VALIDATION REPORT

MINEGAS GMBH

UTILIZATION OF COAL-MINE-METHANE "EWALD 1/2/7"

Report No: 20695208-04/16

RWTÜV Systems GmbH
Member of TÜV NORD Group
JI/CDM Certification Program
Langemarckstrasse, 20
45141 Essen, Germany
Phone: +49-201-825-3335
Fax: +49-201-825-3290
www.tue-vnord.de
www.global-warming.de

Date: 2005-December-30

Date of first issue: 2005-12-30	Project No.: 20695208-04/16
Approved by: Mr. W. Wielpütz	Organisational unit: RWTÜV JI/CDM Certification Program
Client: Minegas GmbH	Client ref.:

Validation Summary/Opinion:
The Minegas GmbH has commissioned the JI/CDM Certification Program of RWTÜV Systems to validate the project: "Utilization of Coal-Mine-Methane – Ewald 1/2/7", with regard to the relevant requirements for JI project activities.

The project intends to reduce GHG emissions by combustion of Coal-Mine-Methane and thereby converting it into CO_2 with less GWP.

The validation of this project was carried out primarily on a project specific basis, but also considering a sectoral approach, as 50 similar CHP plants (all located in the Rhein-Ruhr area in Germany) have been validated simultaneously.

A risk based approach has been followed to perform this validation. In the course of the draft validation 2 Corrective Action Requests (CARs) and 4 Clarification Requests (CRs) were raised and successfully closed. The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided RWTÜV JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria. The successful validation is meant to be the prerequisite for both state approvals.

The conclusions of the validation are given in detail in chapter 4. The conclusions can be summarised as follows:

- The project is in line with all relevant host and sponsor party criteria and all relevant UNFCCC requirements for JI.
- The chosen baseline is a likely scenario to describe what would occur without the project implementation.
- Evaluated risks such as change of gas quality, flooding of the mine gallery, other technical problems and change of financial boundary conditions are summarised and considered within the sectoral approach. This led to an estimation of a reduction factor to be applied to the calculated amount of emission reductions on the project specific level.
- The project is additional to everything that would otherwise occur, because:
    - the project generates a significant amount of emission reductions (ERUs) and creates only minor environmental impacts.
    - without consideration of revenues from carbon there would have been considerable investment barriers that very likely would have affected the realisation of the project. This was clearly shown by the additionality test which was assessed as feasible and transparent.
    - evidence was provided to the validation team that benefits from the Kyoto mechanisms were seriously considered when the decision to start the project activity was taken.
- The monitoring plan and the monitoring practices displayed in the project documentation are transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner on the project specific level, so that the calculated emission reductions of 941,320 t CO_{2eq} is most likely to be achieved within 10 years in case no problems as addressed in the sectoral approach will occur. Applying of the above mentioned sectoral approach reduction factor (0.66) the total amount of emission reductions is reduced to 621,271 t $CO_{2eq.}$ Within the envisaged crediting period (2008-2012) the corresponding figures are 470,660 t CO_{2eq} and respectively 310,636 t CO_{2eq}

The conclusions of this report show, that the project, as it is described in the project documentation, is in line with all criteria applicable for the validation.

Unless requested later on, this version of the validation report will be considered as final, though the German and Dutch Approvals are pending.

Report No.: Validation Report	Subject Group: Environment	
Report title: *Utilization of Coal-Mine-Methane – Ewald 1/2/7*		
Work carried out by: Rainer Winter, Dr. Detlef Nehm, Hinrich Bornebusch		
Work verified by: Wolfgang Wielpütz		
Date of this revision: 2005-12-30	Rev. No.: 0	Number of pages: 55

Indexing terms

Climate Change, JI, CMM Validation, Kyoto Protocol

Abbreviations

B	**Baseline**
BImSchG	**Bundes-Immissionsschutzgesetz (German environmental protection law)**
CAR	**Corrective Action Request**
CH_4	**Methane**
CHP	**Combined Heat & Power**
CMM	**Coal Mine Methane**
CO_2	**Carbon dioxide**
CO_{2e}	**Carbon dioxide equivalent**
CR	**Clarification Request**
E	**Emissions of CO_{2eq}**
EEG	**Erneuerbare Energien Gesetz (German Renewable Energy Law)**
EIA	**Environmental Impact Assessment**
ERU	**Emission Reduction Unit**
EU-ETS	**European Union Emissions Trading Scheme**
GHG	**Greenhouse gas**
kW	**Kilowatt**
kWh	**Kilowatt hour**
LoA	**Letter of Approval**
MP	**Monitoring Plan**
MW	**Megawatt**
P	**Project**
PDD	**Project Design Document**
ProMechG	**Projekt-Mechanismen-Gesetz (German project based mechanisms law)**
UNFCCC	**United Nations Framework Convention on Climate Change**
UVPG	**Umweltverträglichkeitsprüfungsgesetz (German EIA law)**

Table of Contents *Page*

1 INTRODUCTION

Minegas GmbH has commissioned the JI/CDM Certification Program (CP) of RWTÜV Systems GmbH to validate the project:

"Utilization of Coal-Mine-Methane, Ewald 1/2/7"

with regard to the relevant requirements for JI project activities.

1.1 Objective

The purpose of this validation is to have an independent third party assess the project design. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 6 of the Kyoto Protocol; the guidelines for the implementation of Article 6 of the Kyoto Protocol as presented in the Marrakech Accords under decision 16/CP.7, and the annex to the decision (JI-Rules),
- other relevant rules, including the host country legislation JI criteria

are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of emission reduction units (ERUs).

1.2 Scope

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan which are included in the PDD and other relevant supporting documents.

The items covered in the validation are described below:

- **UNFCCC & Host Country Criteria**
  - UNFCCC/Kyoto Protocol requirements, in particular, the requirements of the JI as set out in decision 16/CP.7 (Marrakech Accords), and the annex to the decision (JI-Rules)
  - Host country requirements / criteria

- **JI Project Description**
  - Project design

- Project boundaries
- Predicted JI project GHG emissions

- **Project Baseline**
  - Baseline methodology
  - Baseline GHG emissions

- **Monitoring Plan**
  - Monitoring Plan methodologies and intervals
  - Indicators/data to be monitored and reported
  - Responsibilities
  - External verification and certification

- **Background investigation and follow up interviews**

- **Stakeholder consultation**
  - Publishing the PDD on RWTÜV website
  - Review of comments

- **Draft validation reporting with CARs & CRs, if any**

- **Validation reporting.**

The information included in the PDD and the supporting documents was reviewed against the requirements and criteria mentioned above. The JI/CDM CP of RWTÜV Systems GmbH has, based on the recommendations in the Validation and Verification Manual, employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of ERUs. The validation is based on the information made available to RWTÜV Systems GmbH and on the contract conditions.

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

1.3 GHG Project Description

1.3.1 Project Scope

The considered GHG project can be classified in the sector given in Table 1-1 (according to UNFCCC sectoral scopes numbers).

