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Verification Report

BTG Central Europe s.r.o.

Biomass Energy Portfolio for Czech Republic
Period 01/01/2005 – 31/12/2005

Report No. 812870, Version 02

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TÜV SÜD Industrie Service GmbH
Carbon Management Service
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Subject:	Verification of a JI Project
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Client:	BTG Central Europe S.R.O. Korunni 79 130 00 Praha 3 - CZECH REPUBLIC
Contract approved by:	Werner Betzenbichler
Report Title:	Verification of the project Biomass Energy Portfolio for Czech Republic Period 01/01/2005 – 31/12/2005
Number of pages	17 (without cover page and annexes)

Summary:

TÜV SÜD Industrie Service GmbH has performed a verification of the prospective JI project: “Biomass Energy Portfolio for Czech Republic”. The verification is based on requirements of ER-UPT 1 set as part of the MVP for this specific project. Additionally this verification is based on the currently valid documentation of the UN Framework Convention on Climate Change (UNFCCC). In this context, the relevant documents are the "Marrakech Accords".

This verification engagement was carried out during the period of 11.04.2006 and 31.01.2007.

The management BTG Central Europe s.r.o. (BTG) is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project “Biomass Energy Portfolio for Czech Republic” on the basis set out within the project Monitoring and Verification Plan. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the project.

The verifier confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately.

The monitoring system is in place and the project is ready to generate GHG emission reductions. Further quality assurance procedures summarized in a appropriate manual shall be elaborated and implemented, further details are addressed in the report and its annexes.

The verifier can confirm that the GHG emission reduction is calculated without material misstatements.

Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported for the period of 01-01-2005 to 31-12-2005 and its associated documents. Based on the information we have seen and evaluated we confirm the submitted amount of 109,186 ton CO2 –equivalents for the period of 2005.

Work carried out by:	Internal Quality Control by:
Markus Knödlseder (Project manager, GHG lead auditor) Eva Aligerova (Lead Auditor Environmental Management Systems (ISO 14001), Local expert, GHG auditor)	Werner Betzenbichler

Abbreviations

AE	Applicant Operational Entity
BTG	BTG Central Europe s.r.o.
CAR	Corrective Action Request
FAR	Forward Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CR	Clarification Request
JI	Joint Implementation
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
GHG	Greenhouse gas(es)
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non Governmental Organization
PDD	Project Design Document
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

The client (BTG Central Europe s.r.o.) has commissioned an independent verification by TÜV SÜD Industrie Service GmbH of its project Biomass Energy Portfolio for Czech. Verification is the periodic independent review and ex post determination by the Designated Operational Entity / Independent Entity of the monitored reductions in GHG emissions during the defined verification period.

The objective of verification can be divided in Initial Verification and Periodic Verification:

Initial Verification: The objective of an initial verification is to verify that the project is implemented as planned, to confirm that the monitoring system is in place and fully functional, and to assure that the project will generate verifiable emission reductions. A separate initial verification prior to the project entering into regular operations is not a mandatory requirement.

Periodic Verification: The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures de-scribed in the monitoring plan; further more the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is “free” of material misstatements; and verifies the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records. If no prior initial verification has been carried out, the objective of the first periodic verification also includes the objectives of the initial verification.

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

The verification follows UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities as agreed in the Bonn Agreement and the Marrakech Accords.

The portfolio project is characterized by an increasing number of participating sub-projects. Sub-projects that are the first time in the verification process have to pass above mentioned Initial Verification. For all involved sub-project the initial verification was performed at least in the last verification or even in the verification before; hence this verification is a standard periodic verification.

1.2 Scope

Verification scope is defined as an independent and objective review and ex post determination by the Designated Operational Entity / Independent Entity of the monitored reductions in GHG emissions. The verification is based on validated project design document including baseline. These documents are reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TÜV SÜD has, based on the recommendations in the Validation and Veri-

fication Manual employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of CERs/ERUs.

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

The audit team has been provided with a Monitoring Report issued in March 2006, covering the period 1.1.2005 – 31.12.2005. Based on this documentation a document review and a fact finding mission in form of an on-site audit has taken place. Afterwards the client decided to revise the Monitoring Report according to the identified findings in the audit process. The final Monitoring Report version was submitted in December 2006 serves as the basis for the final assessment presented herewith.

