VERIFICATION REPORT

RME "DONETSKTEPLOCOMUNENERGO"

VERIFICATION OF THE REHABILITATION OF THE DISTRICT HEATING SYSTEM IN DONETSK REGION

PERIODIC 2008

REPORT NO. UKRAINE- VER#/0030/2009

REVISION NO. 01

BUREAU VERITAS CERTIFICATION

VERIFICATION REPORT

Date of first issue:	Organizational unit:
31/03/2009	Bureau Veritas Certification Holding SAS
Client:	**Client ref.:**
RME "Donetskteplocomunenergo"	Mr. Vasyl Vorotyntsev

Summary:

Bureau Veritas Certification has made the verification of the **"Rehabilitation of the District Heating System in Donetsk Region"** project of RME "Donetskteplocomunenergo" located in Donetsk, Ukraine on the basis of UNFCCC criteria for the JI, as well as the host country criteria and criteria given to provide for consistent project operations, monitoring and reporting, as well as the host country criteria.

The verification scope is defined as a periodic independent review and ex post determination by the Accrediting Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the Monitoring Report, Project Design Document and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures. The first output of the verification process is a list of Clarification Requests, Corrective Actions Requests, Forward Actions Requests (CL, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in validated 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 GHG emission reduction is calculated without material misstatements.

Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid project baseline and monitoring, and its associated documents. Based on information seen and evaluated we confirm that the implementation of the project has resulted in **301055.9** t CO2e reductions during period from 01/01/2008 up to 31/12/2008.

On the behalf of verification team, Flavio Gomes, the Bureau Veritas Certification Holding SAS Global Product Manager for Climate Change, approved final version of the Verification Report and it is signed by Ivan Sokolov authorized Bureau Veritas Certification Holding SAS Local product manager for Climate Change in Ukraine.

Report No.:	Subject Group:
UKRAINE- VER#/2009	JI

Project title:
Rehabilitation of the District Heating System in Donetsk Region

Work carried out by:

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Indexing terms

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Abbreviations change / add to the list as necessary

AIE	Accredited Independent Entity
BVCH	Bureau Veritas Certification Holding SAS
CAR	Corrective Action Request
CER	Certified Emission Reductions
CL	Clarification Request
CO_2	Carbon Dioxide
FAR	Forward Action Request
GHG	Green House Gas(es)
IETA	International Emissions Trading Association
JI	Joint Implementation
JISC	JI Supervisory Committee
MoV	Means of Verification
MP	Monitoring Plan
PCF	Prototype Carbon Fund
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
DH	District Heating

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1 INTRODUCTION

RME “Donetskteplocomunenergo” has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project "Rehabilitation of the District Heating System in Donetsk Region" (hereafter called “the project”) at Donetsk, Ukraine, UNFCCC JI Reference Number 0007.
This report summarizes the findings of second periodic verification of the project, performed on the basis of criteria given to provide for consistent project operations, monitoring and reporting, and contains a statement for the verified emission reductions.
The order includes the second periodic verification of the project. Report is based on the Periodic Verification Report Template Version 3.0, December 2003, both part of the Validation and Verification Manual (VVM) published by International Emission Trading Association (IETA).
Second periodic verification has been performed with the account of findings and conclusions of the integral initial and first periodic verification report No. UKRAINE- VER#/2008 version 01 dated 18/11/2008.
The results of the determination were documented by "Climate and Energy" of TÜV Süddeutschland in the report: "Determination of the “Rehabilitation of the District Heating System in Donetsk Region” JI-Project, Ukraine", Report No. 831042 dated 2007, June 8th. The changed monitoring plan was determined during initial verification (BVCH report No. UKRAINE- VER#/2008).

Project is approved by the Ministry of environmental protection in Ukraine and Ministry of Economical Affairs in Netherlands. (Letters of Approval are presented)

1.1 Objective

Verification is the periodic independent review and ex post determination by the AIE of the monitored reductions in GHG emissions during 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 described in the monitoring plan; furthermore the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is free of material misstatements; and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records.
In general, the verification follows UNFCCC criteria referring to the Kyoto Protocol criteria, the JI/CDM rules and modalities, and the subsequent decisions by the JISC, as well as the host country criteria.

1.2 Scope

Verification scope is defined as an independent and objective review and ex post determination by the Designated Operational Entity of the monitored reductions in GHG emissions. The verification is based on the submitted monitoring report and the determinated project design document including the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. Bureau Veritas Certification has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach in the verification, focusing on the identification of significant risks of the project implementation and the generation of ERUs. The verification is not meant to provide any consulting towards the Client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.
The audit team has been provided with a Monitoring Report version 2 and underlying data records, covering the period 01 January 2008 to 31 December 2008 inclusive.

1.3 GHG Project Description

The project main goal is fuel consumption reduction, in particular reduction of natural gas (which is imported to Ukraine), coal and oil consumption, by means of district heating system rehabilitation in Donetsk Region, including boiler and distribution network equipment replacement and rehabilitation, and installation of combined heat and power production plants. Such reduction of fuel consumption will result in decrease of greenhouse gas emissions (CO_2 and N_2O). The purpose of the project is

sustainable development of the region through implementation of energy saving technologies.

Donetsk region's district heating (DH) utility (system of heat supply enterprises) supplies and sells heat energy in forms of heat, hot water and steam, to local consumers, namely households, municipal consumers and state-owned organizations. It is a natural monopolist of heat production in the region. Heat supply market in the region is stable for years.

The project was initiated in 2004 to rehabilitate Donetsk region's district heating system, including boiler and distribution network equipment replacement and rehabilitation, and installation of combined heat and power production plants (CHP). The project "Rehabilitation of the District Heating System in Donetsk Region" consists of two parts: Rehabilitation of Donetsk Region and Rehabilitation of Donetsk City. 286 boiler-houses with 1297 boilers and 1026 km of heat distributing networks are involved in the rehabilitation of Donetsk Region and 39 boiler-houses with 193 boilers and 248 km of heat distributing networks are involved in the rehabilitation of Donetsk City. In total: 325 boiler-houses with 1490 boilers and 1274 km of heat distributing networks are involved in the project. This is the large part of Donetsk regional DH system, and project may be expanded by including the other DH objects in the region.

Installation of cogeneration units at 10 boiler houses (12 gas engines, 0.5-0.63 MW each) in Donetsk region with total installed capacity 7.3 MW and at 6 boiler houses in Donetsk city (6 gas engines, 0.38 - 0.5 MW each) with total installed capacity 2.88 MW, in sum 18 gas engines with total installed capacity 10.18 MW, is incorporated into the project. Machines made by JSC "Pervomaiskdieselmash" (Ukraine), Deutz (Germany) and Jenbacher (Austria) are considered as potential candidates for installation.

The project employs the increase in fuel consumption efficiency to reduce greenhouse gas emissions relative to current practice. After complete project implementation over 15 million Nm^3 of natural gas and 50 thousand ton of coal will be saved annually. Such reduction of fuel consumption is based on increase of the boiler efficiencies, reduction of heat losses in networks and CHP installation. The following activities will ensure fuel saving:

- Replacement of old boilers by the new highly efficient boilers;
- Upgrading of boilers,
- Upgrading of boilers' burners;
- Installation of heat utilizers, including condensation ones;
- Switching of boiler-houses from coal and fuel oil to natural gas;
- Improving of the network organization, application of the new insulation and the pre-insulated pipes;
- Installation of combined heat and power plants;
- Installation of frequency controllers at smoke exhauster and hot water pumps engines.

Estimated project annual reductions of GHG emissions, in particular CO_2, are from 6.4 thousand tons to 123.9 thousand tons in 2005 – 2008, and are over 181.5 thousand tons per year starting from 2009 comparing to business-as-usual or baseline scenario.

Implementation of the project will provide substantial economic, environmental, and social benefits to the Donetsk region. Social impact of the project is positive since after project implementation heat supply service will be improved and tariffs for heat energy will not be raised to cover construction costs. Environmental impact of the project is expected to be very positive as an emission of the exhaust gases such as CO_2, NO_x, and CO will be reduced. Also due to better after-implementation service, some part of population will cease to use electric heaters thus reducing electricity consumption, which is related to power plants emissions of CO_2, SO_x, NO_x, CO and particulate matter.

RME "Donetskteplocomunenergo" fulfils annual minimal repairing of the DH system to keep it working. Particularly it executes repairing of network's parts and boilers that might cause accidents. More economically feasible and realistic scenario without carbon credits sales is a baseline scenario with very slow reconstruction activities than to make a major overhaul of the heating system. Tariffs for heat do not include the resources for prospective reconstruction of the district heating system, only the resources for probable necessary repairing after possible accidents. Minimal annual repairing does not lead to drooping of baseline emissions because of degradation of the whole system with efficiency droop at other objects, the overall actual emissions of Supplier would stay on the same level. This scenario is less environmentally favorable for the near future (including first commitment period 2008-2012), since GHGs emissions of Supplier will continue to be kept at the same level or even higher, but economically such scenario is more attractive.

Estimated project risks are limited and minimized. Ukraine has claimed district heating and municipal energy sector as a priority of the national energy-saving development.

2 METHODOLOGY

The verification is as a desk review and field visit including discussions and interviews with selected experts and stakeholders.

In order to ensure transparency, a verification protocol was customized for the project, according to the Validation and Verification Manual (IETA/PCF) a verification protocol is used as part of the verification. The

protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements the project is expected to meet; and
- It ensures a transparent verification process where the verifier will documents how a particular requirement has been verified and the result of the verification.

The verification protocol consists of one table under Initial Verification checklist and four tables under Periodic verification checklist. The different columns in these tables are described in Figure 1.

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification procedures.

The completed verification protocol is enclosed in Appendix A to this report.

Initial Verification Protocol Table 1			
Objective	**Reference**	**Comments**	**Conclusion (CARs/FARs)**
The requirements the project must meet	Gives reference to where the requirement is found.	Description of circumstances and further comments on the conclusion	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance of the stated requirements. Forward Action Request (FAR) indicates essential risks for further periodic verifications.

Periodic Verification Checklist Protocol Table 2: Data Management System/Controls		
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**
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	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.

	the system component is in place.	

Periodic Verification Protocol Table 3: GHG calculation procedures and management control testing		
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**
Identify and list potential reporting risks based on an assessment of the emission estimation procedures, i.e. ➢ the calculation methods, ➢ raw data collection and sources of supporting documentation, ➢ reports/databases/information systems from which data is obtained. Identify key source data. Examples of source data include metering records, process monitors, operational logs, laboratory/analytical data, accounting records, utility data and vendor data. Check appropriate calibration and maintenance of equipment, and assess the likely accuracy of data supplied. Focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include: ➢ manual transfer of data/manual calculations, ➢ unclear origins of data, ➢ accuracy due to technological limitations, ➢ lack of appropriate data protection measures? For example, protected calculation cells in spreadsheets and/or password restrictions.	Identify the key controls for each area with potential reporting risks. Assess the adequacy of the key controls and eventually test that the key controls are actually in operation. Internal controls include (not exhaustive): ➢ 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. ➢ Controls to ensure the arithmetical accuracy of the GHG data generated and accounting records e.g. internal audits, and checking/ review procedures; ➢ Controls over the computer information systems; ➢ Review processes for identification and understanding of key process parameters and implementation of calibration maintenance regimes ➢ Comparing and analysing the GHG data with previous periods, targets and benchmarks. When testing the specific internal controls, the following questions are considered:	Identify 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.

	1. Is the control designed properly to ensure that it would either prevent or detect and correct any significant misstatements? 2. To what extent have the internal controls been implemented according to their design; 3. To what extent have the internal controls (if existing) functioned properly (policies and procedures have been followed) throughout the period? 4. How does management assess the internal control as reliable?	

Periodic Verification Protocol Table 4: 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)**
List the residual areas of risks (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: 1. Sample cross checking of manual transfers of data 2. Recalculation 3. Spreadsheet 'walk throughs' to check links and equations 4. 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 should be noted here. Errors and uncertainties should be highlighted. Errors and uncertainty can be due to a number of reasons: ➢ Calculation errors. These may be due to inaccurate manual transposition, use of inappropriate emission factors or assumptions etc. ➢ Lack of clarity in the monitoring plan. This could lead to inconsistent approaches to calculations or scope of reported data. ➢ Technological limitations. There may be inherent uncertainties (error bands) associated with the methods used to measure emissions e.g. use of particular equipment such as meters. ➢ Lack of source data. Data for some sources may not be cost effective or practical to collect. This may result in the use of default data which has been derived based on certain assumptions/conditions and which will therefore have varying applicability in different situations. The second two categories are explored with the site personnel, based on their knowledge and experience of the processes. High risk

		process parameters or source data (i.e. those with a significant influence on the reported data, such as meters) are reviewed for these uncertainties.

Verification Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	**Ref. to checklist question in tables 2/3**	**Summary of project owner response**	**Verification conclusion**
If the conclusions from the Verification are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, 3 and 4 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 verification team should be summarized in this section.	This section should summarize the verification team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion".

Figure 1 Verification protocol tables

2.1 Review of Documents

The Monitoring Report (MR) version 2 submitted by RME „Donetskteplocomunenergo" and additional background documents related to the project design and baseline, i.e. State Law, Project Design Document (PDD) version 08, Monitoring Plan, applied methodology, Kyoto Protocol, Clarifications on Verification Requirements to be Checked were reviewed.