Table 1-1: Project Scope

No.	Project Scope
8	Mining/Mineral production

1.3.2 Project entities

The following parties are involved in the developing of the project

Project Developer:	Minegas GmbH Rüttenscheiderstr. 1-3 D-45128 Essen Germany
Contact person:	Mr. Michael Kaminski +49 (0) 201 801 2666 or +49 (0) 160 9784 5066 michael.kaminski@minegas.com
Sponsor:	Carbon-TF B.V. Hertog Eduartstraat 4 5913 EX Venlo Netherlands
Contact Persons:	Dr.-Ing. Jürgen Meyer, Managing Director Dipl.-Ing. Clemens Backhaus, Managing Director +49 (0) 208 8598-1417 info@carbon-tf.com

1.3.3 Project location

The project is located at:

Postal Address	Ewaldstraße 45699 Herten
Land registry entry	Gemarkung: Herten Flur 82 Flurstücke: 39, 58

1.3.4 Technical project description

The project involves the installation of three co-generation gas-engines and the recovery of coal mine methane (CMM) from a closed coal mine gallery to use it as fuel for the gas engines. The technology used in the project is of combined heat & power (CHP) type. The key data are given in the table 1-2 mentioned below.

Table 1-2: Technical and operational data

CHP gas engines	
Manufacturer	Deutz 16K620
Number / formation of cylinders	16 / V
Cylinder capacity	70.8 dm^3
Rotational frequency	1,500 1/min
Capacity (electrical power)	3 x 1.358 MW_{el} total 4.074 MW_{el}
Electrical efficiency	37 %
Yearly operating hours	6500 h

The emission reductions are a result of the recovery of CMM out of the coal mine which otherwise would be emitted to the atmosphere.

The replacement of conventional power is irrelevant for generating ERUs, because together with ProMechG /ProMechG/ and the EEG /EEG/ this would lead to double benefit revenues.

A general survey of the project characteristics including the estimated emission reductions is given in table 1-3 mentioned below.

Table 1-3: Project Characteristics

Project Characteristics	
Project activity level	26,481,000 kWh_{el}
Methane concentration of Coal Mine Gas	> 30%
Project lifetime	Up to 30 years
Lifetime for economic calculation	10 years

2 VALIDATION TEAM

- The Validation Team was led by Mr. Rainer Winter. Mr. Winter works at RWTÜV Systems as ISO 9001/ISO 14001 Auditor and environmental verifier for EMAS. He is also an approved emission verifier within the European Emission Trading Scheme. Mr. Winter is an authorized JI/CDM assessor and is in charge of the JI/CDM Certification Program of RWTÜV Systems GmbH. For this validation he was assisted by:
- Dr Detlef Nehm. He works at RWTÜV Systems as ISO 9001/ISO 14001 Auditor and environmental verifier for EMAS. He is also an approved emission verifier within the European Emission Trading Scheme. Dr. Nehm is an authorized JI/CDM assessor.
- Hinrich Bornebusch, trainee.

The validation report is verified by:

- Mr. Wolfgang Wielpütz. He is the deputy chief of RWTÜV Systems GmbH.

3 METHODOLOGY

The validation of the project was carried out from September to December '05. It was divided into 2 phases: the pre-validation and the final validation.

The pre validation consisted of the following three sub-phases:

- A desk review of the PDD (incl. annexes) /PDD1/ and supporting documents with the use of the a customised validation protocol /CPM/ according to the Validation and Verification Manual /VVM/;
- Background investigation and follow-up interviews with personnel of the project proponent, the consultant, legal authorities and other stakeholders;
- Reporting of draft validation findings taking into account public comments if posted on TÜV NORD website /tuv-nord/.

The draft validation report /VR1/ includes Corrective Action and Clarification Requests (CAR and CR) identified in the course of this validation.

The final validation started after issuance of proposed corrective action (CA) of these CAR and CR by the project proponent. The validator has assessed the proposed CA with a positive result and after the closure of these CAR and CR the project proponent has issued the final version of the PDD /PDD2/. On the basis of this the final validation report and opinion were issued.

3.1 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol was used. The protocol shows, in a transparent manner, criteria and requirements, means of verification and the results from pre-validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements that a JI project is expected to meet;
- It ensures a transparent validation process where the independent entity will document how a particular requirement has been validated and the result of the determination.

The validation protocol consists of three tables: Table 1 (Mandatory Requirements); Table 2 (Requirement Checklist); and Table 3 (Resolution of Corrective Action and Clarification Request) as described in Figure 1.

The completed validation protocol is enclosed in the annex to this report identifying 2 Corrective Action Requests and 4 Clarification Requests.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*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 Validation report.*	*Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.*

Validation Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below). **Clarification** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Validation conclusion***
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the client or other project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 : Validation protocol tables

3.2 Review of Documents

The draft PDD /PDD1/ submitted by Minegas GmbH in September 2005 and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The documents that were considered during the validation process are given in chapter 7 of this report. They are listed as follows:

- Documents provided by the project proponent (Table 7-1)
- Background investigation and assessment documents (Table 7-2)
- Websites used (Table 7-3).

In order to ensure the transparency of the decision making process, the reference codes listed in tables 7-1 to 7-3 are used in the validation protocol and – as far applicable – in the report itself.

3.3 Follow-up Interviews

Mainly in October and November 2005 the JI/CDM CP of RWTÜV Systems GmbH performed interviews with the project proponent and project stakeholders as well as with local authorities to confirm selected information and to resolve issues identified in the document review.

The main topics of the interviews are summarised in Table 3-1.

Table 3-1 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives (head office and site)	- Environmental policy - General aspects of the project - Technical details of the project realisation - Approval procedures and status - Quality and environmental management system - Involved personnel and responsibilities - Monitoring and measurement equipment - Financial aspects - Management decision - Baseline study assumptions

Interviewed Persons / Entities	Interview topics
	- Environmental impacts - Fuel characteristics - Socio economic impacts on the local population - Details of emission reduction calculation - Operational data
Consultant	- Editorial aspects of PDD - Procedural aspects - Details of emission reduction calculation - Sectoral approach
State authorities	- State objectives of climate change policies - GHG Inventory - Procedural aspects - Sectoral approach for JI
Scientists	- Baseline justification - Performance characteristics - Involvement of JI
Manufacturer	- Motor characteristics - Plant load factor

A detailed list including the functions or designations of the interviewed persons is given in chapter 7 (cp. table 7-4). This table also includes reference codes to be used in the validation protocol.

3.4 Resolution of Clarification and Corrective Action Requests

In order to remedy any mistakes, problems or any other outstanding issues which needed to be clarified for positive conclusion on the project design, Corrective Action Requests (CARs) and Clarification Requests (CRs) were raised.

A CAR is issued where:

- mistakes have been made in assumptions or the project documentation which directly will influence the project results
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered or that emission reductions cannot be verified and certified.