Studying the existing documentation belonging to this project, it was obvious that the competence and capability of the validation team has to cover at least the following aspects; according to these requirements TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV certification body “climate and energy”:

- Knowledge of Kyoto Protocol and the Marrakech Accords (Knödlseder)
- Environmental and Social Impact Assessment (Knödlseder)
- Skills in environmental auditing (Knödlseder/Aligerova)
- Quality assurance (Knödlseder/Aligerova)
- Technical aspects of biomass utilization for energy production and district heating (Knödlseder)
- Monitoring concepts (Knödlseder)
- Political, economical and technical random conditions in host country (Aligerova)

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

Werner Betzenbichler (head certification body “climate and energy”)

1.3 GHG Project Description

The project Biomass Energy Portfolio for Czech Republic is a early Joint Implementation project sponsored by Senter International, the Netherlands. The project is owned by BioHeat International B.V., the Netherlands, and administered by its daughter company BTG Central Europe s.r.o., the Czech Republic. After winning a contract (#ERU 0011) in the ERUPT 2000 tender, and two years of administrative delays, the project has recently received an approval from the Czech Ministry of Environment, satisfied the contractual requirements of the Dutch government, and started receiving prepayments from Senter International.

The project is a flexible portfolio of 14 subprojects in the Czech Republic where fossil fuels are replaced by biomass. The prepared and submitted monitoring report is linked to the original Project Description (BTG, February 2001), including the Validation Reports (SGS, January 2001 and May 2004). Furthermore conclusions from last verifications are considered also in this monitoring report.

It covers emission reductions from 1st January 2005 and 31st December 2005 for the 14 subprojects of the portfolio. The subprojects included are:

Bouzov, Nova Cerekev, Velký Karlov,

Bystrice nad Pernstejnem,	Rostin,	Zlate Hory,
Driten,	Slavicín,	Zruc nad Sazavou,
Horni Plana,	Stitna nad Vlari,	Zlutice.
Iromez s.r.o., Pelhrimov,	TTS CZ s.r.o., Trebic,	

The crediting start date is January 1, 2003.

2 METHODOLOGY

The project assessment aims at being a risk based approach and is based on the methodology developed in the Validation and Verification Manual (for further information see www.vvmanual.info), an initiative of Applicant Entities, which aims to harmonize the approach and quality of all such assessments.

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

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

The verification protocol consists of four tables. The different columns in these tables are described in Figure 1. The checklist for initial Verification has been used as well for increasing transparency.

The completed protocol is enclosed in Annex 1 to this report.

Initial Verification Checklist – table 1			
OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	Description of circumstances and further commendation to the conclusion.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Verification report. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications

Periodic Verification Checklist Table 1: Data Management System/Controls		
Expectations for GHG data management system/controls	Score	Verifiers Comments (including Forward Action Requests)

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table.	A score is assigned as follows: Full — all best-practice expectations are implemented. Partial — a proportion of the best practice expectations is implemented Limited — this should be given if little or none of the system component is in place.	Description of circumstances and further commendation to the conclusion. This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Verification report. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications

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

Periodic Verification Checklist Table 3: Detailed audit testing of residual risk areas and random testing		
Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including FARs)

Periodic Verification Checklist Table 3: Detailed audit testing of residual risk areas and random testing		
Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including FARs)
List of residual areas of risks of Periodic Verification Checklist Table 2 where detailed audit testing is necessary. In addition, other material areas may be selected for detailed audit testing.	The additional verification testing performed is described. Testing may include: Sample cross checking of manual transfers of data Recalculation Spreadsheet 'walk throughs' to check links and equations Inspection of calibration and maintenance records for key equipment Check sampling analysis results Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.	Having investigated the residual risks, the conclusions are noted here. Errors and uncertainties are highlighted.

Figure 1 Verification Protocol Tables

2.1 Review of Documents

The project design document submitted by the client and additional background documents related to the project design and baseline were reviewed. A complete list of all documents reviewed is attached as annex 2 to this report.

2.2 Follow-up Interviews

In the period of April 11 - 18, 2006 TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of subproject owners and BTG were interviewed. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
BTG on April 14,	Project design Technical equipment and operation Crediting period Monitoring plan Monitored data

	Implementation of management system Environmental impacts Compliance with national laws and regulations
Bystrice nad Pernstejnem, Iromez s.r.o. - Pelhrimov, TTS CZ s.r.o. - Trebic, Slavicin, Stitna nad Vlari, Zruc nad Sazavou, Velký Karlov	Technical equipment and operation Monitored data Sustainable development issues Environmental impacts Compliance with national laws and regulations

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which needed to be clarified for TÜV SÜD`s positive conclusion on the project design. The Corrective Action Requests, Clarification Requests and raised by TÜV SÜD were resolved during communication between the client and TÜV SÜD. Forward Action Requests are indicated issues which do not effect the generation of emission reduction in the verified period, but shall be improved in order to ensure the reliability of future data. To guarantee the transparency of the verification process, the concerns raised and responses that have been given are summarized in chapter 3 below and documented in more detail in the verification protocol in annex 1.