The verification findings presented in this report relate to the project as described in the PDD version 08 and Project Monitoring Report version 2 for the year 2008.

2.2 Follow-up Interviews

On 17/03/2009 and 18/03/2009 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of RME „Donetskteplocomunenergo" and MCE "Donetskteplomerezha" were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
RME	Organizational structure.

„Donetskteplocomunenergo”, MCE “Donetskteplomerezha””	Responsibilities and authorities. Training of personnel. Quality management procedures and technology. Rehabilitation /Implementation of equipment (records). Metering equipment control. Metering record keeping system, database.
Consultant: Institute of Engineering Ecology	Baseline methodology. Monitoring plan. Monitoring report. Deviations from PDD.

2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

Corrective Action Requests (CAR) are issued, where:
i) there is a clear deviation concerning the implementation of the project as defined by the PDD;
ii) requirements set by the MP or qualifications in a verification opinion have not been met; or
iii) there is a risk that the project would not be able to deliver (high quality) CERs.

Forward Action Requests (FAR) are issued, where:
iv) the actual status requires a special focus on this item for the next consecutive verification, or
v) an adjustment of the MP is recommended.

The verification team may also use the term Clarification Request (CL), which would be where:
vi) additional information is needed to fully clarify an issue.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

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:
1) The findings from the desk review of the original project activity documents 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 Appendix A.
2) The conclusions for verification subject are presented.

The discussions and the conclusions that followed the preliminary verification report and possible corrective action requests are encapsulated in this section.

3.1 Remaining issues CAR's, FAR's from previous verification

One task of verification is to check the remaining issues from the previous validation or issues which are clearly defined for assessment in the PDD. The initial and first verification report, prepared by Bureau Veritas Certification Holding SAS, does not note any open issue.

3.2 Project Implementation

3.2.1 Discussion

The scrutiny of a proper implementation of a project is a key issue of an Initial Verification, in order to have a climate change project ready for successful operation. The project is implemented in the boiler-houses undertaking the JI project activities.
The project was initiated in 2004 to rehabilitate Donetsk region's district heating system, including boiler and distribution network equipment replacement and rehabilitation.
The 124 boiler-houses with 458 boilers (total maximal connected load 423.9 Gkal/hour, 2002) and 227 km of heat distributing networks in Donetsk city and Donetsk Region, which belong to "Donetskteplocomunenergo" are involved in the project as well as the 65 boiler-houses with 223 boilers (total maximal connected load 173.8 Gkal/hour, 2002) and 125 km of heat distributing networks in Donetsk Region, which belong to other heat supply enterprises that empowered RME "Donetskteplocomunenergo" to represent their interests in this project.
The total number of boiler-houses which are involved in the project is 189 with 681 boilers (435 of which are for reconstruction and replacement within this project) and 352 km heat distribution networks (198 of which are for reconstruction and replacement within this project). The following activities will ensure fuel saving:

- Replacement of old boilers by new highly efficient boilers;
- Upgrading of boilers,
- Upgrading of boilers' burners;
- Installation of heat utilizers, including condensation ones;
- Fuel switch from coal and fuel oil to gas;
- Decreasing pipelines length and replacing the 4-pipe lines by 2-pipe lines, with application of the new insulation and the pre-insulated pipes.

According to the project activities the following measurement equipment was implemented:

RME "Donetskteplocomunenergo		MCE "Donetskteplomerezha"	
KSVa-1,25	32	KVANT-0,8	2
KVGM-1,6	7	KVANT-1,5	18
KSVa-2,5	27	KATOH-0,8	1
KVG-0,63	18	KVN-0,28	2
KSVa-1,0	1	KATOH-1,5	8
KSVD-1,25	1		
KSVD-0,5	2		
RBI-8900	2		
KVG-6,5	3		
KVT-1,0	6		
KST-100	3		
KST-100	3		
BGV-50E	8		
KOLVI-500	2		
KVGM-1,0	2		
AOGV-96-4	4		
BK - 32 .	4		
Total	125	Total	31
Replacement of network, m	28303,8	Replacement of network, m	13667,4

Measurement equipment is in place and calibrated. All required metering systems have been identified and checked on the sampling basis. For the fuel, electricity, power production and heat energy production consumption measurement the following meters used:

1. For gas consumption measurement the following Gas flue meters are used:

- G-1600 - ЛГК – 200 produced by Ivano-Frankivsk plant JSC "Promprylad"
- G – 160- ЛГК - 80 produced by Ivano-Frankivsk plant JSC "Promprylad"
- G – 250- ЛГК – 100 produced by Ivano-Frankivsk plant JSC "Promprylad"
- G - 400 - ЛГК- 150 produced by Ivano-Frankivsk plant JSC "Promprylad"
- G - ЛГК - 150 – 650 produced by Ivano-Frankivsk plant JSC "Promprylad"
- G - РГК - 400 - 250 produced by Ivano-Frankivsk plant JSC "Promprylad"
- GMS- G16 ... G250 produced by "Arsenal" plant. Kiev city
- РГК-40 ... РГК-1000 produced by Ivano-Frankivsk plant JSC "Promprylad" and "Kurs" Ltd. Dnipropetrovsk city
- ЛГК-80 ... ЛГК-200 produced by Ivano-Frankivsk plant JSC "Promprylad"
- Flow measurement complex “Potok” produced by SPE "Measurement systems", Dnipropetrovsk city
- Kurs - 01 - G100...1000 produced by "Kurs" Ltd. Dnipropetrovsk city
- GSM 16-32 produced by Germany
- “Inversa”-0,1

2. For power consumption measurement the following electricity meters are used:
   - Merkury 230APT03CN produced by Moscow “Intek”Ltd;
   - Merkury 230APT02CN produced by Moscow “Intek”Ltd;
   - СА4У-И672М produced by Leningrad “LEMZ”;
   - СР4У-И673М produced by Leningrad “LEMZ”;
   - ЦЭ6811 produced by Stavropol «Energomerega”;
   - СЕ-302 produced by Stavropol «Energomerega”;
   - EA05RALX-R4B-4 produced by Russia;
   - ИПСА4У-И672М produced by St. Petersburg;
   - Ф68700 produced by Leningrad «LEMZ”;
   - СА 3У-И670 produced by Leningrad “Lemz”.
3. For power production measurement at the CHP unit the following electricity meter is used:
   - ФА4У-И672М 971405 produced by Leningrad “LEMZ”
4. For heat energy production measurement at the CHP unit the following electricity meter is used:
   - VKP N2 1320-06 and 1319-06.

The Monitoring Plan defines the responsibilities to consolidate the data required for emission reduction calculations. Calculations are transparent

and restricted to entering annually the production data into a predefined Excel spreadsheet.

3.2.2 Findings

Clarification request 1
In the table that represents calibration interval for all equipment the calibration interval for heat energy production measurement meters is not present.
Response
Heat energy meters CALMEX N2 are used to calculate heat power generation by the installed new CHP units at the MCE "Donetskteplomerezha" at boiler-house 21, Adygeyskaya str. Calibration interval of heat energy meters CALMEX N2 is 4 years. Date of heat energy meters # 1320-06 and # 1319-06 is - 01.12.06.

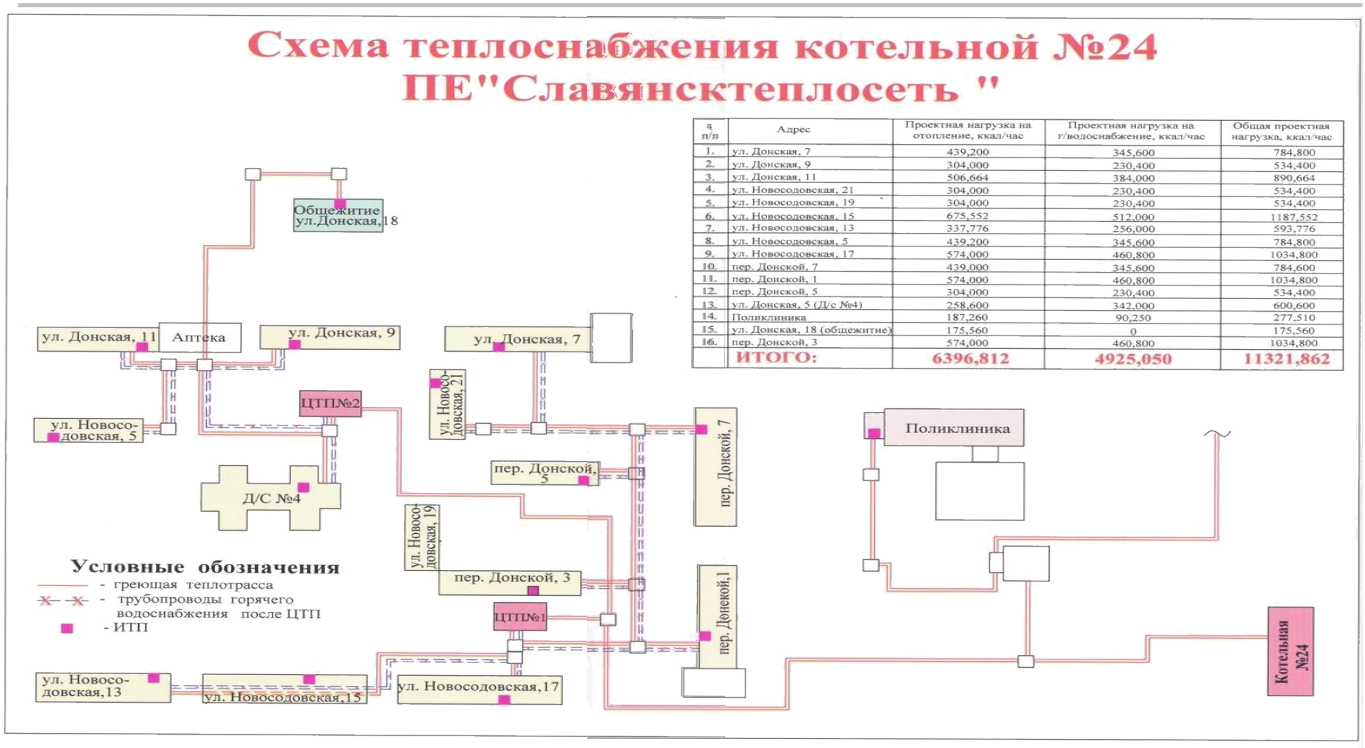
CAR 1

Explain more detail what "Improving of the network organization" means.

Response

Improvement of the heat networks system organization is provided by liquidation of Central Heating Points (CHP) with replacing 4-pipe lines by 2-pipe ones with simultaneous installation of heat exchangers directly at the consumers (Individual Heating Point – IHP), or reconstruction of CHP with modern heat exchangers installation. It is enable to liquidate of pipes with different diameters, to reduce heat losses and to reduce power consumption for power supply of circulation pumps. Photo of one of the IHP in Slov'yansk town is presented at the fig. 1, and its heating scheme presented at the fig. 3.

Fig. 1 One of the IHP in Slov'yansk town



п/п	Адрес	Проектная нагрузка на отопление, ккал/час	Проектная нагрузка на г/водоснабжение, ккал/час	Общая проектная нагрузка, ккал/час
1.	ул. Донская, 7	439,200	345,600	784,800
2.	ул. Донская, 9	304,000	230,400	534,400
3.	ул. Донская, 11	506,664	384,000	890,664
4.	ул. Новосодовская, 21	304,000	230,400	534,400
5.	ул. Новосодовская, 19	304,000	230,400	534,400
6.	ул. Новосодовская, 15	675,552	512,000	1187,552
7.	ул. Новосодовская, 13	337,776	256,000	593,776
8.	ул. Новосодовская, 5	439,200	345,600	784,800
9.	ул. Новосодовская, 17	574,000	460,800	1034,800
10.	пер. Донской, 7	439,000	345,600	784,600
11.	пер. Донской, 1	574,000	460,800	1034,800
12.	пер. Донской, 5	304,000	230,400	534,400
13.	ул. Донская, 5 (Д/с №4)	258,600	342,000	600,600
14.	Поликлиника	187,260	90,250	277,510
15.	ул. Донская, 18 (общежитие)	175,560	0	175,560
16.	пер. Донской, 3	574,000	460,800	1034,800
	ИТОГО:	6396,812	4925,050	11321,862

Fig. 2. Heating scheme of boiler-house #24 "Himik" area in Slov'yansk town

For example in 2007 it was provided reconstruction of "Himik" living area in Slov'yansk town with installation of 16 Individual Heating Points (IHP) in 13 multistorey living buildings, in 1 dormitory (5 storied,) polyclinic and kinder-garden.

In accordance with original scheme, heat-carrying agent directed from boiler-house to 2 Central Heating Points (CHP#1,#2), where preparation of hot water take place in the speed heat exchangers. Pipes for heating pass through CHP as transit. After CHP, residential buildings, that received hot water, were connected to 4-pipes scheme. Implementation of this project allowed to abolish 2 CHP and 1,8 km of hot water supply networks.