A CR is issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

In the course of this validation 2 Corrective Action Requests (CARs) and 4 Clarification Request (CRs) were raised.

The CAR / CR are documented in the Annex and addressed in Chapter 4.

3.5 Public Stake Holder Comments

The PDD was made publicly available through TÜV NORD website www.global-warming.de. Comments on the PDD were invited within 30 days, i.e. September 14th to October 14th 2005.

For this project no comments were received.

In case comments would have been posted those comments would also have been made publicly available on the TÜV NORD website.

3.6 Finalising the report

The draft validation report /VR1/ was submitted to the client. After resolving the CR & CAR raised, reviewing the revised and resubmitted project documentation /PDD2/ and outstanding concerns RWTÜV JI/CDM CP issues this final validation report and opinion.

As this validation is meant to provide the Governments of Germany and the Netherlands with sufficient confidence that the criteria applicable for JI are met, this version of the validation report excludes the criteria of host and sponsor party approval.
Nevertheless - unless requested later on – this version of the validation report is considered as final.

4 VALIDATION FINDINGS

In the following paragraphs the findings from the desk review of the draft PDD and supporting documents, as well as from interviews are summarised. This also includes the corresponding corrective action taken by the client and its final assessment.

The summary of CAR and CR issued are shown in Table 4-1:

Table 4-1: Summary of CAR and CR issued

Validation topic [1)]	No. of CAR	No. of CR
Participation requirements (A3)	0	0
Project design (A1-A2)	0	0
Baseline and additionality (B)	0	3
Crediting Period (C)	0	0
Monitoring plan (D)	1	1
Calculation of GHG emissions (E)	1	0
Environmental impacts (F)	0	0
Comments of local stakeholders (G)	0	0
SUM	**2**	**4**

[1)] The letters in brackets refer to the validation protocol

For an in depth evaluation of all validation items it should be referred to the Annex.

4.1 Participation Requirements

The participation requirements for JI-Projects applicable for Germany and the Netherlands are given in the Article 6 Kyoto Protocol and the decision 16/CP.7 (Marrakech Accords). Both states have committed themselves to have fulfilled all requirements before the beginning of the first commitment period.

The German Government has committed itself e.g. in various Letters of Endorsement /LOE/ to fulfil all eligibility requirements before 2006-09-01 was announced.

Before final acceptance of the project the host party (Germany) and the sponsor party (The Netherlands) have to approve the project and corresponding Letters / Declarations of Approval have to be submitted.

4.2 Project design

The project involves the installation of three co-generation gas-engines and the recovery of coal mine methane (CMM) from a closed coal mine gallery to use it as fuel for the gas engines.

Without recovery the CMM would migrate from the former mine area to the surface and this will result in diffuse emissions of GHG Methane into the atmosphere. In a submitted appraisal of the DMT (Deutsche Montan Technologie) /DMT1/ it is clearly explained that the whole CMM would be emitted without recovery within human timeframes.

The project spatial and system boundaries are described in an appropriate manner. Additional effects that also could have led to emission reductions - power and heat replacement - are not considered for carbon credits because that would have led to double counting of carbon credits (cp. ProMechG).

4.3 Baseline and Additionality

The baseline is the scenario that reasonably represents the anthropogenic emissions by sources of GHG emissions that would occur in the absence of the project.

The baseline must be valid for the whole crediting period, in this case from 2008-2012.

The statements below regarding the recovery of the CMM are valid for the whole period. For the time of the crediting period it is not foreseeable or likely, that the legal conditions in Germany will be changed in a way, which entails changes to the baseline scenario.

In the baseline scenario the coal mine gas escapes into the atmosphere. As

a) the electricity production is within the scope of the German renewable energy law (EEG) and

b) the produced electricity and heat will mainly displace production of EU-ETS facilities and thus would entail double counting of emission reductions

the displacement of electrical energy and heat will not be considered further in terms of calculation of accountable emission reductions.

The basic assumption for calculating the baseline emissions of abandoned mines is that all recovered methane would migrate to the surface in comparable timeframes and that the mitigated methane amounts are equal to the pumped and combusted quantities. During validation the justification of this basic assumption could be verified esp. by means of interviews with scientists and state authorities (cp. chapter 7).

Under the above premise the (project specific) baseline CMM emissions can be calculated by the provided electricity and the electrical efficiency of the CHP plant. The approach is transparent and state of the art and can be carried out by means of

the planned installation. To estimate the (project specific) baseline emissions the following parameters were considered (table 4-1).

Table 4-1: Parameters and results of baseline construction

Parameter	Unit	Value
CHP Electrical power capacity	MW_{el}	4.074
Assumed operating hours	h	6,500
Net efficiency of gas engine	%	37
Calorific Value of methane	kWh/ m^3	9.949
Density of methane	kg/m^3	0.717
Global Warming Potential of CH_4	t CO_{2eq}/t CH_4	21
Baseline Emissions	t CO_{2eq}/a	108,316

All parameters listed above and the applied formulae can be assessed as appropriate and conservative in terms of baseline emission estimating. A sensitivity analysis was carried out.

The coal mine gas contains CO_2 as a further greenhouse gas in addition to CH_4. Provided that the basic assumption (see above) apply for the whole mine gas, the emissions of the CO_2 part of the coal mine gas are the same in the baseline and in the project situation.

The same logic applies for leakage CH_4 gas that also would be emitted in the baseline and the project situation and is therefore not considered further on.

The baseline scenario is assessed to be constructed in a complete as well as transparent manner. It can be considered to remain constant for the whole crediting period. It is in line with the goal for a baseline, to be a scenario that reasonably represents the GHG emissions that would occur in the absence of the project.

This is valid on the individual project level, assuming that no such problems as being addressed in the sectoral approach occur.

Nevertheless it is very likely that out of the 50 projects - that have been validated simultaneously – some will fail during the crediting period or before. This has been taken into account in the framework of the sectoral approach.

This was done by applying a sectoral approach factor R_{SA} - defined as ratio of the estimated most likely emission reductions within the crediting period of all simultaneously validated projects (taking into account all possible negative effects on the project performance) $E_{R,50,estimated}$ and the sum of the emission reductions as calculated in the above described manner for all projects as

$$R_{SA} = \frac{E_{R,50,estimated}}{\sum_{i=1}^{50}(E_B - E_P)_i} \quad . \qquad (1)$$

On the basis of existing operational experience this factor was estimated by several project operators to be

$$R_{SA} = 0{,}66 \quad . \qquad (2)$$

The validation team has assessed this factor to be estimated in an appropriate manner and to be very likely appropriate to describe the situation during the crediting period 2008-12.

Following this logic this factor has to be applied in the same manner for both baseline and project emissions.

In order to distinguish clearly between the individual project situation and the whole sectoral situation, this factor was only finally applied when deriving the value of the most likely emission reductions (cp. validation opinion).

In order to prove the additionality of the project the additionality tool of the UNFCCC /AT/ (as developed for CDM) has been adopted. The flowchart of this test is shown in figure 4-1.