3 VERIFICATION FINDINGS

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

- The findings from the desk review of the final project design document and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Verification Protocol in annex 1.
- Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in annex 1. The verification of the project resulted in Corrective Action Request (CAR) a/o Clarification Requests (CR).
- Where Clarification or Corrective Action Requests have been issued, the exchanges between the Client and TÜV SÜD to resolve these Clarification or Corrective Action Requests are summarized.

In the context of Forward Action Requests (FAR), risks have been identified, which may endanger the delivery of high quality CERs in the future, i.e. by deviations from standard procedures as defined by the MP. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions. Forward Action Requests are understood as recommendation for future project monitoring; they are stated, where applicable, in the following sections and are further documented in the Verification Protocol in annex 1. The verification of the project resulted in five Forward Action Requests.

The final conclusions for verification subject are presented.

The verification findings relate to the project design as documented and described in the final project design documentation.

4 INITIAL VERIFICATION FINDINGS

This verification does not include aspects from the initial verification. Aspects that occurred during the assessment and that fit to the table 1 in the annex 1 are considered in the following chapter “Periodic Verification Findings”.

5 PERIODIC VERIFICATION FINDINGS

5.1 Remaining Issues / FARs from Previous Verification

5.1.1 Discussion

The previous verification the verification team addressed Forward Action Requests (FAR), which may endanger the delivery of high quality CERs in the future, i.e. by deviations from standard procedures as defined by the MP. As a consequence, such aspects should receive a special focus during this periodic verification. A FAR may originate from lack of data sustaining claimed emission reductions. Forward Action Requests are understood as recommendation for future project monitoring; they are stated, where applicable.

In the last Verification Report issued by TÜV SÜD Report No. 451775, Version 01 on September 10, 2005 five FARs were addressed:

Forward Action Request 1:

> *Missing issues for final approval are not addressed. Nevertheless from the last verification of the sites of Bystrice n. P., Nova Cerekev, Driften, Horni Plana, Zludice, Rostin following issues were not solved: Involved contractors for equipment installing and issuing of invoices shall be addressed in detail.*
>
> The validator addressed two observations in its validation report covering the sites of Bouzov, Iromez s.r.o., Pelhrimov, Slavicín, Stitna nad Vlari, TTS CZ s.r.o., Trebic, Velký Karlov, Zlate Hory, Zruc nad Sazavou.
>
> Those observations are:
>
> ***Observation 1:*** *Monitoring plan does not cover the exact data to be collected, how data will be collected, by whom and how data will be handled.*
>
> ***Observation 2:*** *No conformance to internationally accepted methods for monitoring and measurement plan has been provided.*

Forward Action Request 2:

> Concrete reporting and calculating procedures at BTG shall be elaborated, in order to ensure a proper continuation of the project in case of any personal changes. The responsible people of contracted municipalities and companies have certain instruction regarding the monitoring protocols. Further procedures are elaborated in the current submitted monitoring report 2004. However, concrete reporting and calculating procedures at BTG do not exist and shall be elaborated until next verification.

Forward Action Request 3:

The quality assurance for internal data has to be improved. Procedures have to be elaborated and established. The project developer, BTG, has not a sufficient systematic control about all available information.

Forward Action Request 4:

As mentioned in the first validation report, the only environmental impact that this project could generate is the increasing demand and consumption of non sustainable wood. The noted request in the validation report has not been fulfilled; therefore a system has to be elaborated, that demonstrates that there will be no negative impact to the environmental.

Forward Action Request 5:

Internal audits and interviews have taken place, but that is not documented. BTG has to establish a system of internal audits and management reviews assuring that the subprojects are operating well and for identifying emergency cases as soon as possible.

5.1.2 Finding

Forward Action Request 1:

In municipalities where third parties are contracted for data gathering, invoicing or operation and maintenance of installed equipment, such companies shall be aware about their responsibility in this JI-Project Monitoring on the other hand a change of contracted companies to another one or the decision in a municipality to do the job on their own includes a potential risk regarding a lack of correct, continuous or transparent monitoring. Thus the overall project management shall take care about involved third parties. Changes in shall be noted in the annual monitoring report.