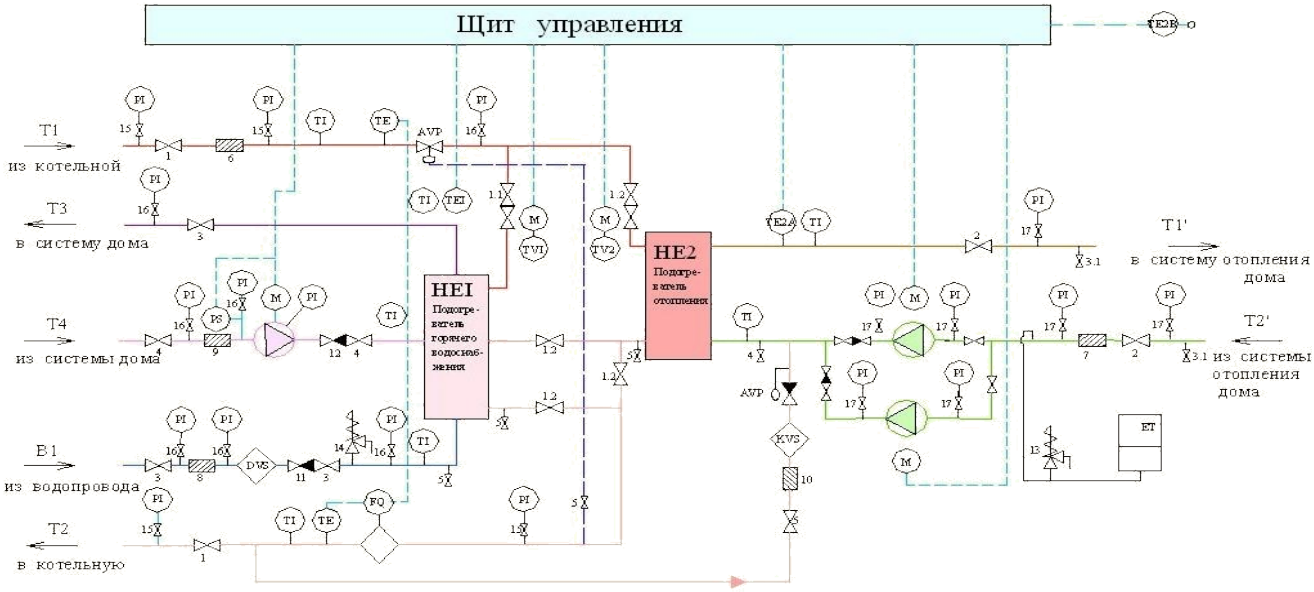


Fig. 3. Heating scheme of IHP

As a result of this project implementation, in the basements of residential buildings were installed IHP, that consist of collapsible laminar heat exchangers, circulation pumps, water, heat agent and power calculation devices and control valves. Fluid makeup of buildings inside heating systems is provided from reverse heating pipe-line through calculation devices. 2 groups of heaters are installed In IHP (to heating and to hot water supply service) and 2 groups of circulation pumps.

Operation of the IHP is realized in accordance with outside air temperature. Outside air temperature automatic arrives to control console from outside air temperature sensor. Temperature inside buildings is putted by operator according to agreement with consumers.
Basing on these 2 parameters correction of temperature of heating agent of buildings inside heating contour is take place automatically. Automatic system provides operation of IHP in economy regime. This regime allows putting required inside temperature depending on time of the day or days of the week.

CAR 2

Explain operation principle of device for automatic control of natural gas consumption.

Response

RME "Donetskteplocomunenergo" implemented automatic systems"ПОТОК-ДН-03" see fig. 4.

Fig. 4 automatic systems"ПОТОК-ДН-03"

Main factors of implementation efficiency of automatic systems for control and optimization of production heat power process on the base of "ПОТОК-ДН-03" complexes at the water mode boilers:
- Realization by one device automatic commercial control of natural gas consumption, technological calculation of heat power and heat agent leakages
- Definition, reflection in real time and calculation of specific natural gas consumption for 1 Gkal of produced heat power
- Formation and keeping during 1 year of boilers operational parameters graphics at the colored monitors
- Simplicity and multifunctionality
- High reliability

Operation principle of multifunctional complex for control and optimization of heat energy production "ПОТОК-ДН-03 presented at the fig 5.

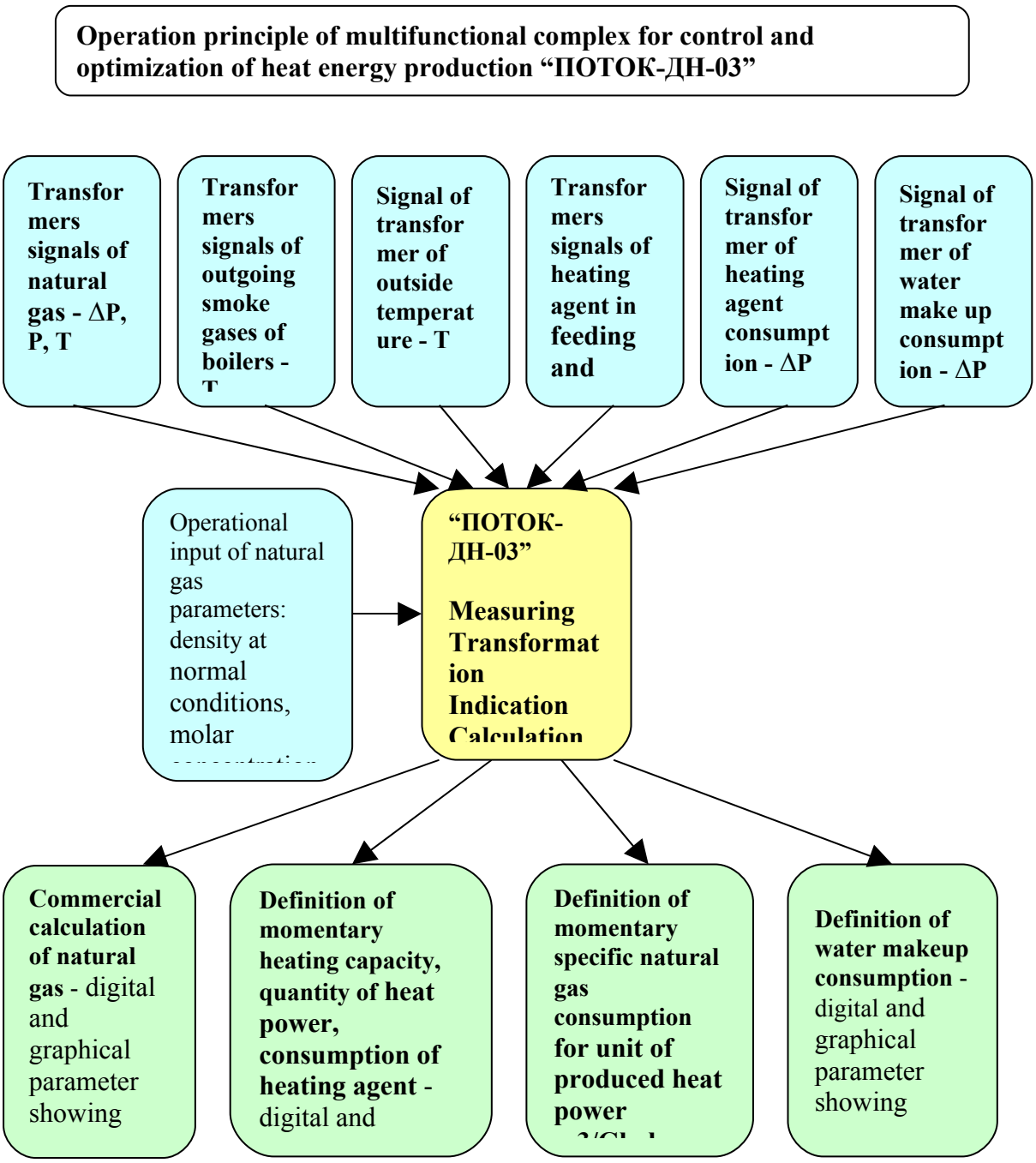


Fig.5 Scheme of operation of automatic system "ПОТОК-ДН-03"

3.2.3 Conclusion

The project complies with the JI requirements as well as with the local requirements.

3.3 Internal and External Data

3.3.1 Discussion

The 20 parameters should be monitored according to Monitoring Plan. CME "Artemivskteplomerezha" refused to participate in this project. Implementation of CHP units at RME "Donetskteplocomunenergo" and MCE "Donetskteplomerezha" is postponed because of significant increasing of natural gas price. CHP units at EMZ, 1, Sadova str. in Enakieve t. and №24 Himik Sovremenna str. in Slov'yansk t. have not been finished yet. Installation of CHP unit at the 21, Adygeyskaya str. in Donetsk city was finished in the end of 2007, and it was put in operation in January, 2008.
Installation of frequency controllers is not finished yet, therefore calculations of CO_2 emissions reduction by power saving was carried out only at those boiler houses where it was completed.

In fact 20 parameters are monitored within the projects but only one of them (volume of natural gas consumption) is measured directly. The remaining monitoring parameters used in calculation of the baseline and project line emissions are taken as statistic data.

The following parameters need to be obtained according to the monitoring plan:

1. Fuel consumption at boiler-houses (for natural gas in 1000 m3, for coal in ton, for heavy oil and light oil in ton, manually recorded every day)
2. Average annual Heating Value of fuel (MJ/m3 for natural gas, MJ/kg for coal, heavy oil (only for Slov'yansk) and light oil (only for Vuglegirsk), data are provided by natural gas suppliers usually 3 times per month, quality certificate is given by coal and heavy oil supplier's for every consignment)
3. Average daily outside temperature during the heating season (^{0}C (K), recorded every day of heating season)
4. Average inside temperature during the heating season (^{0}C (K), recorded once per heating season)
5. Number of Customers (Customers update the contracts for hot water supply service with balance-owners (ZhEK) once per year. ZhEK give to RME "Donetskteplocomunenergo" personal accounts of customers once per month.Contracts with organizations

and legal entities are concludes directly with RME "Donetskteplocomunenergo", they are updated once per year)

6. Heating area (total, m^2 the information is collected at the sales departments of district heating productive units of RME "Donetskteplocomunenergo" in every town by the certificates of owners or balance-owners (ZhEK) in accordance with technical passport of building. Total area with balconies and stairs and Heating area are displayed in the special journal.)
7. Average heat transfer factor of heated buildings in the base year (W/m^2*K, heat transfer factor is recorded ones per year at recording of connection or disconnection of any heating area to boiler-houses included in project)
8. Heating area of buildings (previously existed in the base year) with the renewed (improved) thermal insulation in the reported year (m^2, once per year)
9. Heating area of newly connected buildings (assumed with the new (improved) thermal insulation) in the reported year (m^2 , once per year)
10. Heat transfer factor of buildings with the new thermal insulation (W/m^2*K)
11. Duration of the heating period (hours, once per year)
12. Duration of the hot water supply period (hours, once per day)
13. Maximum connected load to the boiler-house, that is required for heating (MW, once per year)
14. Connected load to the boiler-house, that is required for hot water supply service (MW, once per year)
15. Standard specific discharge of hot water per personal account (kWh/h, once per year)
16. Carbon emission factor (for natural gas, coal and heavy oil kt CO_2/TJ once per year)
17. Recalculating factor for average load during heating period (once per year)
18. Scheduled electric power production by the all new CHP units and electric power generation by the installed new CHP units in reported year (MWh)
19. Scheduled heat power production by the all new CHP units and heat power generation by the installed new CHP units in reported year (MWh)
20. Electric power consumption by the boiler-houses where energy saving measures are scheduled to be implemented (MW*h, every month)

The records are maintained on daily and annually basis, the boiler operation is statutory, so the chances of misstatement in the records are

hereby low. In fact records are taken every 2 hours (manually) or semi-continuously where correctors are present (electronically), and after that manual daily summarizing record is performed. In both cases (manual or semi-continuous) monitoring is within the PDD version 8 where records are required every 2 hours.

The general director of RME "Donetskteplocomunenergo", Mr. Vasyl Vorotyntsev, appointed a responsible person, Mrs. Victoriya Kucherenko, for the implementation and management of the monitoring process at the RME "Donetskteplocomunenergo". Mrs. Victoriya Kucherenko responsible for supervising data collection, measurements, calibration, data recording and storage. The general director of MCE "Donetskteplomerezha" Mr. Viktor Rogachev appointed a responsible person, Mrs. Valentyna Skoryk, for the implementation and management of the monitoring process at the MCE "Donetskteplomerezha". Mrs. Valentyna Skoryk is responsible for supervising data collection, measurements, calibration, data recording and storage. In addition the developers of the project are responsible for baseline and monitoring methodology development and data processing. In particularly:
Dr. Vladimir Gomon, Managing Engineer of European Institute for safety, security, insurance and environmental techniques, is responsible for baseline and monitoring methodology development.
Dr. Dmitri Paderno, vice director of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development.
Ms. Tetiana Grechko, senior engineer of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development and data processing.

The external data used are following:

Average annual Heating Value of Natural Gas – used values are presented in the table below for every town.