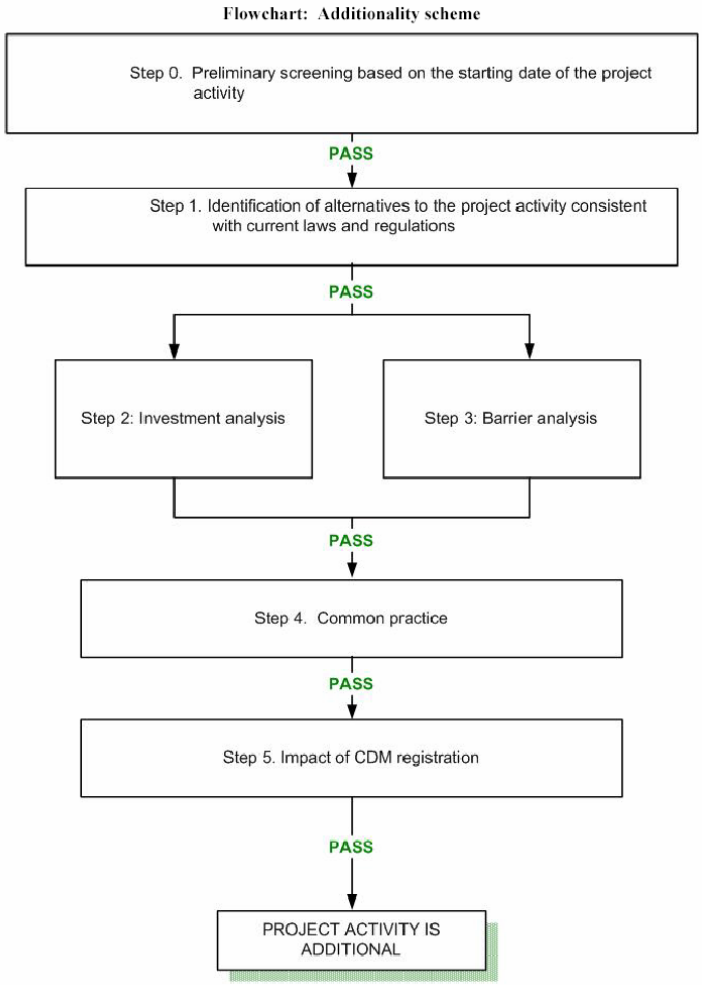

Figure 4-1: CDM addionality tool

This additionality tool was applied in a detailed manner and sufficient evidence was provided that the validation team arrived at the conclusion that the project is not a business as usual case. In brief, applying the test criteria, it was shown that

- benefits from the Kyoto mechanisms were seriously considered when the management decision to start the project activity was taken. The project started in January 2004 (step 0),
- alternatives to the realisation of this project activity are existing. As there is no legal requirement for this kind of projects the most likely alternative is to let the CMM migrate and diffusely emit to the atmosphere as done in the previous decades (step 1),
- financial barriers are existing. In order to assess the economic additionality a detailed investment calculation /IC/ was handed over to and was duly assessed by the validation team. In general all included assumptions, financial parameters and calculation methods were assessed to be feasible and transparent. When calculating the revenues from the electric power production, the EEG benefits were considered. Even though economic benefits will be generated from this source, it was shown, that, in this specific project case, without consideration of carbon credits, there would be substantial investment barriers due to several financial risks that have to be taken by the investor. Furthermore there are other project alternatives that will be more viable in terms of economic benefits than the project under consideration. The financial barriers could be overcome as the IRR of this project raises from 7.8 % (which was assessed as to be too low) to 15.5 % when carbon credits are considered (step 2),
- several technological barriers are existing mainly due to the fact that the technology used is comparatively young and only poor knowledge regarding the long term availability of CMM is existing (step 3),
- though several projects had already been realised before the starting date of this project activity it can not be seen as common practice. Before the beginning of the new century the common practice was to let the CMM emit unused (step 4),
- together with the effects of the EEG the anticipation of benefits from carbon credits has already led to significant initiatives to mitigate GHG emissions from the mining sector. It can be assumed that the signal of successful registration of this project activity (and comparable) will lead to additional efforts to reduce emissions of CMM inside and esp. outside Germany (step 5).

Thus the additionality test leads to the result, that all steps are passed.

The environmental additionality can be assessed essentially by the amount of the emission reductions created by the project. Other environmental impacts, such as NO_x, CO and sound emissions, are of minor importance and will be completely in accordance with the requirements of German environmental legislation (BImSchG, TA Luft).

As CMM is treated as a hydrocarbon, as per German Mining law, the project authority has obtained all necessary licences for exploration and necessary approval for well installation from local authorities for mining, environment, water protection etc.

The project creates a huge amount of emission reductions, significant danger abatement and it will create no harmful environmental impacts. So the ecological additionality is given without any doubt.

During validation the following CR regarding the baseline estimation and the additionality check had to be raised.

Clarification Request B1:	
CR	The date in sector L.4 of the PDD only defines the composing date of the scientific basis, not the building date of the baseline.
CA:	The PDD has been corrected.
Conclusion:	OK

Clarification Request B2:	
CR	The document referenced as /DMT-2/ is not clearly defined (title, year,(author))
CA:	The PDD has been corrected.
Conclusion:	OK

Clarification Request B3:	
CR	The CDM-methodolgy addressed in chapter B should be specified.
CA:	The PDD has been corrected.
Conclusion:	OK

4.4 Crediting Period

The intended crediting period of the project is Jan 2008 to Dec. 2012. Furthermore it is intended to apply for an extended crediting period after 2012. The complete crediting period should not extend 10 years (non-renewable period).

4.5 Monitoring Plan

The monitoring plan defines the collection of data, the measuring instruments and the practices of the monitoring.

All relevant data will be collected continuously and stored during the whole crediting period. The instruments are well known and state of the art. The practices of the monitoring and the training of the personnel represent a high standard.

The approach for the monitoring of the mitigated methane is described in detail in the PDD (cp. chapter P). Basically the amount of methane used can be derived by the measurement of the generated electricity and calculation of the input fuel energy by

applying the thermal efficiency of the CHP. The calculation will be carried out with a fixed conservative value of η = 37 %. In order to prove the conservativeness (i.e. the actual values have to be lower) of this efficiency an annual confirmation measurement of the efficiency has to be carried out by an appropriate institute.

Furthermore the flow rate and the concentration of CH_4 has to be monitored continuously in order to monitor the operation as described in the PDD.

The baseline emissions monitoring regarding CH_4-recovery is virtually identical with the monitoring of the project emissions. No further variables have to be measured.

As the heating system is not considered for carbon credits no monitoring of the generated heat is necessary.

During validation the following CAR/CR regarding the monitoring were raised and successfully closed.

