*	☑
Data Logging:	*Daily*	☑
Archiving of Raw Data:	*The data is* read and documented hourly in respective log book. Document code FJI – 005 – 001	☑
Measurement Principle:	*According to the procedure JI 008* *Oil flow is measured based on metered pressure difference in the feeding pipe.*	☑
Period of Operating Time:	*Begin Starting date of the project* *End Until now*	☑
Instrument Type:	Pressure Transducer / Metering Device	☑
Serial Number:	2317; 3680-83;135; 3681-83	☑
Manufacturer Model Nr.:	Boiler 2 FE1GM Forward Fuel Oil Pressure / AI 96 Forward Fuel Oil Pressure Boiler 2 FE1GM Return Fuel Oil Pressure / AI 96 Return Fuel Oil Pressure	☑
Specific Location:	*See pictures: "Holboca 26.03.09 Fuel oil pressure gauge1"; "Holboca 26.03.09 Fuel oil pressure gauge2"; "Holboca 26.03.09 Fuel oil pressure gauge3"; "Holboca 26.03.09 Fuel oil pressure gauge4"*	☑
Measurement Range:	For pressure gauges 0-50 bar / 4-20mA	☑
Measurement Unit:	*Tones*	☑

Calibration:	See CR # 5	CR # 5
Required Calibration Frequency:	*Yearly*	☑
Uncertainty Level:	*0.5/1.5*	☑
Monitoring & Calculation		
Reading Frequency:	*Continuously*	☑
Recording Frequency:	*Hourly. Registration sheet of the operational hours – form code F – 204 -01.*	
Trouble Shooting:	See CR # 6	CR # 6

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle:	*According to PDD the quantity of fuel oil needs to be recorded continuously*	*In compliance with the procedure JI-008.* *The requirements are fulfilled.*	☑
Installation: *Manner of execution*	*The meters were functioning at the starting date of this verification.*	*The meters are installed properly and are working normal.*	☑
Functionality:	*The meters are functioning*		☑
Quality assurance:	*Calibration*	See CR # 5	CR # 5
Maintenance:	*Description*		☑
Cross-check Approach: The meters are installed, calibrated and are functioning. The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*			

Back to 3.1. List of Parameter to be monitored

3.2.5. Instrument v Quantity of steam produced in boiler 1

PDD	Verified Situation	Conclusion
Instrumentation Information *list all different instruments which have been used during the monitoring period; use a separate table for each single instrument*		
ID-PDD:	qP_{B1}	☑
ID-Internal:	-	☑
Data to be Measured:	Quantity of steam produced in boiler 1	☑
Data Logging:	*Daily*	☑
Archiving of Raw Data:	*The data is* read and documented hourly in respective log book. Document code FJI – 005 – 001	☑
Measurement Principle:	*According to the procedure JI 007* *Quantity of produced steam is measured based on metering the pressure difference in the produced steam pipeline*	☑
Period of Operating Time:	*Begin Starting date of the project* *End Until now*	☑
Instrument Type:	Differential Pressure Transducer / Pressure Transducer/ Voltage-Current Adapter	☑
Serial Number:	12W606158 020; 12W606159 020/ 842-95; 648-95/ 3F001852; 3F001862	☑
Manufacturer Model Nr.:	EJA110A, Yokogava: Live steam Flow-left; Live steam Flow-right / TPRM: Live steam Pressure –left; Live steam Pressure –right/ TMD 833AB2AK: Live steam Temperature – right; Live steam Temperature -left	☑
Specific Location:	*See pictures: "Holboca 26.03.09 steam meter B#1 left"; "Holboca 26.03.09 steam meter B#1 right"; "Holboca 26.03.09 steam meter B#1 right a"; "Holboca 26.03.09 steam meter*	☑

	B#2 left"; "Holboca 26.03.09 steam meter B#2 right";	
Measurement Range:	For pressure gauges 0-100Kpa 4-20mA/ 0-200 bar 4-20mA/ 0-600ºC 4-20mA	☑
Measurement Unit:	*Tonnes*	☑
Calibration:	*15.08.2008*	☑
Required Calibration Frequency:	*Yearly according to the procedure JI 007.*	☑
Uncertainty Level:	*0.1 / 0.5 / 0.1*	☑
Monitoring & Calculation		
Reading Frequency:	*Continuously*	☑
Recording Frequency:	*Hourly*	☑
Trouble Shooting:	*According to the procedure JI 007*	☑

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle:	*According to PDD the quantity of steam produced oil needs to be recorded continuously*	*In compliance with the procedure JI 007.* *The requirements are fulfilled.*	☑
Installation: *Manner of execution*	*The meters were functioning at the starting date of this verification.*	*The meters are installed properly and are working normal.*	☑
Functionality:	*The meters are functioning*		☑
Quality assurance:	*The meters are calibrated.*	*The calibration certificates have been checked and verified on-site. IRL 19 and IRL 20*	☑
Maintenance:	*Description*		☑
Cross-check Approach: The meters are installed, calibrated and are functioning. The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*			