Town	Average lower heating value of Natural gas, MJ/m^3
	2008
Amvrosiivka	33.88
Volnovaha, Dokuchaevsk	33.85
Dzerzhynsk	33.91
Druzhkivka	33.91
Dmytrove	33.90

Enakieve, Vuglegirsk	33.88
Kirovske	33.73
Zhdanivka	33.73
Kostyantinivka	33.90
Kramatorsk	33.91
Krasniy Lyman	33.10
Novoazovsk	33.86
Mangush	33.85
Selidove, Ukrayinsk	33.80
Slov'yansk	33.88
Snizhne	33.85
Starobesheve	33.87
Telmanove	33.87
Torez	33.82
Vugledar	33.79
Chartsyzsk, Ilovaysk	33.91
Chasiv-Yar	33.97
Shahtarsk	33.70
Yasynuvata	33.87
Donetsk	33.70

Average annual Heating Value of Coal, the values is calculated by Lower Heating Value for every town, in which coal as fuel was used are presented in the table below.

Town	Average lower heating value of coal, MJ/kg
	2008
Dzerzhynsk	11.73
Enakieve, Vuglegirsk	18.9
Slov'yansk	16.41
Torez	11.15
Donetsk	18.5

Average annual Heating Value of Heavy oil is calculated only for Slov'yansk by Lower Heating Value the values are presented below.

2008 – 40.07

Average annual Heating Value of Light oil is calculated only for Vuglegirsk by Lower Heating Value the values are presented below.

2008 – 33.9

Daily outside temperature is taken by dispatcher of RME "Donetskteplocomunenergo" from Donetsk Meteorological Centre from 10 to 11 a.m. every day of heating season. The information is sent to district heating productive units of RME "Donetskteplocomunenergo" located in different towns. Towns are divided in to 7 groups depending on it's location.
For calculation of Heat transfer factor of buildings for every boiler-house, the method of Weighted average value was used, that depends on heating area of existing buildings and heating area of the new buildings. Values of the heat transfer factor for existing buildings were taken from SNiP 2-3-79 (1998) - not higher than 0.63. Values of the heat transfer factor of new buildings were taken according to State Buildings Norms (B.2.6-31:2006) - not higher than 0.36.
Heat transfer factor of new buildings and buildings with new thermal insulation - not higher than 0.36, according to State Buildings Norms (B.2.6-31:2006)
Standard specific discharge of hot water per personal account - standard specific discharges of hot water per personal account for different types of consumers are presented in "KTM 204 Ukraine 244-941".

Carbon emission factor for different fuels, which is determinated in PDD and is confirmed in the Monitoring Report 2 for the year 2008 without deviations.
- Cef (natural gas) = 0.0561 $ktCO_2/TJ$
- Cef (mazut) = 0.0774 $ktCO_2/TJ$
- Cef (coal) = 0.0946 $ktCO_2/TJ$

3.3.2 Findings

None.

3.3.3 Conclusion

The project complies with the requirements.

3.4 Environmental and Social Indicators

3.4.1 Discussion

No environmental and social indicators are defined in the monitoring plan. At the same time implementation of project "Rehabilitation of the District Heating System in Donetsk Region" has a positive effect on environment. Following points give detailed information on environmental benefits.

1. Project implementation allowed to save over 104 million m^3 of natural gas and over 46 thousand ton of coal during 2008.
2. Due to fuel economy and new environmentally friendlier technologies of fuel combustion, project implementation reduced emissions of SO_x, NO_x, CO and particular matter (co-products of combustion).

There are no negative social impacts associated with project.
The auditor team on site met a sample of local stakeholders. They expressed their deep appreciations for the project. As per them the project has brought sustainable development in to the Donetsk Region through implementation of energy saving technologies, as well as improving of living comfort through improving of heat and hot water supply service quality and reliability.

3.4.2 Findings

None

3.4.3. Conclusion

The project complies with the JI requirements as well as with the local requirements.

3.5 Management and Operational System

3.5.1 Discussion

In order to ensure a successful operation of a Client project and the credibility and verifiability of the emissions reductions achieved, the project must have a well defined management and operational system.
The RME "Donetskteplocomunenergo" complies with all legal and statutory requirements of the Ukrainian Government and the same were made available to the verification team. Appropriate procedures reflect commitment in management and operational control. Job descriptions, technological instructions are in place. Calibration and maintenance procedures are followed according statutory requirements of Ukraine.

3.5.2 Findings

None

3.5.3 Conclusion

The Monitoring Report and the Management and Operational Systems are eligible for reliable project monitoring.

4 SECOND PERIODIC VERIFICATION FINDINGS

4.1 Completeness of Monitoring

4.1.1 Discussion

The reporting procedures reflect the monitoring plan completely. It is confirmed that the monitoring report does comply with the monitoring methodology and PDD.

All parameters were determined as prescribed. The complete data is stored electronically and documented. The 20 parameters should be monitored according to Monitoring Plan. CME "Artemivskteplomerezha" refused to participate in this project. Implementation of CHP units at RME "Donetskteplocomunenergo" and MCE "Donetskteplomerezha" is postponed because of significant increasing of natural gas price. CHP units at EMZ, 1, Sadova str. in Enakieve t. and №24 Himik Sovremenna str. in Slov'yansk t. have not been finished yet. Installation of CHP unit at the 21, Adygeyskaya str. in Donetsk city was finished in the end of 2007, and it was put in operation in January, 2008.

Installation of frequency controllers is not finished yet, therefore calculations of CO_2 emissions reduction by power saving was carried out only at those boiler houses where it was completed.

The necessary procedures have been defined in internal procedures and additional internal documents relevant for the determination of the 20 parameters listed in the monitoring plan.

Project participants provided necessary documents for the verification – Project Design Document version 8 (PDD) and Monitoring Report version 4 (MR). Emission reductions for monitoring period 2005-2007 were expected to be 85911,0 t CO2e. According to the Monitoring Report the emission reductions achieved 453358,6 t CO2e. (Table 1)

Table1 Summarized amount of emissions and emission reductions for 2005-2007 (t CO2e)

Baseline emissions according to MR	Factual project emissions according to MR	Project emission reductions according to MR	Project emission reductions according to PDD
3282358,1	2828999,5	453358,6	85911,0

MR – Monitoring Report

PDD – Project Design Document

It must be taken into account that emission reductions is the difference between the baseline emissions, which are calculated according to the

determined methodology with the use of particular data for each year, and project emissions, which are achieved during the project activity after implementation of the planned measures in the particular year. (Table 2). This difference is 10-14% from the baseline, which is rather sensitive for the different factors impact.

Table2 Emissions and emission reductions inyears (t CO2e)

Year	Baseline emissions according to MR	Factual project emissions according to MR	Project emission reductions according to MR
2005	1106394,3	977697,3	127650,0
2006	1149808,7	1000448,9	148120,5
2007	1049887,8	870968,6	177588,2

MR – Monitoring Report

The conducted analysis showed that the difference between the amount of emission reductions in PDD and MR was caused by the cumulative impact of several factors:

1. PDD was developed for the commitment period of the Kyoto Protocol for 2008-2012. Emission reductions till 2008 were forecasted with a high level of uncertainty and in accordance with the slow implementation of the planned measures during 2004-2009.
2. Calculations of the baseline scenario were conducted according to the specific methodology, which means that baseline scenario in PDD is just an assumption.
3. Determination is based on the conservative approach, which means that the least favorable scenario is taken into consideration with the future ability to prove emission reductions.
4. Heat characteristics (factors) of the fuel, which is used, really differ from the ones used in the calculation process in PDD.
5. The amount of fuel consumption is not steady. It depends on seasonal and annual climate fluctuations. This fact influences the baseline and the amount of emission reductions (fuel expenditure is decreasing during warm winters in Crimea, and the GHG emission reductions amount is less then while the boilers are working fulltime).
6. Equipment and measures were implemented faster than it was planned in PDD. It is mentioned in PDD that proper measures and equipment would be implemented till 2009, however real implementation was conducted during 2004-2007, while near 50 % of the measures before 2005. The list of the measures implemented:
    - Replacement of old boilers by the new highly efficient boilers;
    - Upgrading of boilers' burners for the combustion improvement;
    - Switching of boiler-houses from fuel oil to natural gas;
    - Improving of the network organization;
    - Application of the new insulation and the pre-insulated pipes;

- Installation of heat-utilizers;
- Replacement of old boiler houses by new ones;

Hence, verified emission reductions in years during 2005-2007 approached to the annual emission reductions forecasted in PDD starting from 2008-2009. (Table 3)

Table 3 Forecasted and factual emission reductions in years (t CO2e)

Year	Project emission reductions according to PDD	Project emission reductions according to MR
2004	0	
2005	6350	1106394.3
2006	19428	1149808.7
2007	60133	1049887.8
2008	123897	301055,9*
2009	186056	
2010	184104	
2011	183041	
2012	181494	
2013	181494	
2014	181494	
2015	181494	
2016	181494	
2017	181494	

* Emission reductions according to MR for the next monitoring period 2008.

4.1.2 Findings

None.

4.1.3 Conclusion

The project complies with the requirements.

4.2 Accuracy of Emission Reduction Calculations

4.2.1 Discussion

Due to the methodology corrections for data uncertainty should be made. The audit team confirms that emission reduction calculations have been performed according to the Monitoring Plan and to the calculation

methodology reported in the Section D.3.4. of the Monitoring Report version 2.
Possible uncertainties and errors for such type project may arise from two main reasons: measurement and stipulation. Measurement error is due to metering equipment inaccuracies. Stipulation occurs when some values are required to complete calculations, but these values cannot be measured directly. In these cases estimates are used in place of actual measurements, and therefore error may be introduced. The stipulation error itself may be estimated based on the expected accuracy of the stipulated values.

The project error can be calculated from the two error components described above. The total project error (Standard Error, SE) can be calculated by taking the square root of the sum of the squares of the individual error components, as below:
$SE = \sqrt{[(\text{measurement error})^2 + (\text{stipulation error})^2]}$

The monitoring plan developed for this project does not rely on any estimates and is therefore free of any stipulation errors.

Thus, $SE = \sqrt{[(\text{measurement error})^2 + (0)^2]} = (\text{measurement error})$

Although the project has 20 monitoring parameters, only one of them (volume of natural gas consumption) is measured directly. The remaining monitoring parameters used in calculation of the baseline and project line emissions are taken as statistic data. Furthermore, they are used for adjustment factors calculation. Calculations of adjustment factors are based on reported and base year parameters ratio. For example, temperature change factor is calculated as ratio of inside and outside temperature differences in reported and base years: $K_2 = (T_{in\ r} - T_{out\ r}) / (T_{in\ b} - T_{out\ b})$. Therefore any error in statistic data will be cancelled.

The volume of natural gas consumption measurement errors which impact the Standard Error and their level of accuracy are: ± 1.0 % (usual value for the majority of meters).
Corresponding metered values of natural gas consumption, according to the conservatism principle, are corrected by accuracy of meters.

4.2.2 Findings

None

4.2.3 Conclusion

All requested corrections have been considered in the final Monitoring Report version 2. The project complies with the requirements. Data

correction regarding accuracy of the meters was checked onsite and found to be adequate.

4.3 Quality Evidence to Determine Emissions Reductions

4.3.1 Discussion

Concerning verification the calculation of emission reductions is based on internal data. The origin of those data was explicitly checked. Further on, entering and processing of those data in the monitoring workbook Excel sheet was checked where predefined algorithms compute the annual value of the emission reductions. All equations and algorithms used in the different workbook sheets were checked. Inspection of calibration and maintenance records for key equipment was performed for all relevant meters.
Necessary procedures have been defined in internal procedures and additional internal documents relevant for the determination of the various parameters on daily basis.

4.3.2 Findings

None

4.3.3 Conclusion

The project complies with the requirements.

4.4 Management System and Quality Assurance

4.4.1 Discussion

The general director of RME “Donetskteplocomunenergo”, Mr. Vasyl Vorotyntsev, appointed a responsible person, Mrs. Victoriya Kucherenko, for the implementation and management of the monitoring process at the RME “Donetskteplocomunenergo”. Mrs. Victoriya Kucherenko is responsible for supervising data collection, measurements, calibration, data recording and storage. The general director of MCE “Donetskteplomerezha” Mr. Viktor Rogachev appointed a responsible person, Mrs. Valentyna Skoryk, for the implementation and management of the monitoring process at the MCE “Donetskteplomerezha”. Mrs. Valentyna Skoryk is responsible for supervising data collection, measurements, calibration, data recording and storage. In addition the developers of the project are responsible for baseline and monitoring methodology development and data processing. In particularly:
Dr. Vladimir Gomon, Managing Engineer of European Institute for safety, security, insurance and environmental techniques, is responsible for baseline and monitoring methodology development.

Dr. Dmitri Paderno, vice director of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development.
Ms. Tetiana Grechko, senior engineer of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development and data processing.
As far as the main activity of RME "Donetskteplocomunenergo" and of the MCE "Donetskteplomerezha" will not change in course of the JI project implementation, the special technical trainings for personnel are not necessary. The technical personnel of the enterprise has sufficient knowledge and experience for implementation of the project activity and maintenance of the usual equipment.

RME "Donetskteplocomunenergo" and MCE "Donetskteplomerezha" provide personnel retraining according to protection of labor norms. The enterprise has the labor protection department, which is responsible for raising the level of personnel skills and trainings.