5.1.3 Conclusion

FAR 1, observation 2 is considered as resolved partly, because on the one hand the monitoring procedures have been updated generally; and on the other hand the project has been accepted by the Dutch and Czech authorities which can be seen as internationally accepted including the used methods. In case that the project should to be adjusted according to methodologies approved by the JI Supervisory Board the project needs to be re-validated anyway.

The identified lack of reporting and calculation procedures addressed as FAR 2 in the earlier Verification Report has been solved.

The identified lack of controlling and gathering of relevant information as FAR 3 in the earlier Verification Report seems to be solved. Happenings occurred at the sub-project have been reported through the given templates.

The issue of FAR 4 in earlier Reports was based on the assumption that the portfolio project will increase in the number of involved sub-projects. BTG does not intend an extension of participating sub-projects the environmental effect due to wood consumption is considered as limited and negligible.

The team of BTG in Prague consists of one responsible managing person and her assistance. Although an internal review process is preferable there is no virtue in doing that. Hence, the demanded FAR 5 is not practicable.

5.2 Project Implementation / changes

5.2.1 Discussion

According to the stated baseline and to the previous verification there are changes beyond the baseline. The changes are transparent mentioned in the submitted monitoring report.

First change has become necessary since a sub project had not measured delivered heat for district heating as required due to applied methodology. The originally developed methodology says that delivered heat should measure. However, that is at Iromez s.r.o. not the case. Produced heat for district heating can only be calculated. The method has been elaborated together with internal energy experts (Eberhard Rothfuß) from TÜV SÜD, the verification team and the project developer. It should be ensured that a reasonable approach has been applied with respect to conservative assumptions.

The second change that has been applied is the proportional distribution of individual stove types has been changed since baseline determination. The district heating systems are growing organically. That means year by year new residences of households are connected to the district heating system. New connected households can be households that had existed already before or which are quite new, like additional accommodations. Since the implemented biomass boilers are smaller than old replaced coal boilers there is no risk that new customers could not be supplied by the old system as well. However, the developed and determined baseline studies and monitoring methodologies does neither cover nor explicitly exclude any baseline adaptations.

5.2.2 Findings

Forward Action Request 2:

The verification team can follow those adjustments, especially against the background that baseline and monitoring procedures of VER- or JI-projects are allowed to be applied more flexible than in other schemes. Nevertheless, the verification team asks for an agreement from all project participants that those changes are accepted. Referring to the periodical update of the baseline situation in each municipality like the proportional stove distribution the verification team asks to fix the period when such baseline update should be made.

5.2.3 Conclusion

Beyond that no significant risk can be identified.

5.3 Completeness of Monitoring

5.3.1 Discussion

Monitoring of data covers all aspects of data measuring, processing and collecting. The focus is on completeness, accuracy and consistency. The accuracy and calibration has been checked onsite at the meters. According to check law the calibration is valid for 4 years. A calibration stamp on each meter addressing the year of calibration serves as an evidence of calibration.

Furthermore the Czech law requires the use of metering equipment with a accuracy class of 2 meaning an accuracy of +- 2%.

5.3.2 Findings

Monitoring equipment is installed appropriately; documented evidences about its calibration are outstanding. However in the case of Iromez s.r.o in Pelhrimov the heat meter is not installed in a position where the produced heat or the district heating system is measured directly. The actual heat for the system has to be calculated.

5.3.3 Conclusion

Procedures for determining particular parameters that diverge from the original approach like in case of *Iromez s.r.o* are documented and mentioned in the monitoring report. On the other hand the special uncertainty of diverging approached has to be considered in the calculation sheet in a higher deduction.

The adjustments are based on thermodynamic calculations according to international accepted methods. The verification had its focus on a realistic and conservative approach.

However, the verification team has to point out that those adjustments and the point of measuring the steam is not exactly according to validated monitoring methodology. See also FAR 2 above.

5.4 Accuracy of Emission Reduction Calculations

5.4.1 Discussion

The calculation is defined in an Excel sheet. Its functionality was tested. As mentioned the Czech law requires the use of metering equipment with an accuracy class of 2 meaning an accuracy of +- 2%. The calculation sheet considers a safety deduction of 5% minimum. In other words the calculated emission reduction per sub-project considers already the common and inherent uncertainty of the equipment. This is valid as far as relevant parameters are metered directly and according to their purpose.

5.4.2 Findings

At the site of Iromez s.r.o. the burnt biomass as well as the heat delivered to the district heat system is calculated based on certain assumptions. Those assumptions shall be noted in the monitoring report and shall be considered by using an uncertainty level in the calculation sheet.