Back to 3.1. List of Parameter to be monitored

3.2.6. Instrument vi Quantity of steam produced in boiler 2

PDD	Verified Situation	Conclusion
Instrumentation Information *list all different instruments which have been used during the monitoring period; use a separate table for each single instrument*		
ID-PDD:	qP_{B2}	☑
ID-Internal:	-	
Data to be Measured:	Quantity of steam produced in boiler 2	
Data Logging:	*Daily*	
Archiving of Raw Data:	*The data is* read and documented hourly in respective log book. Document code FJI – 005 – 001	
Measurement Principle:	*According to the procedure JI 007* *Quantity of produced steam is measured based on metering the pressure difference in the produced steam pipeline*	
Period of Operating Time:	*Begin Starting date of the project* *End Until now*	
Instrument Type:	Differential Pressure Transducer / Pressure Transducer/ Voltage-Current Adapter	
Serial Number:	12A725390 129; 12A725391 129/646-95; 635-95/3F001895; 3F001900	
Manufacturer Model Nr.:	EJA110A, Yokogava: Live steam Flow-left; Live steam Flow-right / TPRM: Live steam Pressure –left; Live steam Pressure –right/ TMD 833AB2AK: Live steam Temperature – right; Live steam Temperature -left	
Specific Location:	*See pictures: "Holboca 26.03.09 steam meter B#1 left"; "Holboca 26.03.09 steam meter B#1 right"; "Holboca 26.03.09 steam meter B#1 right a"; "Holboca 26.03.09 steam meter B#2 left"; "Holboca 26.03.09 steam meter B#2 right";*	

Measurement Range:	For pressure gauges 0-100Kpa 4-20mA/ 0-200 bar 4-20mA/ 0-600ºC 4-20mA	
Measurement Unit:	*Tonnes*	
Calibration:	*15.08.2008*	
Required Calibration Frequency:	*Yearly according to the procedure JI 007.*	
Uncertainty Level:	*0.1 / 0.5 / 0.1*	
Monitoring & Calculation		
Reading Frequency:	*Continuously*	☑
Recording Frequency:	*Hourly*	☑
Trouble Shooting:	*According to the procedure JI 007*	

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle:	*According to PDD the quantity of steam produced oil needs to be recorded continuously*	*In compliance with the procedure JI 007.* *The requirements are fulfilled.*	☑
Installation: *Manner of execution*	*The meters were functioning at the starting date of this verification.*	*The meters are installed properly and are working normal.*	☑
Functionality:	*The meters are functioning*		☑
Quality assurance:	*The meters are calibrated.*	*The calibration certificates have been checked and verified on-site. IRL 19 and IRL 20*	☑
Maintenance:	*Description*		☑
Cross-check Approach: The meters are installed, calibrated and are functioning. The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*			

Back to 3.1. List of Parameter to be monitored

3.3. Sampling Information

3.3.1. Sampling Point i Calorific value of coal

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Sampling Information *list all different sampling points which have been used during the monitoring period; use a separate table for each single sampling point*		
ID-PDD:	*CV_a*	☑
ID-Internal:	-	☑
Sample Taken From:	*Coal belt*	☑
Location of Sampling Point:	*Output belt from the coal bunker*	☑
Monitoring & Calculation		
Sampling Principle:	*According to the procedure JI 009 (IRL 12)*	☑
Methodology of Sampling:	*According to the procedure JI 009 (IRL 12)*	☑
Frequency of Sampling:	*Daily. According to the procedure JI 009 (*Periodicity of collecting the elementary samples is shown by a shovel at every five minutes, during the feeding with coal, namely about 2kg. of fuel. The samples taken off within an interval of 24 hours are gathered and mixed up to the homogenization, the resulted coal weight representing the representative sample; it is deposited in plastic bags.*)*	☑
Training of Sampling Personnel:	*See (IRL33; IRL 34; IRL 35; IRL 36; IRL 37)*	☑
Sample Analysed for / Data to be Measured:	Calorific value of coal	☑
Sample Analysed by:	Chemical Laboratory assistant - See IRL 52; IRL 53	☑
Certification of Analyser/ Laboratory:	*According to the procedure JI 009 (IRL 12)– See* IRL 52; IRL 53	

PDD	Verified Situation	Conclusion
Analysis Principle:	*According to the procedure JI 009 (IRL 12)*	☑
Methodology of Sample Analysis:	*According to the procedure JI 009 (IRL 12)*	☑
Measurement Unit:	*Kcal/kg*	☑
Measurement Range:	CR # 7. Provide information of the measurement range and the uncertainty level of the calorimetric bomb system - IKA LABORTECHNIK-C 5000	CR # 7
Uncertainty Level:	*See CR # 7*	CR # 7
Archiving of Raw Data:	*Archiving of raw data is made in the analysis report - document code F-167-01; As per IRL 38; IRL 39; IRL 40; IRL 41; IRL 42; IRL43; IRL 44; IRL 45; IRL 46; IRL 47; IRL 48*	☑