In course of the JI project development, specialists of Institute of Engineering Ecology and then also of the European Institute for safety, security, insurance and environmental techniques carried out a comprehensive consultations and trainings for involved representatives of RME "Donetskeplocomunenergo" and MCE "Donetskteplomerezha" on the necessary data collection according to Monitoring plan for the project.
In October 2007 European Institute for safety, security, insurance and environmental techniques carried out a comprehensive training "Organization and training of special group for necessary data collection according with Monitoring plan". The group consist of staff RME "Donetskteplocomunenergo" and MCE "Donetskteplomerezha" in particular:
Victoriya Kucherenko – Head of production department;
Katerina Pahomova – engineer of production department;
Anatoliy Shulga – engineer of production department;
Valentina Skorik – engineer of production department;
Vadim Kulik – Head of production department;
Oksana Ermachenko – engineer of heat-energy resources department.

4.4.2 Findings

None

4.4.3 Conclusion

The project complies with the requirements.

5 PROJECT SCORECARD

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Calculated Emission Reductions	
Completeness	Source coverage/ boundary definition	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently.
Accuracy	Physical Measurement and Analysis	✓	✓	✓	State-of-the-art technology is applied in an appropriate manner. Appropriate backup solutions are provided.
	Data calculations	✓	✓	✓	Emission reductions are calculated correctly
	Data management & reporting	✓	✓	✓	Data management and reporting were found to be satisfying.
Consistency	Changes in the project	✓	✓	✓	Results are consistent to underlying raw data.

6 SECOND VERIFICATION STATEMENT

Bureau Veritas Certification has performed a verification of the JI project "Rehabilitation of the District Heating System Rehabilitation in Donetsk Region". The verification is based on the currently valid documentation of the United Nations Framework Convention on the Climate Change (UNFCCC).

The management of the RME "Donetskteplocomunenergo" is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version 8. 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.

Bureau Veritas Certification verified the Project Monitoring Report version 2 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as described in validated 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.

Bureau Veritas Certification 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 and related to the valid project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated we confirm the following statement:

Reporting period: From 01/01/2008 to 31/12/2008
Baseline emissions : 1217754.4 t CO2 equivalents.
Project emissions : 916698.6 t CO2 equivalents.
Emission Reductions : 301055.9 t CO2 equivalents.

7 REFERENCES

Category 1 Documents:
Documents provided that relate directly to the GHG components of the project.

/1/ Project Design Document, version 8, dated 28 of March 2008

/2/ Monitoring Report version 01 , dated 24 of February 2009

/3/ Monitoring Report version 02 , dated 25 of March 2009

/4/ Verification Report by Bureau Veritas Certification Holding SAS UKRAINE-VER#/2008 version 01 dated 18 of November 2008

Category 2 Documents:
Background documents related to the design and/or methodologies employed in the design or other reference documents.

/5/ Documents checked during the verification onsite are presented in Annex C

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

/1/ Sigal Aleksandr – Director of the Institute of Engineering Ecology

/2/ Paderno Dmitriy – Vice -director of the Institute of Engineering Ecology

/3/ Grechko Tetyana – Senior engineer of the Institute of Engineering Ecology

/4/ Klets Vasiliy – the first vice Deputy of the General director of RME

"Donetskteplocomunenergo"

/5/ Shusharin Petr – Technical director of the RME "Donetskteplocomunenergo"

/6/ Kucherenko Viktoriya – Head of the industry and technical department of the RME "Donetskteplocomunenergo"

/7/ Pachomova Ekaterina– Head of the industry and technical department of the RME "Donetskteplocomunenergo"

/8/ Zinchenko Nikolay – vice-director on exploitation of the MCE "Donetskteplomerezha"

/9/ Kulin Vadim – Head of the industry and technical department of the MCE "Donetskteplomerezha".

/10/ Skorik Valentina – engineer of the industry and technical department of the MCE "Donetskteplomerezha"

/11/ Kutsenko Vitaliy – Head of the heating district in Slovyansk

/12/ Bugachev Alleksandr – Director of "Krasnolimanskaya teploset"

/13/ Vasyutin Nikolay – Chief engineer of "Krasnolimanskaya teploset"

/14/ Ked Oleg – Chief engineer of "Drugkovkateploset"

/15/ Kartavenko Evgeniy – head of the heating districtict in Drugkovka

/16/ Mishin Sergey – Director of "Konstantinovkateploset"

/17/ Hivritz Yuriy – Deputy governor of Regional Administration

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APPENDIX A: COMPANY JI PROJECT VERIFICATION PROTOCOL

Initial Verification Protocol Table 1

Objective	Reference	Comments	Conclusion (CARs/FARs)
1. Opening Session			
1.1. Introduction to audits	/7/	The intention and the target of the audit were illustrated to the participants of the audit. Participants at the audit were the following persons: Verification team: Mr. Ivan Sokolov Lead Auditor, Bureau Veritas Ukraine, Mrs. Nadiia Kaiun, Auditor, Bureau Veritas Ukraine, Oleg Skoblyk, specialist, Bureau Veritas Ukraine, Kateryna Zinevych, specialist, Bureau Veritas Ukraine. Interviewed persons: RME "Donetskteplocomunenergo" and MCE "Donetskteplomerezha" : Mrs. Victoriya Kucherenko is responsible for the implementation and management of the monitoring process at the RME "Donetskteplocomunenergo"and for supervising data collection, measurements, calibration, data recording and storage. Mrs. Valentyna Skoryk is responsible for the implementation and management of the monitoring process at the MCE "Donetskteplomerezha"and for supervising data collection, measurements, calibration, data recording and storage. Dr. Vladimir Gomon, Managing Engineer of European Institute for safety, security, insurance and environmental	**OK**

Objective	Reference	Comments	Conclusion (CARs/FARs)
		techniques, is responsible for baseline and monitoring methodology development Institute of Engineering Ecology: Dr. Dmitri Paderno, vice director of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development. Ms. Tetiana Grechko, senior engineer of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development and data processing.	
1.2. Clarification of access to data archives, records, plans, drawings etc.	/7/	The verification team got open access to all required plans, data, records, drawings and to all relevant facilities.	**OK**
1.3. Contractors for equipment and installation works	/7/	Project has been implemented as defined in the PDD and the implementation is evidenced by statements of work completion.	**OK**
1.4. Actual status of installation works	/7/	Implementation of boiler houses rehabilitation and network rehabilitation is realized according to the project plan. In several cases replacement of network pipes with different (from planned before) diameters took place. CME “Artemivskteplomerezha” refused to participate in the project. Same changers also were made in the monitoring methodology developed for “District Heating” projects in Ukrainian conditions”.	

Objective	Reference	Comments	Conclusion (CARs/FARs)
		Those changes concerned Adjustment factors calculations and allow calculating GHG emissions reduction more transparent. Explain more detail what "Improving of the network organization" means. *Response* Improvement of the heat networks system organization is provided by liquidation of Central Heating Points (CHP) with replacing 4-pipe lines by 2-pipe ones with simultaneous installation of heat exchangers directly at the consumers (Individual Heating Point – IHP), or reconstruction of CHP with modern heat exchangers installation. It is enable to liquidate of pipes with different diameters, to reduce heat losses and to reduce power consumption for power supply of circulation pumps.	**CAR 1**
2. Open issues indicated in validation report			
2.1. Missing steps to final approval	/4/	Based on the validation report the verification team identified no missing steps. The project has been approved by NFP.	**OK**
3. Implementation of the project			
3.1. Physical components	/7/	As it follows from the Monitoring Report, some measures envisaged by Project Plan had not been implemented: - three CHP units	**OK**

Objective	Reference	Comments	Conclusion (CARs/FARs)
		- frequency controllers. The project participants explained, this was due to lack of additional investments and significant increase of the natural gas price to perform measures indicated. Appropriate calculations of CO2 emission reductions were excluded to be conservative.	
3.2. Project boundaries	/7/	Yes the project boundaries are as defined in the PDD.	**OK**
3.3. Monitoring and metering systems	/7/	The installations have the metering and measurement devices such as gas flow meters, electric power consumption meters to monitor parameters related to project. All equipments are of reputed make and included in the structured calibration plans where they are periodically calibrated. The procedures have been documented for the equipment operation. Explain operation principle of device for automatic control of natural gas consumption. *Response* Main factors of implementation efficiency of automatic systems for control and optimization of production heat power process on the base of “ПОТОК-ДН-03” complexes at the water mode boilers: - Realization by one device automatic commercial control of	**CAR 2**

Objective	Reference	Comments	Conclusion (CARs/FARs)
		natural gas consumption, technological calculation of heat power and heat agent leakages - Definition, reflection in real time and calculation of specific natural gas consumption for 1 Gkal of produced heat power - Formation and keeping during 1 year of boilers operational parameters graphics at the colored monitors - Simplicity and multifunctionality - High reliability	
3.4. Data uncertainty	/7/	All measuring equipment corresponds to the regulatory requirements on accuracy of meters and measurement deviations that is calculated and certified. This ensures the required by the technology level of uncertainty of the estimations.	**OK**
3.5. Calibration and quality assurance	/7/	All monitoring equipment is part of detailed calibration plan. The strict control is maintained over the calibration process. On the date of verification, Calibration records of the measuring and monitoring equipment has been verified at site. All the meters have been found to be calibrated regularly as per determined calibration plan for each site. In the table that represents calibration interval for all equipment the calibration interval for heat energy production measurement meters is not present. *Response* Heat energy meters CALMEX N2 are used to calculate heat	**CL 1**

Objective	Reference	Comments	Conclusion (CARs/FARs)
		power generation by the installed new CHP units at the MCE "Donetskteplomerezha" at boiler-house 21, Adygeyskaya str. Calibration interval of heat energy meters CALMEX N2 is 4 years. Date of heat energy meters # 1320-06 and # 1319-06 is - 01.12.06.	
3.6. Data acquisition and data processing systems	/7/	1. Every hour operator of a boiler house reads the values of inside air temperature, temperature of the natural gas and gas pressure at the entrance to the boiler-house. Natural gas consumption is measured by gas flow meters, installed at the every boiler-house. Every day operator of a boiler house make registration of daily gas consumption in the special paper journal. 2. Instrument readings are summarized daily and transferred to RME "Donetskteplocomunenergo" and MCE "Donetskteplomerezha"calculating centers. 3. Every decade calculating center transferred data to gas supplying company. All measuring equipment and calibration is presented in Annex 4. of the Monitoring Report version 02.	**OK**
3.7. Reporting procedures	/7/	The Monitoring Plan defines the responsibilities to consolidate the data required for emission reduction calculations. Calculations are transparent and restricted to entering annually the production data into a predefined Excel spreadsheet.	**OK**

Objective	Reference	Comments	Conclusion (CARs/FARs)
3.8. Documented instructions	/7/	Section B.3. Data processing and archiving (including software used) of the Monitoring Report version 2 provides with the necessary information relating the procedures for the monitoring, measurements and reporting. These were verified onsite and found satisfactory.	**OK**
3.9. Qualification and training	/7/	The overall authority of the project is personally supervised by Victoriya Kucherenko who is responsible for collection and compilation of all data related to this JI Project at RME "Donetskteplocomunenergo". In addition Skoryk Valentina is responsible for collection and compilation of all data related to this JI Project at MCE "Donetskteplomerezha". The responsibilities and authorities are described for each individual in job descriptions as required statutorily.	**OK**
3.10. Responsibilities	/7/	The overall authority of the project is personally supervised by Victoriya Kucherenko who is responsible for collection and compilation of all data related to this JI Project at RME "Donetsk teplocomunenergo". In addition Skoryk Valentina is responsible for collection and compilation of all data related to this JI Project at MCE "Donetskteplomerezha". The responsibilities and authorities are described for each individual in job descriptions as required statutorily.	**OK**
3.11. Troubleshooting procedures	/7/	Procedure exists to react in the case incorrect data appear or equipment failure. There is a separate procedure laid down for measuring and recording energy related parameters. These procedures	**OK**

Objective	Reference	Comments	Conclusion (CARs/FARs)
		include the troubleshooting tips.	
4. Internal Data			
4.1. Type and sources of internal data	/7/	The internal parameters are obtained according to the monitoring plan: Monitoring report, Annex1 contains internal parameters that are monitored.	**OK**
4.2. Data collection	/7/	The responsibility for data collection is described in the monitoring plan. Natural gas consumption at boiler houses of RME "Donetskteplocomunenergo" and MCE "Donetskteplomerezha" was carried out by the following scheme: 1. Every hour operator of a boiler house read the values of inside air temperature, temperature of the natural gas and gas pressure at the entrance to the boiler-house. Natural gas consumption is measured by gas flow meters, installed at the every boiler-house. Every day operator of a boiler house make registration of daily gas consumption in the special paper journal. 2. Instrument readings are summarized daily and transferred to RME "Donetskteplocomunenergo" and MCE "Donetskteplomerezha"calculating centers. 3. Every decade calculating center transferred data to gas	