Corrective Action Request D1:	
CAR	The necessary formulae for the calculations mentioned in section / table 3.1 are not given. Furthermore the variables could be mentioned in this table.
CA:	The PDD has been completed with the necessary formulae.
Conclusion:	OK

Clarification Request D1:	
CR	It should be clarified that in formula 2.4.2 W_{el} is the produced (and not the transferred) electrical energy.
CA:	The PDD has been corrected.
Conclusion:	OK

4.6 Calculation of GHG Emissions

The emission reductions are calculated by subtracting the project emissions (cp. chapter K of the PDD) from the baseline emissions (cp. chapter N of the PDD). The determination of the baseline emissions can be assessed as complete and transparent (cp. 4.3). The estimation of the project emissions is also transparent and follows conservative assumptions.

Emission reductions from the replacement of conventional power and heat production are not considered as almost exclusively emissions from EU-ETS facilities will be displaced and thus this would lead to double counting of emission reductions.

The calculated values to determine the emission reductions are summarized in table 4-3.

Table 4-3: Calculation of Emission Reductions

Parameter	Unit	Value
Baseline emissions (fugitive emission of CMM)	t CO_2eq/a	108 316
Project emissions	t CO_2eq/a	14 184
Emission reduction	**t CO_2eq/a**	**94 132**

The following CAR regarding the calculation of GHG Emission reductions was raised:

Corrective Action Request E1:	
CAR	The calculations can be assessed as appropriate and best practice estimation as far as this single project is concerned. In annex 2 (sectoral approach) it was clearly shown that it has to be considered that a certain portion of all projects will fail or operate with a reduced capacity. This influence is not considered on the individual project specific basis and should be addressed in the framework of the sectoral approach. This should be done in a way that the sum of estimated emission reductions of all considered projects is the most likely value for the whole sector portion incl. all considered projects.
CA:	The annex 2 (sectoral approach) has been upgraded with an additional chapter.
Conclusion:	OK

Applying the sectoral approach ratio RSA = 0,66 the total emission reduction reduces to 62,127 t CO_{2eq}/a.

4.7 Environmental Impacts

In Germany the environmental impact assessment law (UVPG) requires a site-specific test of relevance for this kind of projects. This was carried out prior to the BImSchG approval application. It was assessed that no complete EIA is necessary.

In the framework of the addionality demonstration other environmental aspects, such as flue gas (NO_x and CO) and sound emissions have been addressed and assessed to be of minor importance.

4.8 Comments by Local Stakeholders

Local stakeholders have been informed about the project by using local media esp. newspaper articles. No major comments were received.

5 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the validation of JI projects, RWTÜV Systems GmbH published the draft PDD on its website www.global-warming.de on 14th September 2005 and invited comments within 30 days, until 14th October 2005 by parties, stakeholders and UNFCCC accredited non-governmental organisations.

A link to this website was hosted on the BMU – website /bmu/ during the mentioned period.

No comments were received during this period.

6 VALIDATION OPINION

The Minegas GmbH has commissioned the JI/CDM Certification Program of RWTÜV Systems to validate the project: “Utilization of Coal-Mine-Methane – Ewald 1/2/7”, with regard to the relevant requirements for JI project activities.

The project intends to reduce GHG emissions by combustion of Coal-Mine-Methane and thereby converting it into CO_2 with less GWP.

The validation of this project was carried out primarily on a project specific basis, but also considering a sectoral approach, as 50 similar CHP plants (all located in the Rhein-Ruhr area in Germany) have been validated simultaneously.

A risk based approach has been followed to perform this validation. In the course of the draft validation 2 Corrective Action Requests (CARs) and 4 Clarification Requests (CRs) were raised and successfully closed. The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided RWTÜV JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria. The successful validation is meant to be the prerequisite for both state approvals.

The conclusions of the validation are given in detail in chapter 4. The conclusions can be summarised as follows:

- The project is in line with all relevant host and sponsor party criteria and all relevant UNFCCC requirements for JI.
- The chosen baseline is a likely scenario to describe what would occur without the project implementation.
- Evaluated risks such as change of gas quality, flooding of the mine gallery, other technical problems and change of financial boundary conditions are summarised and considered within the sectoral approach. This led to an estimation of a reduction factor to be applied to the calculated amount of emission reductions on the project specific level.
- The project is additional to everything that would otherwise occur, because:
    - o the project generates a significant amount of emission reductions (ERUs) and creates only minor environmental impacts.
    - o without consideration of revenues from carbon credits there would have been considerable investment barriers that very likely would have affected the realisation of the project. This was clearly shown by the additionality test which was assessed as feasible and transparent.
    - o evidence was provided to the validation team that benefits from the Kyoto mechanisms were seriously considered when the decision to start the project activity was taken.

- The monitoring plan and the monitoring practices displayed in the project documentation are transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner on the project specific level, so that the calculated emission reductions of 941,320 t CO_{2eq} is most likely to be achieved within 10 years in case no problems as addressed in the sectoral approach will occur. Applying of the above mentioned sectoral approach reduction factor (0.66) the total amount of emission reductions is reduced to 621,271 t $CO_{2eq.}$ Within the envisaged crediting period (2008-2012) the corresponding figures are 470,660 t CO_{2eq} and respectively 310,636 t CO_{2eq}

The conclusions of this report show, that the project, as it is described in the project documentation, is in line with all criteria applicable for the validation.

Unless requested later on, this version of the validation report will be considered as final, though the German and Dutch Approvals are pending.

Essen, 2005-12-30

Rainer Winter

Team Leader

RWTÜV JI/CDM Certification Program

7 REFERENCES

Table 7-1: Documents provided by the project proponent

Reference	Document
/CH4EM/	Minegas GmbH: CH_4-emssions of German coal mining
/DMT1/	Meiners, H.; Marzlinger, A.: Gesamtemissionen im deutschen Steinkohlebergbau, Glückauf 138, 2002
/DMT2/	Stellungnahme der Deutschen Montan Technologie GmbH: Beitrag der Gewinnung von Grubengas zur Minderung der CH_4-Emissionen im Sinne des Klimaschutzkonzeptes NRW
/IC/	Investment calculation
/ISI/	Fraunhofer Institut für Systemtechnik und Innovationsforschung: Emission trading and other flexible instruments, presentation held at Oberhausen, 7. November 2001
/LOE/	Letters of Endorsement of the German Government issued for several CMM projects (e.g. LoE of 2004-10-21)
/PDD1/	Draft PDD: Utilization of Coal-Mine-Methane “Ewald 1/2/7” (version including investment calculation details)
/PDD2/	Final PDD: Utilization of Coal-Mine-Methane “Ewald 1/2/7”
/TDS/	Technical Data Sheet
/XCS/	Excel calculation sheets

Table 7-2: Background investigation and assessment documents

Reference	Document
/AT/	UNFCCC: Tool for demonstration and assessment of additionality
/BImSchG/	Bundesimmissionsschutzgesetz
/CPM/	RWTÜV JI / CDM CP Manual (incl. CP procedures and forms)