Inspection Results During Verification			
Operation of Sampling	Method of Verification	Verification Results	Conclusion
Documentation	According to the procedure JI-009 *(IRL 12)*	The operation of coal sampling is done according to the procedure JI-009. *(IRL 12)*	☑
Representativity	According to the procedure JI-009*(IRL 12)*	The sample analyse is representative.	☑
Reproducibility	According to the procedure JI-009*(IRL 12)*	*The values of are found in the "Analysis certificate for mineral coal" - Document code F-167-01.*	☑
Cross-check Approach: The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*			☑

Back to 3.1. List of Parameter to be monitored

3.3.2. Sampling Point ii Calorific value of fuel oil

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Sampling Information *list all different sampling points which have been used during the monitoring period; use a separate table for each single sampling point*		
ID-PDD:	CV_a	☑
ID-Internal:	-	☑
Sample Taken From:	fuel oil pumps station	☑
Location of Sampling Point:	transportation pipelines towards the boilers (tour),	☑
Monitoring & Calculation		
Sampling Principle:	*According to the procedure JI 009*	☑
Methodology of Sampling:	*According to the procedure JI 009*	☑
Frequency of Sampling:	*Weekly*	☑
Training of Sampling Personnel:	*See IRL 36; IRL 37*	☑
Sample Analysed for / Data to be Measured:	Calorific value of fuel oil	☑
Sample Analysed by:	Chemical Laboratory assistant - See IRL 52; IRL 53	☑
Certification of Analyser/ Laboratory:	*According to the procedure JI 009*- See IRL 52; IRL 53	☑
Analysis Principle:	*According to the procedure JI 009*	☑
Methodology of Sample Analysis:	*According to the procedure JI 009*	☑
Measurement Unit:	*Kcal/kg*	☑
Measurement Range:	CR # 7	CR # 7

PDD	Verified Situation	Conclusion
Uncertainty Level:	*See CR # 7*	CR # 7
Archiving of Raw Data:	*Document code F-862-02*	☑

Inspection Results During Verification			
Operation of Sampling	Method of Verification	Verification Results	Conclusion
Documentation	According to the procedure JI-009	The operation of fuel oil sampling is done according to the procedure JI-009.	☑
Representativity	According to the procedure JI-009	The sample analyse is representative.	☑
Reproducibility	According to the procedure JI-009	*The values of are found in the "Analysis certificate for fuel oil" - Document code F-862-02.*	☑
Cross-check Approach: The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. **Risk Classification:** *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*			☑

Back to 3.1. List of Parameter to be monitored

3.4. Accounting information

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Accounting Information *list all significant accounted components which have been used during the monitoring period; use a separate table for each single component*		
ID-PDD:	*Invoices on bought fuel;*	☑
ID-Internal:	-	☑
Description of Accounted Component:	Invoice on bought fuel; Samples of accounting documents are found in AD 07	☑
Accounting Unit:	CR # 8. Provide information on the responsible persons/departments for the accounting documents regarding the bought fuel.	CR # 8
Quality Assurance Measures / System:	Head of the Procurement Department is responsible for fuel delivery program so as to ensure appropriate boiler operation and submits to the Project Manager the Fuel Analysis Certificates from the fuel suppliers	☑
Account Archived:	*Starting date of the project- Until now*	☑
Account Credible / in Line with PDD:	-	☑
Cross-check Approach: The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. T*he risk of errors is low.* **Further Remarks:** *No further remarks.*		

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Accounting Information *list all significant accounted components which have been used during the monitoring period; use a separate table for each single component*		
ID-PDD:	*Invoices on electricity and heat sold to the customers*	☑
ID-Internal:	-	☑
Description of Accounted Component:	Invoice on electricity and heat sold to the customers; Samples of accounting documents are found in IRL 29	☑
Accounting Unit:	CR # 9. Provide information on the responsible persons/departments for the accounting documents regarding the *electricity and heat sold to the customers*	CR # 9
Quality Assurance Measures / System:	CR # 10. Provide information on the responsible person/department for verification of heat and electricity sold.	CR # 10
Account Archived:	*Starting date of the project- Until now*	☑
Account Credible / in Line with PDD:	-	
Cross-check Approach: The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. **Further Remarks:** *No further remarks.*		☑

3.5. External Data

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
External Data *list all external data components which have been used during the monitoring period; use a separate table for each single component*		
ID-PDD:	*Independent accredited external laboratory analysis report (IRL 47).*	☑
ID-Internal:	-	☑
Description of Data / Data Refers to:	Calorific value of coal	☑
Unit of Data (if appropriate):	*Kcal/kg*	☑
Date of Data Income:	Date of invoice on bought coal IRL 26 IRL 27	☑
Source of Data:	The invoice is followed by the quality certificate for coal from an accredited laboratory. IRL 26; IRL 27	☑
Reliability of Data Source:	Quality certificate for coal from an accredited laboratory.	☑
Is the Data up-to-date?	*Yes*	☑
Uncertainty Level:	*NA*	☑
Cross-check Approach: The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*		☑