Objective	Reference	Comments	Conclusion (CARs/FARs)
		supplying company.	**OK**
4.3. Quality assurance	/7/	Section B.3. Data processing and archiving (including software used) of the Monitoring Report version 2 provides with the necessary information relating the procedures for the monitoring, measurements and reporting. These were verified onsite and found satisfactory.	**OK**
4.4. Significance and reporting risks	/7/	As the records are maintained on daily basis and the consumption natural gas is a statutory records the chances of misstatement are hereby low.	**OK**
5. External Data			
5.1. Type and sources of external data	/7/	The external data used are following: •Emission factor of fuels – IPCC values are used. •Calorific Values of fuels – calculated values are used. The external parameters are obtained according to the monitoring plan: monitoring report, Annex2 contains external parameters that are monitored.	**OK**
5.2. Access to external data	/7/	Origin of the external data is indicated in the monitoring report, Annex2.	**OK**

Objective	Reference	Comments	Conclusion (CARs/FARs)
5.3. Quality assurance	/7/	See chapter 5.1..	**OK**
5.4. Data uncertainty	/7/	See chapter 5.1.	**OK**
5.5. Emergency procedures	/7/	See chapter 5.1.	**OK**
6. Environmental and Social Indicators			
6.1. Implementation of measures	/7/	Environmental and social indicators are not defined in the monitoring plan. Hence the question is not applicable. But the client takes action on a voluntary basis regarding environmental and social issues: The auditor team on site was informed on local stakeholders' opinion. They expressed their appreciations for the project. As per them the project has brought improvements in heat supply system, which the project has brought in.	**OK**
6.2. Monitoring equipment	/7/	See chapter 6.1.	**OK**
6.3. Quality assurance procedures	/7/	See chapter 6.1.	**OK**
6.4. External data	/7/	See chapter 6.1.	**OK**
7. Management and Operational System			

Objective	Reference	Comments	Conclusion (CARs/FARs)
7.1. Documentation	/7/	The company complies with all legal and statutory requirements of the Ukraine and the same were made available to the verification team. RME "Donetskteplocomunenergo" has all the necessary permissions and licenses, issued by the State Inspection on Labor Safety, that allow performing of the following activities: to operate, repair and install the steam and hot-water boilers, steam and hot-water pipelines; to perform building and installation works; to perform designing works; to conduct adjustment and alignment of fuel-using equipment.	**OK**
7.2. Qualification and training	/7/	The overall authority of the project is personally supervised by Victoriya Kucherenko who is responsible for collection and compilation of all data related to this JI Project at RME "Donetsk teplocomunenergo". In addition Skoryk Valentina is responsible for collection and compilation of all data related to this JI Project at MCE "Donetskteplomerezha". The responsibilities and authorities are described for each individual in job descriptions as required statutorily.	**OK**
7.3. Allocation of responsibilities	/7/	The responsibilities and authorities are described for each individual in job descriptions as required statutorily. Persons working at sites are aware of their responsibilities, and relative records are maintained.	**OK**

Objective	Reference	Comments	Conclusion (CARs/FARs)
7.4. Emergency procedures	/7/	The emergency procedures with respect to operation controls are available in data control	**OK**
7.5. Data archiving	/7/	Data are archived in the physical and electronic forms and then stored electronically.	**OK**
7.6. Monitoring report	/7/	Calculations are laid down in the monitoring report.	**OK**
7.7. Internal audits and management review	/7/	In the Section B.1.3 and Section C of the Monitoring Report version 2 internal audits and control measures are performed. Measurement equipment calibration for RME “Donetsk teplocomunenergo” and MCE “Donetskteplomerezha” was carried out by Donetsk center of standardization, metrology and certification. Performance review for the project is made by Production Technical department.	**OK**

Periodic Verification Checklist Protocol Table 2: Data Management System/Controls

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
1. Defined organizational structure, responsibilities and competencies		
1.1. Position and roles	Full	The general director of RME “Donetskteplocomunenergo”, Mr. Vasyl Vorotyntsev, appointed a responsible person, Mrs. Victoriya Kucherenko, for the implementation and management of the monitoring process at the RME “Donetskteplocomunenergo”. Mrs. Victoriya Kucherenko responsible for supervising data collection, measurements, calibration, data recording and storage. The general director of MCE “Donetskteplomerezha” Mr. Viktor Rogachev appointed a responsible person, Mrs. Valentyna Skoryk, for the implementation and management of the monitoring process at the MCE “Donetskteplomerezha”. Mrs. Valentyna Skoryk is responsible for supervising data collection, measurements, calibration, data recording and storage. Dr. Vladimir Gomon, Managing Engineer of European Institute for safety, security, insurance and environmental techniques, is responsible for baseline and monitoring methodology development. Dr. Dmitri Paderno, vice director of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development. Ms. Tetiana Grechko, senior engineer of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development and data processing.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
1.2. Responsibilities	Full	Victoriya Kucherenko, Head of the production and Technical Department are responsible for supervising data collection, measurements, calibration, data recording and storage at RME "Donetskteplocomunenergo". Skoryk Valentina, engineer of the Production and Technical Department is responsible responsible for supervising data collection, measurements, calibration, data recording and storage at MCE "Donetskteplomerezha". Dr. Vladimir Gomon, Managing Engineer of European Institute for safety, security, insurance and environmental techniques, is responsible for baseline and monitoring methodology development Dr. Dmitri Paderno, vice director of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development. Ms. Tetiana Grechko, senior engineer of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development and data processing.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
1.3. Competencies needed	Full	The overall authority of the project is personally supervised by Victoriya Kucherenko who is responsible for collection and compilation of all data related to this JI Project at RME “Donetsk teplocomunenergo”. In addition Skoryk Valentina is responsible for collection and compilation of all data related to this JI Project at MCE “Donetskteplomerezha”. The responsibilities and authorities are described for each individual in job descriptions as required statutorily.
2. Conformance with monitoring plan		
2.1. Reporting procedures		The monitoring plan is as per the registered PDD. The applauded version 3 of PDD is publicly available at the site http://ji.unfccc.int/JI_Projects/DeterAndVerif/Verification/PDD/index.html where it was placed during determination process. The monitoring methodology developed for “District Heating” projects in Ukrainian conditions” was used in monitoring process.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
2.2. Necessary Changes	Full	Implementation of boiler houses rehabilitation and network rehabilitation is realized according to the project plan. CME “Artemivskteplomerezha” refused to participate in the project. Same changes also were made in the monitoring methodology developed for “District Heating” projects in Ukrainian conditions”. Those changes concerned Adjustment factors calculations and allow to calculate GHG emissions reduction more transparent.
3. Application of GHG determination methods		
3.1. Methods used	Full	The reporting procedures reflect the monitoring plan content. The calculation of the emission reduction is correct.
3.2. Information/process flow	Full	The necessary procedures have been defined in internal procedures and additional internal documents relevant for the determination of the various parameters on regular basis. Natural gas consumption at boiler houses of RME “Donetskteplocomunenergo” and MCE “Donetskteplomerezha” was carried out by the following scheme: 1. Every hour operator of a boiler house read the values of inside air temperature, temperature of the natural gas and gas pressure at the entrance to the boiler-house. Natural gas consumption is measured by gas flow meters, installed at the every boiler-house. Every day operator

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
		of a boiler house make registration of daily gas consumption in the special paper journal. 2. Instrument readings are summarized daily and transferred to RME "Donetskteplocomunenergo" and MCE "Donetskteplomerezha"calculating centers. 3. Every decade calculating center transferred data to gas supplying company. Monthly data for the last month, with printout of daily bulletin and final bulletin, are transfered to gas supplying company.
3.3. Data transfer	Full	The complete data is stored electronically and also the part of Management information system which is controlled by accounts
3.4. Data trails	Full	The necessary procedures have been defined in internal procedures and additional internal documents relevant for the determination of the all the parameters listed in the monitoring plan
4. Identification and maintenance of key process parameters		
4.1. Identification of key parameters	Full	The critical parameters for the determination of GHG emissions are the parameters listed in section D of the approved PDD

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
4.2. Calibration/maintenance	Full	The company maintains the elaborate calibration plan for each of the equipment. The audit team verified the status for all the equipment at the sites sampled for the audit and found them to be complying with the plan.
5. GHG Calculations		
5.1. Use of estimates and default data	Full	The carbon emission factor & Net calorific values is used as a predetermined default value which has been defined in the PDD and confirmed during validation of the project.
5.2. Guidance on checks and reviews	Full	Internal audits and control measures are performed. Measurement equipment calibration for RME “Donetskteplocomunenergo” and MCE “Donetskteplomerezha” was carried out by Donetsk center of standardization, metrology and certification.
5.3. Internal validation and verification	Full	Monitoring procedure for JI Project includes the responsibility and frequency for carrying out internal audits. The audit team did verify all the parameters listed in monitoring report
5.4. Data protection measures		The necessary procedures relating to Information technology are in place to provide necessary data security, and also prevent the unauthorized use of the same.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
5.5. IT systems	Full	The IT system is server based and located in head quarters in Donetsk and has full fledged manpower. The department is also supported by the internal guidelines and procedures to allocate roles and rights for each user. Additionally it clearly defines the responsibility, authority for back up, archiving and protection of data and equipments.

Periodic Verification Protocol Table 3: GHG calculation procedures and management control testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Potential reporting risks based on an assessment of the emission estimation procedures can be expected in the following fields of action: ➢ the calculation methods, ➢ raw data collection and sources of supporting documentation, ➢ reports/databases/information systems from which data is obtained. Key source data applicable to the project	Regarding the potential reporting risks identified in the left column the following mitigation measures have been observed during the document review and the on site mission: Key source data for this parameter are: • meter reading. • Invoices and record for Fuels (and coal) for consumption and purchase. The metering equipments are installed	The issue remaining is the way the data obtained is used to calculate the emission reduction in a conservative manner according to the approach prescribed in the PDD as well as the way data obtained is used to calculate the emissions reductions/

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
assessed are hereby: ➢ metering records (gas and power consumption per heat generated), ➢ process monitors (heat generation), ➢ operational logs (metering records), ➢ laboratory/analytical data (for energy content of fuels), ➢ accounting records, Appropriate calibration and maintenance of equipment resulting in high accuracy of data supplied should be in place. It is hereby needed to focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include: ➢ manual transfer of data/manual calculations, ➢ position of the metering equipment, ➢ unclear origins of data, ➢ accuracy due to technological	appropriately in the enclosure panels and same are of reputed make. Calculation methods: The reporting procedures reflect the monitoring plan content and the calculation of the emission reduction is correct and also additionally deducting the project emissions caused by fossil fuel.	

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
limitations, ➢ lack of appropriate data protection measures (for example, protected calculation cells in spreadsheets and/or password restrictions).		

Periodic Verification Protocol Table 4: 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)
The issue remaining is the way the data obtained is used to calculate the emission reduction in a conservative manner according to the approach prescribed in the PDD.	There has been a complete check of data transferred from daily consumption and generation readings to the calculation tool. There was no error in such transfer. The correct installation of the metering equipment can be confirmed.	Having investigated the residual risks, the audit team comes to the following conclusion: Immediate action is not needed with respect to the current emission reduction calculation. Those corrections have been considered during the verification process, so no residual risk is open.

Verification Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	**Ref. to checklist question in tables 2/3**	**Summary of project owner response**	**Verification conclusion**
CL1 In the table that represents calibration interval for all equipment the calibration interval for heat energy production measurement meters is not present.	3.5.	Heat energy meters CALMEX N2 are used to calculate heat power generation by the installed new CHP units at the MCE "Donetskteplomerezha" at boiler-house 21, Adygeyskaya str. Calibration interval of heat energy meters CALMEX N2 is 4 years. Date of heat energy meters # 1320-06 and # 1319-06 is - 01.12.06.	
CAR 1. Explain more detail what "Improving of the network organization" means.	1.4.	Improvement of the heat networks system organization is provided by liquidation of Central Heating Points (CHP) with replacing 4-pipe lines by 2-pipe ones with simultaneous installation of heat exchangers directly at the consumers (Individual Heating Point – IHP), or reconstruction of CHP with modern heat exchangers installation. It is enable to liquidate of	

Verification Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
		pipes with different diameters, to reduce heat losses and to reduce power consumption for power supply of circulation pumps.	
CAR 2. Explain operation principle of device for automatic control of natural gas consumption.	3.3	Main factors of implementation efficiency of automatic systems for control and optimization of production heat power process on the base of “ПОТОК-ДН-03” complexes at the water mode boilers: - Realization by one device automatic commercial control of natural gas consumption, technological calculation of heat power and heat agent leakages - Definition, reflection in real time and calculation of specific natural gas consumption for 1 Gkal of produced heat power - Formation and keeping during 1 year of boilers operational parameters graphics at the colored monitors - Simplicity and multifunctionality - High reliability	

APPENDIX B: VERIFICATION TEAM

The verification team consists of the following personnel:

Flavio Gomes, M.Sci. (civil engineering)

Team Leader

Bureau Veritas Certification, Climate Change Verifier
Flavio Gomes is a Chemical and Safety Engineer graduated from «UNICAMP – Universidade Estadual de Campinas», with a MSc title in Civil Engineer (Sanitation). He spent four years at RIPASA Pulp and Paper as Environmental Process Engineer. He is, since 2006 the Global Manager for Climate Change. Previously and since 1997, he was senior consultant for Bureau Veritas Consulting in fields of Environment, Health, Safety, Social Accountability and Sustainability audit and management systems. He also acted as Clean Development Mechanism verifier, and Social/Environmental Report auditor, in the name of Bureau Veritas Certification. Flavio is pursuing his PhD on Energy Management at the Imperial College – London.