Reference	Document
/EEG/	Erneuerbare Energien Gesetz
/IPPC-RM/	IPPC: Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories
/KP/	Kyoto Protocol (1997)
/MA/	Decision 16/CP. 7 (Marrakesh-Accords): Guidelines for the implementation of Article 6 of the Kyoto Protocol
/ProMechG/	Projekt Mechanismen Gesetz (2005-09-22)
/TAL2002/	TA Luft 2002
/UVPG/	German Environmental Impact assessment law
/VR1/	RWTÜV Draft validation report on the project "Utilization of Coal-Mine-Methane – Ewald 1/2/7"
/VVM/	IETA, PCF Validation and Verification Manual (V. 4)

Table 7-3: Websites used

Reference	Link	Organisation
/bmu/	http://www.bmu.de	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
/tuv-nord/	http://www.global-warming.de	RWTÜV / TÜV-Nord
/uba/	www.umweltbundesamt.de/uba-infodaten/daten/kohlendioxidemissionen.htm	Umweltbundesamt
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interview persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms.	Thomas Forth	BMU, German Federal Ministry for the Environment
/IM02/	T	☒ Mr. ☐ Ms.	Dr. Meiners	DMT, Scientist
/IM03/	T	☒ Mr. ☐ Ms.	Hüllnkämper	UBA, National GHG register expert
/IM04/	T	☒ Mr. ☐ Ms.	Dr. Jürgen Meyer	Carbon-TF B.V., Director
/IM05/	T	☒ Mr. ☐ Ms.	Besselmann	Minegas GmbH, Expert
/IM08/	T	☒ Mr. ☐ Ms.	Willenbrink	Pro 2 GmbH, Project manager
/IM09/	T	☐ Mr. ☒ Ms.	Diewitz	DEHST
/IM10/	V	☒ Mr. ☐ Ms.	Franzjosef Schaffhausen	BMU, Head of Division Z III 6, Climate Change Programme
/IM10/	V	☒ Mr. ☐ Ms.	Thomas Forth	BMU, German Federal Ministry for the Environment
/IM10/	V	☒ Mr. ☐ Ms.	Andreas Minke	Mingas-Power GmbH, Minegas GmbH, Chairman of the board of management
/IM10/	V	☒ Mr. ☐ Ms.	Michael Kaminski	Minegas GmbH, Excecutive General Project Manager
/IM10/	V	☒ Mr. ☐ Ms.	Gerd Wagner	Mingas-Power GmbH, Managing Director
/IM10/	V	☒ Mr. ☐ Ms.	Clemens Backhaus	Carbon-TF B.V., Director
/IM10/	V	☒ Mr. ☐ Ms.	Adam Hadulla	Carbon-TF B.V., Project manager

Reference	MoI[1]		Name	Organisation / Function
/IM19/	T	☒ Mr. ☐ Ms.	Besselmann	see above
/IM20/	V	☒ Mr. ☐ Ms.	Andreas Minke	see above
/IM31/	E	☒ Mr. ☐ Ms.	Adam Hadulla	see above

1) Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

ANNEX

Validation Protocol

ANNEX: VALIDATION PROTOCOL

Table 1: Mandatory Requirements for Joint Implementation (JI) Project Activities

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
1. The project must have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a) /IM01/	The decision to issue the Letter(s)/Declaration(s) of Approval will be taken on the basis of this Validation Report.	Though the Letter(s) / Declaration(s) of Approval are not available at the time of issuing this Validation Report it will be considered as final.
2. Emission reductions, or an enhancement of removal by sinks, must be additional to any that would otherwise occur	Kyoto Protocol Article 6.1 (b)	Fulfilled	Table 2, Section B.2
3. The sponsor Party shall not aquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7	Kyoto Protocol Article 6.1 (c)	Fulfilled	Corresponding declarations have been issued.
4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3	Kyoto Protocol Article 6.1 (d)	Fulfilled	
5. Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects	Marrakech Accords, JI Modalities, §20	Fulfilled	
6. The host Party is a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24	Fulfilled	

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
7. The host Party's assigned amount has been calculated and recorded in accordance with the modalities for the accounting of assigned amounts	Marrakech Accords, JI Modalities, §21(b)/24	Fulfilled (before 2006-09-01)	
8. The host Party has in place a national registry in accordance with Article 7, paragraph 4	Marrakech Accords, JI Modalities, §21(d)/24	Fulfilled (before 2006-09-01)	
9. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination	Marrakech Accords, JI Modalities, §31	Fulfilled	
10. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments	Marrakech Accords, JI Modalities, §32	Fulfilled	Via www.global-warming.de from 2005-09 -14 until 2005-10-14
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out	Marrakech Accords, JI Modalities, §33(d)	Fulfilled	German Environmental Impact assessment law (UVPG) requires a site-specific test of relevance for this kind of projects. This has been carried out prior to the approval application. It was assessed that no complete EIA is necessary. (cp. Table

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
			2, Section F)
12. The baseline for a JI project is the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project	Marrakech Accords, JI Modalities, Appendix B	Fulfilled	Table 2, Section B.2
13. A baseline must be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, JI Modalities, Appendix B	Fulfilled	Additional to the project specific approach a sectoral approach was considered. (cp. Table 2, Section B.2)
14. The baseline methodology must exclude to earn ERUs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, JI Modalities, Appendix B	Fulfilled	Table 2, Section B.2
15. The project shall have an appropriate monitoring plan	Marrakech Accords, JI Modalities, §33(c)	Fulfilled	Table 2, Section D