Back to 3.1. List of Parameter to be monitored

3.6. Others – not applicable

Back to 3.1. List of Parameter to be monitored

4 Data Verification

4.1 Internal Review

Description and performance of internal review			
	Description	Comments	Concl.
Procedure	*According to the JI 003 procedure*	Project Manager coordinates the activity of the team constituted for the implementation of the Project "Boiler Efficiency Improvement at Holboca CET IASI II"; is responsible for the Monitoring Plan management; initiates the adjustment of this procedure any time, as necessary, after the Verifier prior Notification; Notifies the Verifier about any queries appeared regarding the data management and regarding the procedures adjustment necessity; supervises the activities related to the project.	☑
Documentation	*The Monitoring Report is issued by CET IASI II*	Documented instructions exist as "Monitoring Plan – Guidelines and Procedures" and several "JI Procedures" 001 – 009	☑
Responsibilities	*According to the JI 003 procedure*	The general manager approves the Project Monitoring Reports	☑
Cross-check Approach: The Project Manager makes monthly the control in order to meet the obligations of providing the monitoring supposed quality of the JI Project. *The risk of malfunctioning is low* **Further Remarks:** *No further remarks.*			☑

4.2 Usage of default values

No estimates or default data are used. .

4.3 Reproducibility

Description and performance of the assessment			
	Description	Comments and Results	Concl.
Procedure	*The raw data from the documents were entered into the calculation sheet.*	*The same result was achieved as in the Monitoring Report.* See CAR # 2; CAR # 3	CAR # 2; CAR # 3
Cross-check Approach: *The data can be easily reproduced. The risk of missing the reproducibility is low* **Further Remarks:** *No further remarks.*			

4.4 Peculiarities

Description of Peculiarities and unexpected Daily Events during the verification period			
	Description	Comments and Results	Concl.
Performance	*The project activity was operating during the verification period.* *It is operated on full capacity approximately 6 month per year, only during the heating season, which usually lies between the months November -– April . Rest of the year it is operated in smaller extent for production of hot water.*	During the monitored period, no special event was recorded. In the first part of the monitoring period, no important problems were registered in operating the boilers. In the second period, several incidents were registered, which imposed the change of the boilers (breaks of gaskets, shock in the national grid etc). In comparison with the previous situation, (operation without implementing Therma - Chem technology), the boilers were operated in normal conditions, no exceeds of the allowed temperatures being recorded, especially in the air pre-heaters area that could have required to shutdown the boilers in order to remove the ash deposits from the heat exchange surfaces.	☑
Documentation	*All the problems are indicated in the failure register*	Failure register was presented to the audit team.	☑
Measures	*There are measures initialized to stabilize the performance of the facility*	The implementing of Therma - Chem technology determined normal condition of operation for the Boilers. See IRL 50; IRL 51	☑

Cross-check Approach: *Reviewed documents and interviews showed clearly that there were no special events during verification period. The risk of unreported peculiarities is low.* **Further Remarks:** *No further remarks.*	☑

4.5 Reliability and Plausibility

Description of crosschecks and plausibility checks			
	Description	Comments and Results	Concl.
Performance	*See 2.2; 2.3; 2.4; 2.5 and 3.4*	*The audit team checked the Monitoring Report calculations, the raw data collection, transfer and processing.* *The crosscheck of data calculation was performed.* *See CAR # 1; CAR # 2; CAR # 3; CR # 4*	*CAR # 1* *CAR # 2* *CAR # 3* *CR # 4*
Cross-check Approach: *The calculation is based on the data collected from the collection of the main operational parameters of boilers and laboratory analysis reports, so the possibility of overestimation is low. Data processing is basically. The risk that data would be outside the plausible range is low.* **Further Remarks:** *No further remarks.*			

4.5 Completeness and Correctness

Description of completeness and correctness			
	Description	Comments and Results	Concl.
Correctness	*The verifier confirms that all the data provided in Monitoring report is correct.*	*All the data was verified and cross-checked.* *See CAR # 1; CAR # 2; CAR # 3;* *CR # 4*	*CAR # 1; CAR # 2; CAR # 3;* *CR # 4*
Completeness	*The verifier confirms that all the data provided in Monitoring report is complete.*	*The data provided is complete as described in project design documents.*	☑
Further Remarks: Protection measures in the gathering data and at the calculation tool to avoid unintentional errors or data losses is necessary.			

5 Additional requirements

Description of additional requirements to be checked			
	Description	Comments and Results	Concl.
Environmental issues	According to the Monitoring Plan the local EPA should prepare an annual Inspection Report. The Inspection Reports should be provided to the audit team.	CR # 11. *Provide EPA report*	*CR # 11*
Cross-check Approach: Any environmental and social impacts caused by the project will be recorded by local EPAs and described in EPA inspection reports. *The risk of environmental problems is low.* As part of the QA – system the local EPA will frequently visit Holboca CET Iasi II to carry out inspection of the monitoring procedures described in this MP. The local EPA is a public authority under the Romanian Ministry of Waters and Environment responsible for environmental issues related to the local society. **Further Remarks:** *No further remarks.*			