Ivan G. Sokolov, Dr. Sci. (biology, microbiology)
Team member

Bureau Veritas Ukraine HSE Department manager.

He has over 25 years of experience in Research Institute in the field of biochemistry, biotechnology, and microbiology. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered), Quality Management System (IRCA registered), Occupational Health and Safety Management System, and Food Safety Management System. He performed over 130 audits since 1999. Also he is Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and Lead Tutor of the IRCA registered ISO 9000 QMS Lead Auditor Training Course. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is involved in the validation of 6 JI projects.

Nadiya Kaiiun, M. Sci. (environmental science)
Team member

Bureau Veritas Ukraine HSE Department project manager.

She has graduated from National University of Kyiv-Mohyla Academy with the Master Degree in Environmental Science. She is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). She performed over 15 audits since 2008. She has undergone intensive training on Clean Development Mechanism /Joint Implementation and she is involved in the validation of 6 JI projects.

Oleg Skoblyk, Specialist (Energy Management)
Team member

Bureau Veritas Ukraine HSE Department project manager.

He has graduated from National Technical University of Ukraine 'Kyiv Polytechnic University" with specialty Energy Management. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). He performed over 10 audits since 2008. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is involved in the validation of 3 JI projects.

Kateryna Zinevych, M. Sci. (environmental science)
Team member

Bureau Veritas Ukraine HSE Department project manager.

She has graduated from National University of Kyiv-Mohyla Academy with the Master Degree in Environmental Science. She is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). She performed 6 audits since March of 2009. She has undergone intensive training on Clean Development Mechanism /Joint Implementation and she is involved in the validation of 3 JI projects.

Ashok Mammen - PhD (Oils & Lubricants)

Bureau Veritas Certification Internal reviewer
Over 20 years of experience in chemical and petrochemical field. Dr. Mammen is a lead auditor for environment, safety and quality management systems and
a lead verifier for GHG projects. He has been involved in the validation

and verification processes of more than 60 CDM/JI and other GHG projects.

APPENDIX C: DOCUMENTS CHECKED DURING VERIFICATION

	Slovjansk
1.	Contract on electric power supply №5258 dated 1.07.2005
2.	Act №001176 about replacement, check of electric meters (in electric units higher 1000V). 19.10.2007. Serial number : 73021344, 199159, 73003042, 770860
3.	Act №001182 about replacement, check of electric meters (in electric units higher 1000V). 6.12.2007. Serial number : 013080, 199158, 926782, 770860
4.	A fame of natural gas consumption is for April 2008p.
5.	Contract on electric power supply №2354 dated 28.11.2006
6.	Contract №3 about the terms of the centralized heating and hot water supply. 01.09.2006.
7.	Act of reception-transmission PU «Slov'yanskteplomerezha» for February, 2009. Amount of the used electric energy.
8.	Act of basic equipment commissioning. 09.01.2008. Gas engine-generator DvG1-500
9.	Act of basic equipment commissioning. 15.12.2007. Gas engine-generator DvG1-500
10.	Act of basic equipment commissioning. 15.12.2007. Frequency changers.
11.	Information is about the gas charges PU «Slov'yanskteplomerezha». 12.2008.
12.	Act about the actual natural gas consumption. 31.12.2008.
13.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №57004
14.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №57005
15.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №57006
16.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №57007
17.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №57008
18.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №57009
19.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №570011
20.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №570019
21.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №570018
22.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №570017

23.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №570016
24.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №570015
25.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №570014
26.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №570013
27.	Act of working commission about a put into operation (individual heating unit). 05.03.2007. Serial number №570012
28.	Passport, complex of control and automation of thermal energy production process «Potik-DN-03». Serial number №03/50. Calibration dates: 16.10.2008.
29.	Photo, complex of control and automation of thermal energy production process «Potik-DN-03».
30.	Scheme of individual heating unit.
31.	Scheme of boiler-house heating supply №24 PU «Slov'yanskteplomerezha».
32.	Shift log-book of boilers operators, boiler-house №24.
33.	Heating scheme of boiler-house №24.
34.	Log-book of natural gas charge.
35.	Photo, frequency changers.
36.	Photo, gas meter GMS-G100. Serial number №118969.
37.	Photo, the proof-reader of gas volume V25,
38.	Photo, individual heating unit.
39.	Act about the actual natural gas consumption . 31.12.2008.
40.	Act about the actual natural gas consumption . 30.11.2008.
41.	Act about the actual natural gas consumption . 16.04.2008.
42.	Act about the actual natural gas consumption . 31.03.2008.
	Krasnyi Lyman
43.	Act of working commission about a put into exploitation (reconstruction of boiler-house №3 Komunalna str. Krasnyi Lyman– replacement of boilers NIISTU-5 on boilers KSVa -1,25). 12.2008.
44.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 12.2008. Replacement of 3 boilers NIISTU-5 on 3 boilers KSVa -0,63.
45.	Passport, ultrasonic gas meter «Kurs-01» G160A-2, Serial number №02650. Calibration

	dates: 05.08.2008.
46.	Passport, the proof-reader of gas volume V25, Serial number №08186. Calibration dates: 19.11.2008.
47.	Passport, the proof-reader of gas volume V25, Serial number №02066. Calibration dates: 11.07.2008.
48.	Contract №3 about the terms of the centralized heating and hot water supply. 25.01.2006.
49.	Heating scheme of boiler-house №17.
50.	Photo, boilers KSVa -0,63, boiler-house №17.
51.	Regime card of the boiler №3 type KSVa -0,63 boiler-house №17.
52.	Regime card of the boiler №2 type KSVa -0,63 boiler-house №17.
53.	Regime card of the boiler №1 type KSVa -0,63 boiler-house №17.
54.	Photo, burners RIELLO RS70.
55.	Photo, heat exchangers.
56.	Order №18, dated 28.10.2008. About the order of removal of natural gas consumption indexes.
57.	Variable log-book of hot-water boilers exploitation of boiler-house №17.
58.	Log-book of gas account with proof-reader, boiler-house №17.
59.	Photo, boilers KSVa -1,25, boiler-house №3.
60.	Photo, burners RIELLO RS130.
61.	Regime card of the boiler №3 type KSVa -1,25 boiler-house №3.
62.	Photo, ultrasonic gas meter «Kurs-01» G160A-2, Serial number №02650.
63.	Photo, the proof-reader of gas volume V25
64.	Gas log-book, boiler-house №3.
65.	The certificate Kislyuk Lubov Mykolaivna, boiler-house №3. Knowledges verification 23.09.2008.
66.	Heating scheme of boiler-house №3.
67.	Variable log-book of equipment exploitation, boiler-house №3.
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68.	Regime card of the boiler №3 type DKVRv-10-13 boiler-house №7.

69.	Heating engineering scheme of boiler-house №7.
70.	Photo, frequency changers.
71.	Photo, electric energy account point.
72.	Act about stopping and handing over of stoppings and account facilities on a maintainance №085095 dated 08.10.2008. Electric meters.
73.	Act technical verification of account calculation facilities lower 1 kV №098445 dated 08.10.2008.
74.	Act technical verification of account calculation facilities lower 1 kV №098446 dated 08.10.2008.
75.	Passport, complex of control and automation of thermal energy production process «Potik-DN-03». Serial number №03/23. Calibration dates: 16.10.2008.
76.	Act of reception-handing over of reconstructed, repaired and modernized objects. Installation of frequency changers. 12.2007.
77.	Protocol of technical commission of put into exploitation of frequency changers, boiler-house №7.
78.	Act of working commission about a put into exploitation (reconstruction of boiler-house №7 – replacement of burners of boilers DKVR 10/13). 25.12.2007.
79.	Protocol of technical commission of put into exploitation of gas burners, boiler-house №7.
80.	Contract on electric power supply №2041. 28.02.2005.
81.	Log-book of natural gas, electric energy, water consumption account. Boiler-house №7.
82.	Act about the actual natural gas consumption . 31.08.2008.
83.	Act about the actual natural gas consumption . 31.10.2008.
84.	Act about the actual natural gas consumption . 31.12.2008.
85.	Photo, complex of control and automation of thermal energy production process «Potik-DN-03».
86.	Contract №19 about the terms of centralized heating service. 15.02.2008
87.	Contract №19 about the heating energy supply №571. 01.10.2007
88.	Act acceptance-transferrableness of commodity products (electric power) PU «Druzhkovkateplomerezha» dated 12.2008.
89.	Act acceptance-transferrableness of commodity products (electric power) PU «Druzhkovkateplomerezha» dated 11.2008.
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90.	Technological scheme of boiler-house “Zhitlobutservis».
91.	Photo, gas meter GMS-G160. Serial number №105552.
92.	Passport, gas meter GMS-G160. Serial number №105552. Calibration dates: 12.08.2008.

93.	Scheme GDU with account unit of boiler-house “Zhitlobutservis».
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95.	Photo, the calculator of gas volume Universal-02. Serial number №3063.
96.	Technological scheme of boiler-house «Stacionar».
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100.	Photo, burner RIELLO RS130.
101.	Photo, ultrasonic gas meter «Kurs-01» G160A-2, Serial number №02853.
102.	Passport, ultrasonic gas meter «Kurs-01» G160A-2, Serial number №02853. Calibration dates: 11.12.2007.
103.	Log-book of boiler-house exploitation parameters of boiler-house «Stacionar».
104.	Log-book of boiler-house gas charges «Stacionar».
105.	Variable log-book.
106.	Day’s fame of boiler-house «Stacionar».
107.	Photo, the calculator of gas volume Universal-02. Serial number №6374.
108.	Technological scheme of boiler-house Centralna №2.
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110.	Photo, frequency changer.
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112.	Photo, electric energy account point.
113.	Photo, complex of control and automation of thermal energy production process «Potik-DN-03».
114.	Log-book of boiler-house Centralna №2.
115.	Log-book of boiler-house Centralna №2 exploitation parameters.
116.	Log-book of FER account of boiler-house Centralna №2.

117.	Variable log-book of boiler-house Centralna №2.
118.	Passport, the calculator of gas volume Universal-02. Serial number №6374. Calibration dates: 07.12.2007.
119.	Passport, the calculator of gas volume Universal-02. Serial number №3063. Calibration dates: 17.07.2008.
120.	Act technical verification of account calculation facilities lower 1 kV №057793 dated 12.10.2006. Boiler-house Centralna №2.
121.	Act about stopping and handing over of stoppings and account facilities on a maintainance №094769 dated 02.10.2006. Boiler-house Centralna №2.
122.	Act of reception-handing over of reconstructed, repaired and modernized objects. Boiler-house Stacionar. 20.10.2007.
123.	Act of reception-transmission (internal moving) of basic measures №309. 01.2008.
124.	Act of reception-handing over of reconstructed, repaired and modernized objects. Boiler-house Zhitlobutservis. 30.12.2008.
125.	Act of reception-handing over of reconstructed, repaired and modernized objects. Boiler-house Stacionar. 30.12.2008.
126.	Act of reception-handing over of reconstructed, repaired and modernized objects. Boiler-house Stacionar. 20.10.2007.
127.	Act of reception-transmission (internal moving) of basic measures №303. Boiler-house Stacionar. 01.2008.
128.	Act of reception-transmission (internal moving) of basic measures №304. Boiler-house Stacionar. 01.2008.
129.	Act of reception-handing over of reconstructed, repaired and modernized objects №811-5. Boiler-house 81th quarter. 12.2006.
130.	Protocol of technical commission of put into exploitation of frequency changers, boiler-house Centralna №2.
131.	Act of reception-handing over of reconstructed, repaired and modernized objects. Boiler-house Stacionar. 20.10.2007.
132.	Act about the actual natural gas consumption . 31.12.2008.
133.	Act acceptance-transferrableness of commodity products (electric power) PU «Kostyantinivkateplomerezha» dated 12.2008.
134.	Contract №46 about the terms of the centralized heating and hot water supply. 21.06.2007.
135.	Contract №46 about the terms of the centralized heating and hot water supply. 21.06.2007.
136.	Contract №647 about the electric power supply. 14.02.2003.
137.	Calculation of electric power charges for the boiler-houses PU «Kostyantinivkateplomerezha» 2008 p.
	Volnovaha
138.	Log-book of natural gas, electric energy, water consumption account. Boiler-house SSh №5.
139.	Photo, gas meter GMS-G160. Serial number №077857.
140.	GDU scheme.