Table 2: Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/PDD1/ (section A.4.1)	DR	The project boundary is the physical geographical site of the methane recovery facility incl. the old mine gallery.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/PDD1/ (section G)	DR	The project's system boundaries do not include the electrical distribution system.		OK
A.2. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.2.1. Does the project design engineering reflect current good practices?	/TDS/ Validator´s experience	DR	Yes, assessment on the basis of Technical data sheet and experience out of comparable projects.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/PDD1/ Validators Experience	DR	The project uses advanced state of the art technology for common gaseous fuels. Alternatives would lead to less environmental benefits		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/PDD1/ Validators Experience	DR	No, not likely to be substituted (see above).		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/PDD1/ Validators Experience	DR	No, not more than usual natural gas fired co-generation plants		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/PDD1/ (section P) /IM05/ /IM20/	DR, I	All responsible personal will be trained.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the discussion and selection of the baseline methodology transparent?	/PDD1/ (section L) /IM02/ /IM03/	DR, I	Yes, sufficiently transparent. The baseline study considers diffuse methane emissions and cold flaring.		OK
B.1.2. Does the methodology describe the general approaches for demonstrating the additionality of the project?	/PDD1/ (Annex 1, annex 2 (incl. investment calculation)) /IM05/ /IM10/ /IM20/	DR, I	In order to prove the additionality of the project the "Tool for the demonstration and assessment of additionality" is used. Evidence was provided to the validator that carboncredits were considered when the management decision to start the project was taken. Taking into account the sectoral approach, it is shown that all assessment steps (incl. 2 and 3) are passed. That means that also		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			financial and technological barriers are given. The general assumptions, incl. the investment calculation were assessed to be generally accurate and transparent.		
B.1.3. Does the baseline methodology specify data sources and assumptions?	/PDD1/ (section L)	DR	Yes, 2 studies of DMT are mentioned.		OK
B.1.4. Does the baseline methodology sufficiently describe the underlying rationale for the algorithm/formulae used to determine baseline emissions (e.g. marginal vs. average, etc.)	/PDD1/ (sections L, M, N, and P)	DR	Yes		OK
B.1.5. Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?	/PDD1/ (section L, M, N and P)	DR	Yes		OK
B.1.6. Does the baseline methodology specify the spatial level of data (local, regional, national)?	/PDD1/	DR	The applied data is consistent with the spatial project boundary i.e. only local data is applied.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/PDD1/ (section L, M, and N)	DR	The application of the baseline methodology is assessed to be transparent and adequate.		OK
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/PDD1/ (section L, M, and N) /DMT1/ /DMT2/ /IM02/ /IM03/	DR, I	(1) The mentioned studies by DMT show that all methane that will be combusted during the project activity would have been diffusely emitted (or cold flared) within a timeframe of several years. (2) The baseline emissions are directly proportional to the project emissions. Therefore the assessment of conservativeness applies in the same way as for the project emissions (cp. E). (3) The motor efficiency can be assessed as the highest value to be achieved with the CMM of the specified kind.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Therefore the baseline - in terms of reduced CO_{2eq}/kWh_{el} – can be assessed as conservative.		
B.2.3. Has the baseline been established on a project-specific basis?	/PDD1/ /DMT1/	DR	The baseline has been established on a project specific basis The baseline can be established in the same way for all projects within the sectoral approach. The date in L.4 (2002) refers to the scientific basis of this baseline approach for methane avoidance	CR B1	OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/PDD1/ /EEG/	DR	Yes (e.g. EEG)		OK
B.2.5. Is the baseline determination compatible with the available data?	/PDD1/ /NTGI/ /IM03/	DR, I	Yes, see above. The data of the German National GHG inventory is about to be adjusted.		OK
B.2.6. Does the selected baseline represent a likely scenario in the absence of the project?	/PDD1/	DR	Yes, (it represents a likely scenario)		OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario (e.g. through demonstrating	/PDD1/ (Annex 1,2) /IM02/	DR, I	The economic additionality is clearly stated in Annex 1 and 2. The project leads to significant emission		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
investment barriers, technology barriers, barriers to prevailing practices, and/or other barriers or through quantitative evidence that the project would otherwise not be implemented)?	/IM05/ /IM20/		reductions compared to the baseline scenario. (cp. B.1.2)		
B.2.8. Have the major risks to the baseline been identified?	/PDD1/	DR	The major risk to the baseline is the overestimation of the emission in the without-project-situation. This risk can be assessed as low (see comments above).		OK
B.2.9. Is all literature and sources clearly referenced?	/PDD1/	DR	All cited literature was forwarded to the validator. DMT-2 is not clearly referenced (title, year,(author)) In section E of the PDD it was stated that the value of the methane, which slips uncombusted through the engine, was in accordance with the CDM-Methodology for biogas. This methodology should be clearly addressed and defined.	 CR B2 CR B3	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/PDD1/ (section A.2, A.4.1 and D, Annex	DR	The starting date is 2004. The operational lifetime is estimated to be up to 30 years.		OK
C.1.2. Is the project's crediting time clearly defined?	/PDD1/ (section D) /ProMechG/	DR	The non-renewable crediting period (10 years) was chosen. According to the ProMechG (§5 (3)) the crediting period is limited till the end of 2012. Therefore in section D of the PDD 2008 – 2012 is stated as crediting period. Nevertheless the investment calculation assumes that also after 2012 carbon credits can be generated.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D. Monitoring Plan *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Does the monitoring methodology reflect good monitoring and reporting practices?	/PDD1/ (section P)	DR	The monitoring methodology reflects good monitoring and reporting practices, except of the clarifications raised in this section D of the Requirements Checklist.		OK
D.1.2. Is the selected monitoring methodology supported by the monitored and recorded data?	/PDD1/ (section P)	DR	All necessary parameters will be monitored continuously.		OK
D.1.3. Are the monitoring provisions in the monitoring methodology consistent with the project boundaries in the baseline study?	/PDD1/ (sections P, G)	DR	The project boundary is the site of the methane recovery facility including the mine gallery.		OK
D.1.4. Have any needs for monitoring outside the project boundaries been evaluated and if so, included as applicable?	/PDD1/	DR	All relevant data will be measured inside the project boundaries.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.1.5. Does the monitoring methodology allow for conservative, transparent, accurate and complete calculation of the ex post GHG emissions?	/PDD1/ (section P)	DR	All measured data will be collected and stored during the whole project lifetime and additional five years. The data will be counterchecked, so the ex post calculation of the project and the baseline emissions can be carried out in a conservative, transparent, accurate and complete manner. Nevertheless the following clarifications should be included. (1) It should be clarified that in formula 2.4.2 W_{el} is the produced (and not the transferred) electrical energy. (2) The necessary formulae for the calculations mentioned in section P / table 3.1 are not given. Furthermore the variables could be mentioned in this table.	CR D1 CAR D1	OK
D.1.6. Is the monitoring methodology clear and user friendly?	/PDD1/ (section P)	DR	The necessary data are clearly stated and the calculation of the project and baseline emissions is quite simple. Nevertheless the above mentioned		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			clarifications (D.1.5) will improve the transparency of the calculations to be carried out.		
D.1.7. Does the methodology mitigate possible monitoring errors or uncertainties addressed?	/PDD1/ (section P)	DR	The uncertainties of the measuring devices are generally addressed. The monitoring errors will be minimized by counterchecking the basic assumptions.		OK
D.2. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/PDD1/ (section P)	DR	Relevant data will be collected continuously and stored during the whole project lifetime and additional five years, electronically and as a paper print-out.		OK
D.2.2. Are the choices of project GHG indicators reasonable?	/PDD1/ (section P)	DR	The following values will be measured: volume flow rate, pressure, temperature, CH_4-concentration, power production, transferred power.		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/PDD1/	DR	Yes, (see above).		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	/PDD1/	DR	Yes, (see above)		OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	/PDD1/	DR	Yes, (see above)		OK
D.3. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*	/PDD1/	DR	Not applicable, as electricity generation is not considered.		
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?					
D.3.2. Have relevant indicators for GHG leakage been included?					
D.3.3. Will it be possible to monitor the specified GHG leakage indicators?					
D.4. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/PDD1/ (section P)	DR	The monitoring of the baseline emissions regarding methane avoidance is identical with the monitoring of the project emissions as far as methane avoidance is considered.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/PDD1/	DR	Yes, (see above)		OK
D.4.3. Will it be possible to monitor the specified baseline indicators?	/PDD1/	DR	Yes, (see above)		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental impacts?	/PDD1/ /TAL2002/	DR	Emission measurements have to be performed according to the BImSchG approval notification (basis: TA Luft 2002)		OK
D.5.2. Will it be possible to monitor the specified sustainable development indicators?	/PDD1/	DR	Not applicable.		OK
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	/PDD1/ (section P)	DR	Minegas GmbH will be the operator of the plant. The responsibilities are clearly defined acc. to section P.1 and 2.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/PDD1/	DR	The responsibilities are clearly defined acc. to section P.1 and 2.		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/PDD1/ /IM05/ /IM20/	DR, I	It is planned to train the monitoring personnel at comparable facilities.		OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/BImSchG/	DR	Yes, alongside with the approval procedure (BImSchG, mining law) – incl. safety appraisal		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/PDD1/ (section P 3.3)	DR	All monitoring devices are included in the control system of monitoring and measuring devices.		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/IM05/ /IM20/	I	All monitoring devices are included in the maintenance system of monitoring and measuring devices.		OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/PDD1/ (section P)	DR	According to approval notification external measurement requirements will be specified		OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/PDD1/ (section P)	DR	Yes, see above		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/IM05/ /IM20/	I	Yes, if adjustments will be necessary, they will be recorded in a log file and are accessible for the verifier.		OK
D.6.10. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/IM05/ /IM20/	I	The plant manager has to report to the project manager.		OK
D.6.11. Are procedures identified for project performance reviews?	/IM05/ /IM20/	I	The project manager will (at least) annually review the performance of the plant.		OK
D.6.12. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/IM05/ /IM20/	I	Provisions are taken in order to handle corrective actions.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
E.1. Predicted Project GHG Emissions *The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/PDD1/ (sections E, F)	DR	No deficiencies were detected.		OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/PDD1/ /IM04/	DR, I	Calculations are documented in the PDD. The calculations can be assessed as appropriate and best practice estimation as far as this single project is concerned. In annex 2 (sectoral approach) it was clearly shown that it has to be considered that a certain portion of all projects will fail or operate with a reduced capacity. This influence is not considered on the individual project	CAR E1	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			specific basis and should be addressed in the framework of the sectoral approach. This should be done in a way that the sum of estimated emission reductions of all considered projects is the most likely value for the whole sector portion incl. all considered projects.		
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/PDD1/ /IM04/	DR, I	The assumption of the electrical efficiency of the plant (37%) can be assessed as conservative. The assumption that the plant will constantly operate with the full power output is assessed to be reasonable and conservative on the project specific level, but considering the sectoral approach the risks of failure or performance reduction should also be considered (cp. CAR E1)		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/PDD1/ (sections I, J and K)	DR	The accuracies of the parameters, which underlie the GHG emissions estimations, are clearly addressed in the PDD. Nevertheless, the uncertainties and risks addressed in the sectoral		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			approach are not considered on the project level (cp CAR E1)		
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/PDD1/	DR	Only carbon dioxide and methane are involved and considered.		OK
E.2. Leakage *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.*		DR	Not applicable, as electricity generation is not considered.		OK
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?					
E.2.2. Have these leakage effects been properly accounted for in calculations?					
E.2.3. Does the methodology for calculating leakage comply with existing good practice?					
E.2.4. Are the calculations documented in a complete and transparent manner?					
E.2.5. Have conservative assumptions been used when calculating leakage?					
E.2.6. Are uncertainties in the leakage estimates properly addressed?					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.3. Baseline Emissions *The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/PDD1/	DR	The indicators for baseline emissions are the same as for the section E1 (Predicted Project GHG Emissions) apply.		OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/PDD1/	DR	The indicators for baseline emissions are the same as for the section E1 (Predicted Project GHG Emissions) apply.		OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/PDD1/	DR	The indicators for baseline emissions are the same as for the section E1 (Predicted Project GHG Emissions) apply.		OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/PDD1/	DR	The indicators for baseline emissions are the same as for the section E1 (Predicted Project GHG Emissions) apply.		OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/PDD1/	DR	The indicators for baseline emissions are the same as for the section E1 (Predicted Project GHG Emissions) apply.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/PDD1/	DR	The calculation of the project emissions and the baseline emissions follow the same methodology and consider the same assumptions.		OK
E.4. Emission Reductions *Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations*.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/PDD1/	DR	Yes		OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/PDD1/	DR	A site-specific relevance test of environmental impacts has been carried out prior to the BImSchG approval application. This test states that the environmental impacts, induced by the project, are unimportant, so that no complete environmental impact assessment have to conduct.		OK
F.1.2. Are there any Host Party requirements for	/BImSchG/	DR	In Germany an Environmental		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/UVPG/		Impact Assessment Law (UVPG) exists. For this kind of project a site-specific test of relevance is required and has been carried out prior to the approval application (cp. F 1.1). It was assessed that no EIA study is necessary.		
F.1.3. Will the project create any adverse environmental effects?	Validators experience /TAL2002/ /BImSchG/	DR	There are only minor environmental effects (CO, NOx, emissions, noise) which are addressed to in the BImSchG approval application. The effects can roughly be estimated as comparable to motor vehicles of the same capacity.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/TAL2002/ /BImSchG/	DR	Within the BImSchG application procedure the impact of emissions to the vicinity of the plant was assessed in accordance with the guidelines of TA Luft		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/PDD1/ (section B)	DR	The low environmental impacts are addressed in section B of the PDD.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/BImSchG/ /UVPG/ /TAL2002/	DR	The projects compliance to the German environmental legislation will be assured by the approval acc. to BImSchG.		OK