6 Data Reporting

Description of the Monitoring Report		
	Comments and Results	Concl.
Compliance with UNFCCC regulations	*The project is applying a project specific methodology approach. All requirements from the project specific methodology approach are fulfilled. The Monitoring Plan in the PDD and the Monitoring Report are consistent* *Monitoring report 2008 is consistent with the PDD.* CAR # 4. The monitoring report has to be revised according to CAR # 3, (due to a typing mistake.) *The verified period is from 1st January 2008 to 31st December 2008.*	CAR # 4
Completeness and Transparency	*The project description and implementation is transparently explained in the Monitoring Report.* *See CR # 1*	CR # 1
Correctness	*All the reported data is represented in the Monitoring report and Calculation Tool.* *See CAR # 2; CAR # 3*	*CAR # 2; CAR # 3*
Cross-check Approach: *One risk should be the mistakes in data gathering and storage and unprotected calculation cells. This risk is significant* **Further Remarks:** *No further remarks.*		*CAR # 2; CAR # 3*

7 Compilation and Resolutions of CARs, CRs and FARs

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
CAR # 1 Protection measures in the gathering data and at the calculation tool is necessary to avoid unintentional errors or data losses	The required actions are now in place. The "Operational Procedure JI 011 – Electronic Data Integrity and Security for JI Project "Boiler efficiency improvement at Holboca CET Iasi", addresses specifically these aspects.	In the procedure JI 0011 – Electronic Data Integrity and Security for JI Project "Boiler efficiency improvement at Holboca CET Iasi II" (IRL 14) is presented how the data for the JI project is secured. This issue is closed. ☑
CAR # 2 *Cells with calculation formulas shall be protected to avoid unintentional errors.*	The calculation formulae in the cumulative document Monitoring Plan cod F JI – 003 – 004 are now secured with specific password.	The document "Monitoring Report 2008. Section II. Version 2.xls" (IRL 55) is secured. The formulas cannot be changed. This issue is closed. ☑
CAR # 3 Correct the formulae of baseline emissions from boiler I from "INPUT DATA BOILER I" calculation sheet in the excel document "090201_IASI Monitoring Report 2008" (only a writing mistake)	The corrections have been made	In the document "Monitoring Report 2008. Section II. Version 2.xls" (IRL 55) the corrections have been made. This issue is closed. ☑
CAR # 4 The monitoring report has to be revised according to CAR # 3	The Monitoring Report was revised accordingly. Version 2 of the above document was issued.	The revised Monitoring Report was presented scanned first and last page and in word format (IRL 54, IRL 55, IRL 67, IRL 68, IRL 69). This issue is closed. ☑

Industrie Service

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
Clarification Requests by audit team	**Summary of project owner response**	**Audit team conclusion**
CR # 1 Please provide information of installing the ash removal system	Concerning the Ash Removal System the situation is as follows: • The main components of the system namely, New Redesigned Electrostatic Precipitators were installed (boiler 1 - December 2007, boiler 2 – December 2008), • In order to finalize the ash removal system and implement also some other activities related to the District Heating System in order to increase the overall power plant efficiency, it was decided to apply for European Structural Funds. It was selected a Consultant (Ramboll – Romanian Branch) to prepare the necessary documentation. In so far the feasibility study – that includes the above mentioned activities - has been prepared as well as other related documentation. It is expected that in the next coming period full documentation will be completed and the application presented.	Ash removal system is not installed yet. It can be accepted due to the fact that the ash removal system has little influence on efficiency and on emission reduction (IRL64; IRL 65). However the main components of the system which have the direct influence on emission reduction were installed. **FAR#1.** The ash removal system shall be installed as it was the part of the Project described in PDD. In case PP will reconsider to install it, the deviation from the Project Design Document will be mentioned.
CR # 2 Provide the new procedures added to the project in the Quality Manual	The new procedures are: 1. Operational Procedure JI 010 – Settlement of the Main Parameters in Case the Boilers Measurement Devices Afferent to the Project	The new procedures were presented (IRL13; IRL 14). This issue is closed. ☑

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
	are Out of Order, and 2. Operational Procedure JI 011 – Electronic Data Integrity and Security for JI Project, Version 2.	
CR # 3 Provide description of this new standard procedure in the revised work instruction JI-006	The Version 2 of the Operational Procedure JI 006 – Coal Flow Checking and Calibration in the DCS Damatic System sets forth how the coal supplying system is checked and recalibrated if necessary.	The updated procedure it presented (IRL 9) This issue is closed. ☑
CR # 4 Provide information of the person responsible for data transfer from manually to calculation tool.	The boilers daily operational data are transferred, on a daily basis, in electronic format (code document F JI – 005 – 01) by the responsible person within the Energetic Management Office. The Project Manager transfers the project data in electronic format (code document F JI – 003 – 004).	The person responsible for data transfer from manually to calculation tool is presented in the JI – 003 Procedure (IRL 6). This issue is closed. ☑
CR # 5 *Provide the last calibration certificate for the meters referring to fuel oil*	Calibration and Checking Certificates for pressure transducers installed on the fuel oil return pipe related to boilers 1 and 2 (6 samples) are included in : "Fuel Oil Calibration and Checking Certificates (for pressure transducers installed on the fuel oil return pipe related to boilers 1 and 2)"	The calibration certificates for the meters referring to fuel oil updated procedure are presented (IRL 56; IRL 57; IRL 58; IRL 59; IRL 60; IRL 61; IRL62) This issue is closed. ☑