The calculation of the heat shall be based on conservative assumptions in order to be sure that there is no overestimation.

5.4.3 Conclusion

According to submitted and verified data the verification team confirms that the accuracy of calculated and reported emission reductions do not lead to a significant and material misstatement.

5.5 Quality of Evidence to Determine Emission Reductions

5.5.1 Discussion

Determining emission reductions is based on invoices in the case of biomass. Those are usually the most reliable evidences. In case of produced or consumed heat the most reliable evidence is also the invoice for sold heat in respective manual monitored heat production.

5.5.2 Findings

Corrective Action Request 2:

In the last verification BTG was asked to summarize all elaborated procedures, including trouble shooting procedures, in a kind of manual for sub-project owner and for BTG office. At the time of office visit such manual was in process. Before finishing the verification report it was agreed that the manual will be submitted to the audit team.

5.5.3 Conclusion

The project management elaborated procedures ensuring stable quality. Procedures are mainly described in the monitoring report as well. The Issues is considered as resolved.

5.6 Management System and Quality Assurance

5.6.1 Discussion

A proper established and implemented Quality Management System is not crucial for monitoring and reporting of emission reduction units (ERU), but it reduce the inherent risk and raise the reliability of monitored data.

As recommended the conduction of internal validation and checks have been performed. Additional documented procedures have been introduced

5.6.2 Findings

None

5.6.3 Conclusion

The verification team can not identify any misstatements through that missing documentation. The verification team identified the introduction of a proper management system as recommended.

6 PROJECT SCORECARD

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Emission Reductions	
Completeness	Source coverage/ boundary definition	☑	☑	☑	Can be confirmed
Accuracy	Physical Measurement and Analysis	☑	☑	☑	Can be confirmed
	Data calculations	☑	☑	☑	Can be confirmed
	Data management & reporting	☑	☑	☑	Can be confirmed
Consistency	Changes in the project	☑	☑	☑	Can be confirmed

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7 VERIFICATION OPINION

TÜV SÜD Industrie Service GmbH has performed a verification of the prospective JI project: “Biomass Energy Portfolio for Czech Republic”. The verification is based on requirements of ER-UPT 1 set as part of the MVP for this specific project. Additionally this verification is based on the currently valid documentation of the UN Framework Convention on Climate Change (UNFCCC). In this context, the relevant documents are the "Marrakech Accords".

This verification engagement was carried out during the period of 11.04.2006 and 31.01.2007.

The management BTG Central Europe s.r.o. (BTG) is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project “Biomass Energy Portfolio for Czech Republic” on the basis set out within the project Monitoring and Verification Plan. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the project.

The verifier confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately.

The monitoring system is in place and the project is ready to generate GHG emission reductions. Further quality assurance procedures summarized in a appropriate manual shall be elaborated and implemented, further details are addressed in the report and its annexes.

Possible negative as well as positive environmental and social impacts are addressed detailed in the report, however significant negative impacts are not identifiable.

The verifier can confirm that the GHG emission reduction is calculated without material misstatements.

Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported for the period of 01-01-2005 to 31-12-2005 and its associated documents. Based on the information we have seen and evaluated we confirm the submitted amount of 109,186 ton CO2 –equivalents for the period of 2005.

Munich, 07 February 2007

Werner Betzenbichler
Head of certification body “climate and energy“

Munich, 07 February 2007

Markus Knödlseder
Project Manager

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Annex 1: Verification Protocol

1 PERIODIC VERIFICATION CHECKLIST

Table 1: Data Management System/Controls

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
1. Defined organizational structure, responsibilities and competencies		
1.1. Position and roles	Full	The positions and roles are defined in the contracts.
1.2. Responsibilities	Full	The responsibilities of involved person are clear and documented in the contracts. <u>Forward Action Request 1:</u> In some municipalities there are third parties contracted, e.g. for data gathering, invoicing or operation and maintenance of installed equipment. Such companies shall be aware about their responsibility in this JI-Project Monitoring on the other hand a change of contracted companies to another one or the decision in a municipality to do the job on their own includes a potential risk regarding a lack of correct, continuous or transparent monitoring. Thus the overall project management shall take care about involved third parties. Changes in shall be noted in the annual Monitoring Report.
1.3. Competencies needed	Full	Involved persons have the appropriate competence to fulfill all required tasks with GHG reporting.