Table 3: Resolution of Corrective Action and Clarification Requests

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CR B1 The date in sector L.4 of the PDD only defines the composing date of the scientific basis, not the building date of the baseline.	B 2.3	The PDD has been corrected.	OK
CR B2 The document referenced as /DMT-2/ is not clearly defined (title, year,(author))	B 2.9	The PDD has been corrected.	OK
CR B3 The CDM-methodology addressed in chapter B should be specified.	B 2.9	The PDD has been corrected.	OK
CR D1 It should be clarified that in formula 2.4.2 W_{el} is the produced (and not the transferred) electrical energy.	D 1.5	The PDD has been corrected.	OK
CAR D1 The necessary formulae for the calculations mentioned in section P / table 3.1 are not given. Furthermore the variables could be mentioned in this table.	D 1.5	The PDD has been completed with the necessary formulae.	OK

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR E1 The calculations can be assessed as appropriate and best practice estimation as far as this single project is concerned. In annex 2 (sectoral approach) it was clearly shown that it has to be considered that a certain portion of all projects will fail or operate with a reduced capacity. This influence is not considered on the individual project specific basis and should be addressed in the framework of the sectoral approach. This should be done in a way that the sum of estimated emission reductions of all considered projects is the most likely value for the whole sector portion incl. all considered projects.	E 1.2	The annex 2 (sectoral approach) has been upgraded with an additional chapter.	OK