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
CR # 6 Provide information of what is happening in case of an error from the procedure.	If a procedure error is detected, the procedure is revised.	This issue is closed. ☑
CR # 7 Provide information of the measurement range and the uncertainty level of the calorimetric bomb system - IKA LABORTECHNIK-C 5000	The relative experimental standard deviation is of 0.04%, and the measurement uncertainty is of 0.32%, according to Standard Calibration Certificate no. 04.02-72/2008, page 3/4. "Calorimetric Bomb System Calibration Certificates"	The information referring to the measurement range and the uncertainty level of the calorimetric bomb is presented on the Calibration Certificates. (IRL 63). This issue is closed. ☑
CR # 8 Provide information on the responsible persons/departments for the accounting documents regarding the bought fuel.	CET Iasi - Accounting Department (Biroul Contabilitate)	The responsible department for the accounting documents regarding the bought fuel is presented. This issue is closed. ☑
CR # 9 Provide information on the responsible persons/departments for the accounting documents regarding the *electricity and heat sold to the customers*	**Electricity:** Energy Management Department (Biroul de Management Energetic) **Heat delivered to consumers connected to the Transport DH Network:** Heat Supply and Contracting Department (Serviciul de Contractare si Furnizare Energie Termica) **Heat delivered to consumers connected to**	The responsible department for the accounting documents regarding the electricity and heat sold to the customers is presented. This issue is closed. ☑

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
	the Distribution DH Network: CET Iasi - Heat Supply Branch / Heat Invoicing and Collecting Department (Uzina de Furnizare Energie Termica – Serviciul de facturare si Incasare Energie Termica)	
CR # 10 Provide information on the responsible person/department for verification of heat and electricity sold.	**Electricity:** Financial Department (Biroul Financiar), **Heat delivered to consumers connected to the Transport DH Network:** Financial Department (Biroul Financiar), **Heat delivered to consumers connected to the Distribution DH Network:** CET Iasi - Heat Supply Branch / Heat Invoicing and Collecting Department (Uzina de Furnizare Energie Termica – Serviciul de facturare si Incasare Energie Termica)	The responsible department for verification of heat and electricity sold to the customers is presented. This issue is closed. ☑
CR # 11 *Provide EPA report.*	The last checking report issued by Iasi Environment Protection Local Agency is included in "EPA Report "	The EPA report was presented (IRL 49). This issue is closed. ☑
Forward Action Requests by audit team	**Summary of project owner response**	**Audit team conclusion**
FAR#1. *The ash removal system shall be installed as it was the part of the Project described in PDD. In case PP will reconsider*		Will be checked during the next verification.

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
to install it, the deviation from the Project Design Document will be mentioned		

Industrie Service

Annex 2: Information Reference List

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information (Relevance in JI Context)
1	24/03/2009	On-site interviews conducted by TÜV SÜD. **Validation Team:** Madis Maddison – JI Auditor Laura Vaida - TÜV SÜD Romania, JI Auditor Trainee Cristian Delamarian - TÜV SÜD Romania, Expert **Interviewed Persons:** Ion Asavoae – Plant Director CET Iasi Costica Neculai – General Director CET Iasi Sandu Maricica – Consilier A.P.M. Iasi Dana-Luminita Dulan – Project Manager CET Iasi Florea Vasile – Head of Laboratory AMC CET Iasi Bobu Boris – Eng. S.C. ENERGIC-SERV Hunea Traian – Head of boilers department Musteata Ioan – Head of chemical department On the part of Danish Environmental Agency: Mihai Brasoveanu – DEA/Local Project Coordinator Romania	TÜV SÜD	
2	04/03/2009	Initial and First Verification Report Version No. 03 1100242	TUV SUD	
3	24/09/2008	MP Guidelines and Procedures Version 3 No.080729	GRUE&HORNSTRUP	
4	24/09/2008	PDD Version 4	CET Iasi II	
4	12/09/2006	JI 001 Procedure - Training of the Staff with Responsibilities under the Project “Boiler Efficiency Improvement at Holboca CET Iasi II“ – Version 1	CET Iasi II	
5	15/09/2006	JI 002 Procedure - The Features of the Used Fuels at CET Iasi II Boilers – Version 1	CET Iasi II	
6	10/10/2007	JI 003 Procedure - Monitoring of the Greenhouses Gases Emission Reductions at CET Iasi II – Version 2	CET Iasi II	