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:
Full all best-practice expectations are implemented.
Partial a proportion of the best practice expectations is implemented
Limited this should be given if little or none of the system component is in place.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
2. Conformance with monitoring plan		
2.1. Reporting procedures	Partial	The reporting follows the improved procedures of the last verification. It is also documented in the current Monitoring report 2006. The validator addressed two observations in its validation report covering the sites of Bouzov, Iromez s.r.o., Pelhrimov, Slavicín, Stitna nad Vlari, TTS CZ s.r.o., Trebic, Velký Karlov, Zlate Hory, Zruc nad Sazavou. That observation was: Monitoring plan does not cover the exact data to be collected, how data will be collected, by whom and how data will be handled. Verification statement: The used monitoring protocol that has to be fulfilled by responsible persons gathering relevant data is sufficient. Responsibilities are concretized. Nevertheless, the verification team recommends that those procedures shall be summarized in a manual; see CR 1 in table 1 above. The other observation is about the international framework of JI. Such frame had not existed at the moment when the project had been validated. Due to interviews the project developer is aware about the current framework. The verifier is convinced that further steps will be taken at certain time.

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:
Full all best-practice expectations are implemented.
Partial a proportion of the best practice expectations is implemented
Limited this should be given if little or none of the system component is in place.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
2.2. Necessary Changes	Full	The first verification identified and addressed necessary changes. Those changes have been respected within this monitoring period. However, further changes have been become necessary. The changes are correctly mentioned in the monitoring report chapter 6.
3. Application of GHG determination methods		
3.1. Methods used	Full	The used method follows the validated method considering the real heat production or heat demand. At the sub-project of Iromez s.r.o., Pelhrimov the verification team identified that produced heat is measured after the boiler. However, as the drawing in monitoring reports shows the produced stem is used in a back pressure turbine for energy electricity generation. After the back pressure turbine the steam is used partly for the district heating and partly for further electricity production in a condensate turbine. That means that the heat that is used for heating purposes is lower than measured. Appropriate adjustments have been introduced. That means in the case of Iromez s.r.o. in Pelhrimov the heat meter is not installed in a position where the produced heat or the district heating system is measured directly. The actual heat for the system has to be calculated.

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:
Full all best-practice expectations are implemented.
Partial a proportion of the best practice expectations is implemented
Limited this should be given if little or none of the system component is in place.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
		The introduced adjustments are described in the monitoring report. The adjustments are based on thermodynamic calculations according to international accepted methods. The verification had its focus on a realistic and conservative approach. However, the verification team has to point out that those adjustments and the point of measuring the steam is not exactly according to validated monitoring methodology. Further adjustments have been applied according to changed baseline situations in the municipalities. Those changes are reasoned by the fact that originally given proportions of individual stoves change over time. Neither the validated baseline nor the PDD defines if such changes have to be monitored and applied to the project. Although the verification team feels that those adjustments are justified it is finally up to the project participants to agree on that adjustment.
		<u>Forward Action Request 2:</u> As indicated above the verification team can follow those adjustments, especially against the background that baseline and monitoring procedures of VER- or JI-projects are allowed to be applied more flexible than in other schemes. Nevertheless, the verification team asks for an agreement from all project participants that those changes are accepted. Referring to the periodical update of the baseline situation in each municipality like the proportional stove distribution the verification team asks to fix the period when such baseline update should be made.

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:
Full all best-practice expectations are implemented.
Partial a proportion of the best practice expectations is implemented
Limited this should be given if little or none of the system component is in place.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
3.2. Information/process flow	Full	An information flow diagram is not developed. However, the contract between BTG and the sub-project owner rules the duties and rights of each.
3.3. Data transfer	Full	On the tier of sub-project data has to be collected from computer assisted systems as well as from invoices or manual writings. That information is summarized in the given monitoring protocols. Those protocols are handled at BTG. A more standard-ized or automatic procedure will result in high costs and quality risks.
3.4. Data trails	Full	All documents are physical available.
4. Identification and maintenance of key process parameters		
4.1. Identification of key parameters	Full	The determination of the GHG emissions is based on two aspects: First the fuels switches from fossil to biomass fuels and second the avoidance of rotting biomass. Rotting biomass emits methane. Regarding fuel switch the key process parameters is the produced energy respec-tively consumption. That key parameters are verifiable. Regarding avoiding methane one key parameter is the biomass utilization factor. Those values have not been determined on objective evidences but just on state-ments. As that approach was rejected neither by validator nor by involved parties, the verification team accepts that approach.

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:
Full all best-practice expectations are implemented.
Partial a proportion of the best practice expectations is implemented
Limited this should be given if little or none of the system component is in place.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
4.2. Calibration/maintenance	Full	The electricity and heat meters are calibrated according to Czech law defined in Act no.458/2000 Coll, of 28 November 2000. Calibration and maintenance are managed different by the operators. Some of them use specialized companies for maintenance and some do not.
5. GHG Calculations		
5.1. Use of estimates and default data	Partial	As mentioned above the proportional distribution of individual stove types have been adjusted according to updated circumstances. Those proportions are based on the assumptions from the majors in the municipality. That is the same approach had been used for validation. Also the developed approach to calculate the district heat at Iromez s.r.o. requires the use of estimations and default data. Conservative assumptions have been used according to the efficiency of turbines which are used for electricity generation. For determining the heat turbine efficiencies of 57.5% at the first back pressure turbine and 75% at the condensate turbine have been applied. Default values for steam enthalpy are clearly mentioned in the monitoring report.
5.2. Guidance on checks and reviews	Partial	Guidance on checks and reviews are very important in this kind of project portfolio has been checked by interviews in the office of BTG s.r.o. It is also reflected by the monitoring and reporting procedures of BTG.
5.3. Internal validation/ verification	Full	BTG makes a kind of internal validation and verification of submitted data from the sub-project.
5.4. Data protection measures	Full	Special data protection systems seem not be necessary.

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:
Full all best-practice expectations are implemented.
Partial a proportion of the best practice expectations is implemented
Limited this should be given if little or none of the system component is in place.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
5.5. IT systems	Partial	The central IT system for reporting is MS-Excel at BTG. On the tier of sub-projects the IT systems of energy monitoring is the most relevant, those systems are usually reliable, and however its functionality shall be tested regularly and documented.

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:

Full all best-practice expectations are implemented.
Partial a proportion of the best practice expectations is implemented
Limited this should be given if little or none of the system component is in place.

Table 2: GHG calculation procedures and management control testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
At the sub-project of Iromez s.r.o., Pelhrimov the verification team identified that produced heat is measured after the boiler. However, as the drawing in monitoring reports shows the produced stem is used in a back pressure turbine for energy electricity generation. After the back pressure turbine the steam is used partly for the district heating and partly for further electricity production in a condensate turbine. That means that the heat that is used for heating purposes is lower than measured. Appropriate adjustments have been introduced.	The introduced adjustments are described in the monitoring report. The adjustments are based on thermodynamic calculations according to international accepted methods. The verification had its focus on a realistic and conservative approach. However, the verification team has to point out that those adjustments and the point of measuring the steam is not exactly according to validated monitoring methodology. See also FAR 2 below.	*i. None*
Further adjustments have been applied according to changed baseline situations in the municipalities. Those changes are reasoned by the fact that originally given proportions of individual stoves change over time. Neither the validated baseline nor the PDD defines if such changes have to be monitored and applied to the project.	The adjustments are based on surveys and experiences from the municipalities. In that way the approach is the same as used during baseline determination which has been confirmed by the validation report as well. The verification team feels that those adjustments are justified it is finally up to the project participants to agree on that adjustment.	ii. In case that involved project participants agree on those adjustments, the verification team see the need for appropriate methodology to fix the period when updates have to be performed; see also FAR 2 below.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
The reporting follows the improved procedures of the last verification. It is also documented in the current Monitoring report 2006. The used monitoring protocol that has to be fulfilled by responsible persons gathering relevant data is sufficient. Responsibilities are concretized. Nevertheless, the verification team recommends that those procedures shall be summarized in a manual.	The project management has developed a manual for gathering data during that verification. It will be part of future verifications to check if such procedures are respected.	*None*

Table 3: Detailed audit testing of residual risk areas and random testing

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
i. The verification team has to point out that those adjustments and the point of measuring the steam is not exactly according to validated monitoring methodology. *ii.* In case that involved project participants agree on those adjustments, the verification team see the need for appropriate methodology to fix the period when updates have to be performed.	*The application of those new methodologies and the use of parameters have been tested very carefully.* *The calculation method to determine the net heat, which is sent to the district heating system and the underlying default value, has been checked with consultancy of internal experts of TÜV SÜD.*	<u>Forward Action Request 2:</u> As indicated above the verification team can follow those adjustments, especially against the background that baseline and monitoring procedures of VER- or JI-projects are allowed to be applied more flexible than in other schemes. Nevertheless, the verification team asks for an agreement from all project participants that those changes are accepted. Referring to the periodical update of the baseline situation in each municipality like the

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
		proportional stove distribution the verification team ask to fix the period when such baseline update should be made.