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7	12/09/2006	JI 004 Procedure - Monitoring Report of the Greenhouses Gases Emission Reductions at CET Iasi II – Version 1	CET Iasi II	
8	10/10/2007	JI 005 Procedure - Registration of the Main Parameters at the Boilers of 420 t/h on Mineral Coal – Version 2	CET Iasi II	
9	10/05/2009	JI 006 Procedure - Coal Flow Checking And Calibration In The DCS Damatic System at CET II – Version 2	CET Iasi II	
10	15/09/2006	JI 007 Procedure - Checking and Calibration of the Differential Pressure Transducers; Measurement of the Boilers Live Steam at CET II – Version 1	CET Iasi II	
11	12/09/2006	JI 008 Procedure - The Calculation of the Fuel Oil Flow Spent at the Boilers of 420 t/h on Mineral Coal – Version 1	CET Iasi II	
12	10/10/2007	JI 009 Procedure - The Coal Sampling on the Boilers' Feeding Bands, the Fuel Oil Sampling and the Settlement Of The Fuels Heating Power – Version 1	CET Iasi II	
13	01/11/2008	JI 010 Procedure - Settlement of the Main Parameters in Case the Boilers Measurement Devices Afferent to the JI Project from CET Iasi II are out of Order – Version 1	CET Iasi II	
14	13/05/2009	JI 011 Procedure - Electronic Data Integrity and Security for JI Project “Boiler Efficiency Improvement at Holboca CET IASI II” – Version 2	CET Iasi II	
15	30/11/2006	PO-168 Operation of the Therma-chem FS-12 Solution Injection Installation in the Boilers of 420 t/h – Version 1	CET Iasi II	
16	09/06/2009	3. Meters Technical Features	CET Iasi II	
17	10/11/2008	4.1. Calibration certificate for measuring the coal quantity “Test result and speed of rotation calculated for Redller belt” – Boiler 1	CET Iasi II AMC Laboratory	
18	16/11/2008	4.1. Calibration certificate for measuring the coal quantity “Test result and speed of rotation calculated for Redller belt” – Boiler 2	CET Iasi II AMC Laboratory	
19	15/08/2008	4.2. Calibration certificate for measuring the steam ”Raport de inspectie si verificare metrologica traductor presiune diferentiala – Debit abur viu stanga K1”	CET Iasi II AMC Laboratory	

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20	15/08/2008	4.2. Calibration certificate for measuring the steam ”Raport de inspectie si verificare metrologica – Adaptor temperatura abur viu stanga K1”	CET Iasi II AMC Laboratory	
21	11/11/2008	4.3.1. Metrological checking in the Chemical Laboratory ”Buletin de verificare metrologica Nr.0030182; Buletin de verificare metrologica Nr.0030181 ”	Biroul Roman de Metrologie Legala / Romanian Bureau of Legal Metrology	
22	22/08/2008	4.3.1. Metrological checking for the Calorimetric System ”Buletin de verificare metrologica Nr.0042849; Buletin de verificare metrologica Nr.0042848 ”	Biroul Roman de Metrologie Legala / Romanian Bureau of Legal Metrology	
23	09/06/2009	5. Description of SCADA Process	CET Iasi II	
24	12/02/2008 – 18/02/2008	6.B. Plant operational reports “Registration sheet for the main operational parameters of boiler no.1 and boiler no.2 – 420t/h running on hard coal”	CET Iasi II	
25	06/12/2008	6. Failure register	CET Iasi II	
26	31/12/2008	7. Fuel invoice “Factura fiscala HE 0000022”	SC IZVORUL MARIEI SRL	
27	30/12/2008	7. Quality certificate for the fuel “Certificat de cantitate si calitate No. 0508373”	ROMCONTROL	
28	13/01/2009	8. Electricity and Heat Production “Chestionar pentru inventarierea emisiilor de poluanti atmosferici An 2008”	CET Iasi II	
29	31/12/2008	9. Electricity and heat invoices “Factura U-276970”	CET Iasi II	
30	09/06/2009	10. One line diagram – coal “Pozitionare traductor turatie benzi Redler”	CET Iasi II	
31	09/06/2009	10. One line diagram – fuel oil “Circuit tehnologic (pacura) Grupa 1 – Sarcina”	CET Iasi II	
32	09/06/2009	10. One line diagram – live steam “Circuit abur viu Grup I+II ”	CET Iasi II	
33	27/12/2007	11. Training evidence ”The training planning for the staff that has responsibilities in the JI Project “Boiler Efficiency Improvement at Holboca CET Iasi II Year 2008””	CET Iasi II	
34	27/12/2007	11. Training evidence ”The training subject for the staff that has responsibilities in the JI Project “Boiler Efficiency Improvement at Holboca	CET Iasi II	

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		CET Iasi II Year 2008””		
35	31/10/2008	11. Training evidence “Proces verbal instructaj periodic profesional – The staff confirmation at training”	CET Iasi II	
36	18/07/2008	11. Training evidence “Proces verbal instructaj periodic complex”	CET Iasi II Chemical Laboratory	
37	01/10/2008	11.Training evidence “Certificat de instruire Nr. 482”	Biroul Roman de Metrologie Legala / Romanian Bureau of Legal Metrology	
38	12/02/2008	13.1.Chemical Analysis for Hard Coal No. 126	CET Iasi II Chemical Laboratory	
39	13/02/2008	13.1.Chemical Analysis for Hard Coal No. 127	CET Iasi II Chemical Laboratory	
40	14/02/2008	13.1.Chemical Analysis for Hard Coal No. 129	CET Iasi II Chemical Laboratory	
41	15/02/2008	13.1.Chemical Analysis for Hard Coal No. 130	CET Iasi II Chemical Laboratory	
42	16/02/2008	13.1.Chemical Analysis for Hard Coal No. 131	CET Iasi II Chemical Laboratory	
43	17/02/2008	13.1.Chemical Analysis for Hard Coal No. 132	CET Iasi II Chemical Laboratory	
44	18/02/2008	13.1.Chemical Analysis for Hard Coal No. 133	CET Iasi II Chemical Laboratory	
45	07/02/2008	13.2. Chemical Analysis for Fuel Oil No. 120	CET Iasi II Chemical Laboratory	
46	14/02/2008	13.2. Chemical Analysis for Fuel Oil No. 128	CET Iasi II Chemical Laboratory	

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47	26/01/2009	13.3. Laboratory analysis reports for calorific value of coal – independent laboratory “Raport de incercare Nr. 58”	OVM ICCPET	
48	26/01/2009	13.3. Laboratory analysis reports for calorific value of fuel oil – independent laboratory “Raport de incercare Nr. 59”	OVM ICCPET	
49	08/10/2008	14. QA Checklist for local EPA “Proces verbal”	EPA	
50	02/12/2008	15. Invoices for Therma Chem “Factura fiscala 8108701”	Energy Serv	
51	15/12/2008	15. Invoices for Therma Chem “Factura fiscala 8108704”	Energy Serv	
52	02/12/2008	16. Licenses “Autorizatie cerificator metrolog BC-187-08”	Biroul Roman de Metrologie Legala / Romanian Bureau of Legal Metrology	
53	09/06/2009	16. Licenses “Diploma de absolvire a scolii profesionale No. 02860”	Biroul Roman de Metrologie Legala / Romanian Bureau of Legal Metrology	
54	04/05/2009	Monitoring Report Version 2 No 10264	CET Iasi II	
55		Monitoring Report 2008. Section II. Version 2.xls	CET Iasi II	
56	25/07/2008	6. Fuel oil Calibration and Checking Certificates – Boiler 1, Group 3 “Raport de inspectie si verificare metrologica traductor presiune – presiune retur pacura Gr3.K1 ”	CET Iasi II AMC Laboratory	
57	17/04/2008	6. Fuel oil Calibration and Checking Certificates – Boiler 2, Group 3 “Raport de inspectie si verificare metrologica traductor presiune – presiune retur pacura Gr3.K2 ”	CET Iasi II AMC Laboratory	
58	23/07/2008	6. Fuel oil Calibration and Checking Certificates – Boiler 1, Group 1 “Raport de inspectie si verificare metrologica traductor presiune – presiune retur pacura Gr1.K1 ”	CET Iasi II AMC Laboratory	
59	24/07/2008	6. Fuel oil Calibration and Checking Certificates – Boiler1, Group 2 “Raport de inspectie si verificare metrologica traductor presiune – presiune retur pacura Gr2.K1 ”	CET Iasi II AMC Laboratory	
60	24/07/2008	6. Fuel oil Calibration and Checking Certificates – Boiler1, Group 2	CET Iasi II AMC Laboratory	

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		“Raport de inspectie si verificare metrologica traductor presiune – presiune retur pacura Gr2.K1 ”		
61	14/04/2008	6. Fuel oil Calibration and Checking Certificates – Boiler2, Group 1 “Raport de inspectie si verificare metrologica traductor presiune – presiune retur pacura Gr1.K2 ”	CET Iasi II AMC Laboratory	
62	17/04/2008	6. Fuel oil Calibration and Checking Certificates – Boiler2, Group 2 “Raport de inspectie si verificare metrologica traductor presiune – presiune retur pacura Gr2.K2 ”	CET Iasi II AMC Laboratory	
63	20/08/2008	Calorimetric Bomb System Calibration Certificates “Certificat de etalonare Nr. 04.02-72/2008”	Biroul Roman de Metrologie Legala / Romanian Bureau of Legal Metrology	
64	09/06/2009	Ash removal system “Memoriu tehnic necesar obținerii Acordului de mediu Retehnologizarea sistemului de termoficare din municipiul Iasi in vederea conformarii la normele de protectia mediului privind emisiile poluante in aer si pentru cresterea eficientei in alimentarea cu caldura urbana ”	SC Ramboll Romania SRL	
65	09/06/2009	Ash removal system – English	CET Iasi II	
66	26/03/2009	Photos, Holboca	Madis Maddison	
67	04/05/2009	“Monitoring Report. Section II. Signed and Stamped Cover Page.JPG”	CET Iasi II	
68	09/06/2009	“Monit. Rep. Version 2. Section I. Signed and Stamped, pag.1.JPG”	CET Iasi II	
69	09/06/2009	“Monit. Rep. Version 2. Section I. Signed and Stamped, pag.2.JPG”	CET Iasi II	