Table 4: Summery of Clarification Requests, Corrective Action Requests and Forward Action Requests

Action Requests	Conclusion
Forward Action Request 1: In some municipalities there are third parties contracted, e.g. for data gathering, invoicing or operation and maintenance of installed equipment. Such companies shall be aware about their responsibility in this JI-Project Monitoring on the other hand a change of contracted companies to another one or the decision in a municipality to do the job on their own includes a potential risk regarding a lack of correct, continuous or transparent monitoring. Thus the overall project management shall take care about involved third parties. Changes in shall be noted in the annual Monitoring Report.	The missing information about contracted companies is not considered as a significant risk for the calculated emission reductions, since monitored data are retraceable. The providence of additional data about contracted companies is for enhancing the project management and available information.
Forward Action Request 2: As indicated above the verification team can follow those adjustments, especially against the background that baseline and monitoring procedures of VER- or JI-projects are allowed to be applied more flexible than in other schemes. Nevertheless, the verification team asks for an agreement from all project participants that those changes are accepted. Referring to the periodical update of the baseline situation in	The applied adjustments are not covered by validated documents. On the other hand the once developed project documentation does not define and hence does not exclude such adjustments. From a technical and conservative point of view those adjustments are justified and methods are applied correctly. However finally it is the responsibility of involved project participants to agree on those or not. The verification team recommends fixing such changes in a

each municipality like the proportional stove distribution the verification team ask to fix the period when such baseline update should be made.	signed agreement as kind of amendment to validated documents. Considering that involved parties agree on all adjustments since validation the verification team confirms that stated emission reductions are without material misstatements.

Annex 2: Information Reference List

Reference No.	Document or Type of Information
1.	The audits were conducted in the office of BTG in Prague on March 24, 2006 and April 28, 2006; the onsite visits covered following locations additional: April 12, 2006 Mestro Slavicin Mr. Končický (deputy major) April 12, 2006 Stitná Mr. Barboric (operator) April 13, 2006 Velky Karlov Mr. Prudky (major) April 18, 2006 Iromez s.r.o., Pelhrimov Mr. Dub (director of IROMEZ s.r.o in Pelhrimov), April 18, 2006 Zruc nad Sazavou Mgr. Martin Hujer (major) April 19, 2006 TTS CZ s.r.o., Trebic Mr. Radek Placek TTS Energo s.r.o. and Mr. Radek (deputy director of operations) TTS Energo s.r.o. April 19; 2006 Bystrice nad Pernstejnem Mr. Stanislav (staff) Mr. Josef Novotný (major) **Validation team on-site:** Markus Knödlseder TÜV SÜD Industrie Service GmbH Eva Aligeriva TÜV CZ s.r.o. **Interviewed persons:** Michaela Remrova BTG Central Europe s.r.o Patrick Reunemann BTG Biomass Technology Group BV
2.	Biomass Energy Portfolio for Czech Republic Final Monitoring Report 2005, BTG Central Europe s.r.o., March 2006, finally submitted on January 31. 2007
3.	Project Design Document: Biomass Energy Portfolio for Czech Republic PROJECT DESCRIPTION, Feb. 2001, BTG Biomass Technology Group B.V.
4.	Validation Report: Biomass Energy Portfolio for Czech Republic, 2001, SGS Agrocontrol

Reference No.	Document or Type of Information
5.	Validation Report: Validation of 'Biomass Energy Portfolio for Czech Republic Extension #1' , 2004, SGS Agrocontrol
6.	Verification Report: First Verification of "Biomass Energy Portfolio for Czech Republic", Report No. 306533 2004, August 31st, TÜV SÜD
7.	Declaration of Approval, issued by the State of the Czech Republic, March 2005
8.	Validation and Verification Manual, IETA/PCF http://www.vvmanual.info
9.	UNFCCC homepage http://www.unfccc.int
10.	European Standard; EN 1434-1 and EN 1434-6, reviewed 2005
11.	Czech law: Act no.458/2000 Coll, of 28 November 2000
12.	Onsite records about produced heat and electricity, Onsite records abut sold heat, Completed and reported monitoring protocols from sub-projects to BTG Central Europe s.r.o Verification of existing and valid seals from calibrations of measruring equipments
13.	International Association for the Properties of Water and Steam, "Steam Tables" books based on the IAPWS-IF97, http://www.iapws.org/