141.	Heating scheme of boiler-house SSh №5.
142.	Passport, gas meter GMS-G160. Serial number №077857. Calibration dates: 31.07.2008.
143.	The certificate Lukashova Tetyana Mykolaivna, boiler-house SSh №3. Knowledges verification 18.09.2008.
144.	Act of commissions about acceptance of equipment after a complex test. Boiler KSVa -2,5.
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145.	Contract 38/09/11 dated 01.01.2009. Gidrometeocentr.
146.	Photo, frequency changers. Boiler-house MR 2 (Rozdolna str., 3a).
147.	Photo, the calculator of gas volume Universal-01. Serial number №6461.
148.	Photo, electric energy account point. Boiler-house MR 2 (Rozdolna str., 3a).
149.	Passport, the calculator of gas volume Universal-01. Serial number №6461. Calibration dates: 25.02.2008.
150.	Act about stopping and handing over of stoppings and account facilities on a maintainance №004181 dated 07.11.2007. Electric meters. Boiler-house MR 2 (Rozdolna str., 3a).
151.	Act about stopping and handing over of stoppings and account facilities on a maintainance №004168 dated 17.09.2007. Electric meters. Boiler-house MR 2 (Rozdolna str., 3a).
152.	Act №004194 about replacement, check of electric meters (in electric units higher 1000V). 17.09.2007. Boiler-house MR 2 (Rozdolna str., 3a).
153.	Act №004206 about replacement, check of electric meters (in electric units higher 1000V). 07.11.2007. Boiler-house MR 2 (Rozdolna str., 3a).
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157.	Regime card of the boiler №3 type PTVM-30M of boiler-house MR 2 (Rozdolna str., 3a).
158.	Regime card of the boiler №4 type PTVM-30M of boiler-house MR 2 (Rozdolna str., 3a).
159.	Log-book of boiler-house MR 2 (Rozdolna str., 3a).
160.	Log-book of FER account. Boiler-house MR 2 (Rozdolna str., 3a).
161.	Photo, isolated heat network. Boiler-house MR 2 (Rozdolna str., 3a).
162.	Photo, boiler №3 type PTVM-30M. Boiler-house MR 2 (Rozdolna str., 3a).
163.	Photo, pressure transducer «Safir M». Serial number №02930921.

164.	Passport, pressure transducer «Safir M». Serial number №02930921. Calibration dates: 05.02.2007.
165.	Photo, pressure transducer «Safir M». Serial number №08120025.
166.	Passport, pressure transducer «Safir M». Serial number №08120025. Calibration dates: 05.09.2006.
167.	Photo, pressure transducer «Safir M». Serial number №09216341.
168.	Passport, pressure transducer «Safir M». Serial number №09216341. Calibration dates: 29.09.2008.
169.	Photo, pressure transducer «Safir M». Serial number №11359156.
170.	Passport, pressure transducer «Safir M». Serial number №11359156. Calibration dates: 16.09.2007.
171.	Act of reception-handing over of reconstructed, repaired and modernized objects №661, 662. Dates 28.12.2007.
172.	Act of reception-handing over of reconstructed, repaired and modernized objects №663, 664. Dates 28.12.2007.
173.	Act of reception-handing over of reconstructed, repaired and modernized objects №665, 666, 667, 668. Dates 28.12.2007.
174.	Act of reception-handing over of reconstructed, repaired and modernized objects №669. Dates 28.12.2007.
175.	Act of reception-handing over of reconstructed, repaired and modernized objects №663, 664. Dates 28.12.2007.
176.	Act of reception-handing over of reconstructed, repaired and modernized objects №665, 666, 667, 668. Dates 28.12.2007.
177.	Act of reception-handing over of reconstructed, repaired and modernized objects №159, 160, 161, 162, 163, 164, 165, 166. Dates 31.12.2007.
178.	Photo, boiler №1 type TVG-8M. Boiler-house kv. 139 (Ratnikova str., 111a).
179.	Regime card of the boiler №1 type TVG-8M. Boiler-house kv. 139 (Ratnikova str., 111a).
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181.	Photo, the calculator of gas volume Universal-01. Serial number №6713.
182.	Passport, the calculator of gas volume Universal-01. Serial number №6713. Calibration dates: 9.02.2008.
183.	Photo, electric energy account point. Boiler-house kv. 139 (Ratnikova str., 111a).
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185.	Heating scheme of boiler-house kv. 139 (Ratnikova str., 111a).
186.	Photo, the calculator of gas volume Universal-01. Serial number №5045.
187.	Passport, the calculator of gas volume Universal-01. Serial number №5045. Calibration dates: 24.06.2008, 06.08.2008.

188.	Log-book of energy resources account of boiler-house kv. 139 (Ratnikova str., 111a).
189.	Photo, isolated heat network. Boiler-house kv. 139 (Ratnikova str., 111a).
190.	Photo, pressure transducer «Safir M». Serial number №11151194.
191.	Passport, pressure transducer «Safir M». Serial number №11151194. Calibration dates: 14.12.2007.
192.	Photo, pressure transducer «Safir M». Serial number №11303225.
193.	Passport, pressure transducer «Safir M». Serial number №11303225. Calibration dates: 16.12.2007.
194.	Photo, pressure transducer «Safir M». Serial number №12601428.
195.	Passport, pressure transducer «Safir M». Serial number №12601428. Calibration dates: 16.12.2007.
196.	Photo, pressure transducer “Safir M». Serial number №10377818.
197.	Passport, pressure transducer “Safir M». Serial number №10377818. Calibration dates: 28.09.2008.
198.	Photo, pressure transducer “Safir M». Serial number №11279215.
199.	Passport, pressure transducer “Safir M». Serial number №11279215. Calibration dates: 28.09.2008.
200.	Photo, pressure transducer “Safir M». Serial number №07118579.
201.	Passport, pressure transducer “Safir M». Serial number №07118579. Calibration dates: 28.09.2008.
202.	Photo, frequency changers. Boiler-house MKR 18.
203.	Photo, electric energy account point. Boiler-house MKR 18.
204.	Regime card of the boiler №3 type PTVM-30M of boiler-house MKR 18.
205.	Regime card of the boiler №4 type PTVM-30M of boiler-house MKR 18.
206.	Log-book of boiler-house MKR 18.
207.	Log-book of energy resources account. Boiler-house MKR 18.
208.	Photo, gas meter LGK-150. Serial number №9222.
209.	Passport, gas meter LGK-150. Serial number №9222. Calibration dates: 22.03.2008.
210.	Photo, the proof-reader of gas volume V25.
211.	Passport, the proof-reader of gas volume V25, Serial number №04028. Calibration dates: 25.03.2008.

212.	Photo, the calculator of gas volume Universal-01. Serial number №5043.
213.	Passport, the calculator of gas volume Universal-01. Serial number №5043. Calibration dates: 07.08.2008, 30.10.2008.
214.	GDU scheme of boiler-house MKR 18.
215.	Photo, pressure transducer «Safir M». Serial number №02201484.
216.	Passport, pressure transducer «Safir M». Serial number №02201484. Calibration dates: 14.08.2007.
217.	Photo, pressure transducer «Safir M». Serial number №02604416.
218.	Passport, pressure transducer «Safir M». Serial number №02604416. Calibration dates: 14.08.2007.
219.	Photo, pressure transducer «Safir M». Serial number №02012413.
220.	Passport, pressure transducer «Safir M». Serial number №02012413. Calibration dates: 14.08.2007.
221.	Photo, isolated heat network. Кот. МКР 18.
222.	Act of reception-handing over of reconstructed, repaired and modernized objects №511. Dates 28.12.2007.
223.	Act of reception-handing over of reconstructed, repaired and modernized objects №569, 570. Dates 28.12.2007.
224.	Act of reception-handing over of reconstructed, repaired and modernized objects №567, 568. Dates 28.12.2007.
225.	Act of reception-handing over of reconstructed, repaired and modernized objects №101, 102, 103, 104. Dates 28.12.2007.
226.	Act of reception-handing over of reconstructed, repaired and modernized objects №197.
227.	Act of reception-handing over of reconstructed, repaired and modernized objects №657, 658. Dates 28.12.2007.
228.	Contract №741 of heat energy supply. 06.06.2007.
229.	Contract №139 of heat energy supply. 15.10.2008.
230.	Contract №1070 of heat energy supply. 17.04.2007.
231.	Contract №285 of heat energy supply. 15.10.2007.
232.	Contract №503 of heat energy supply. 20.06.2007.
233.	Contract №799 of heat energy supply. 15.10.2008.
234.	Contract №1585/97E of heat energy supply. 01.09.2008.
235.	Contract №772 of heat energy supply. 01.10.2007.

236.	Contract №4100 of heat energy supply. 01.03.2007.
237.	Contract №2073 of heat energy supply. 23.05.2007.
238.	Photo, day's archive of amount used natural gas database.
239.	Act about stopping and handing over of stoppings and account facilities on a maintainance №046975 dated 26.05.2008. Electric meters.
240.	Act about stopping and handing over of stoppings and account facilities on a maintainance №046974 dated 26.05.2008. Electric meters.
241.	Act about stopping and handing over of stoppings and account facilities on a maintainance №042663 dated 21.04.2008. Electric meters.
242.	Act of technical verification of account calculation facilities lower №068754 dated 26.05.2008.
243.	Act of technical verification of account calculation facilities lower №068232 dated 21.04.2008.
244.	Act of reception-handing over of reconstructed, repaired and modernized objects №645, 646, 647, 648. Dates 28.12.2007.
245.	Act of reception-handing over of reconstructed, repaired and modernized objects №649, 650. Dates 28.12.2007.
246.	Act of reception-handing over of reconstructed, repaired and modernized objects №651, 652, 653, 654. Dates 28.12.2007.
247.	Act of reception-handing over of reconstructed, repaired and modernized objects №655, 656. Dates 28.12.2007.
248.	Act of reception-handing over of reconstructed, repaired and modernized objects №143. Dates 31.12.2007.
249.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 10.09.2008.
250.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 18.02.2008.
251.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 24.03.2008.
252.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 16.09.2008.
253.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 08.01.2008.
254.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 21.01.2008.
255.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 11.02.2008.
256.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 15.09.2008.
257.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 08.12.2008.
258.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 15.02.2008.
259.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 04.11.2008.
260.	Act of a working commission about acceptance in operation of the building, structure,

	premise, completed by construction. 15.12.2008.
261.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 26.12.2008.
262.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 06.06.2008.
263.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 13.06.2008.
264.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 06.10.2008.
265.	Act of a working commission about acceptance in operation of the building, structure, premise, completed by construction. 18.07.2008.
266.	Photo, frequency changers. Boiler-house Krivozubova-4.
267.	Photo, electric energy account point. Krivozubova-4.
268.	Regime card of the boiler №1 type PTVM-30M of boiler-house Krivozubova-4.
269.	Regime card of the boiler №2 type PTVM-30M of boiler-house Krivozubova-4.
270.	Regime card of the boiler №3 type PTVM-30M of boiler-house Krivozubova-4.
271.	Log-book of boiler-house Krivozubova-4.
272.	Log-book of FER account. Boiler-house Krivozubova-4.
273.	Photo, gas meter LGK-150. Serial number №9222.
274.	Passport, the proof-reader of gas volume V25, Serial number №04028. Calibration dates: 25.03.2008.
275.	Photo, the calculator of gas volume Universal-01. Serial number №2263.
276.	Passport, the calculator of gas volume Universal-01. Serial number №2263. Calibration dates: 05.11.2007.
277.	GDU scheme of boiler-house MKR 18.
278.	Heating scheme of boiler-house Krivozubova-4.
279.	Heat network scheme of boiler-house Krivozubova-4.
280.	Photo, pressure transducer «Safir M». Serial number №08034858.
281.	Passport, pressure transducer «Safir M». Serial number №08034858. Calibration dates: 22.08.2007.
282.	Photo, pressure transducer «Safir M». Serial number №08121848.
283.	Passport, pressure transducer «Safir M». Serial number №08121848. Calibration dates: 22.08.2007.
284.	Photo, pressure transducer «Safir M». Serial number №07914656.

285.	Passport, pressure transducer «Safir M». Serial number №07914656. Calibration dates: 22.08.2007.
286.	Photo, isolated heat network. Boiler-house Krivozubova-4.
287.	Photo, frequency changers. Boiler-house MR Myrnyi.
288.	Photo, electric energy account point. Boiler-house MR Myrnyi.
289.	Regime card of the boiler №1 type PTVM-30M of boiler-house MR Myrnyi.
290.	Variable log-book of boiler-house MR Myrnyi.
291.	Log-book of boiler-house MR Myrnyi.
292.	Log-book of energy resources account. Boiler-house MR Myrnyi.
293.	Log-book of gas charges and heat production. Boiler-house MR Myrnyi.
294.	Photo, gas meter LGK-80. Serial number №5861.
295.	Passport, gas meter LGK-80. Serial number №5861. Calibration dates: 24.07.2008.
296.	Photo, the calculator of gas volume Universal-01. Serial number №5362.
297.	Passport, the calculator of gas volume Universal-01. Serial number №5362. Calibration dates: 07.08.2008.
298.	Photo, the calculator of gas volume Universal-01. Serial number №6820.
299.	Passport, the calculator of gas volume Universal-01. Serial number №6820. Calibration dates: 15.02.2008
300.	Heatmechanical scheme of boiler-house MR Myrnyi.
301.	Photo, gas engine-generator DVGa-500.
302.	Act technical verification of account calculation facilities lower 1 kV №018559 dated 06.08.2007.
303.	Act about stopping and handing over of stoppings and account facilities on a maintainance №023030 dated 06.08.2007. Boiler-house MR Myrnyi.
304.	Act-warrant №012112 dated 06.08.2007 on replacement (establishment, output) of electric meter for the consumer of legal entity.
305.	Act about stopping and handing over of stoppings and account facilities on a maintainance №023015 dated 26.07.2007. Boiler-house MR Myrnyi.
306.	Act technical verification of account calculation facilities lower 1 kV №018513 dated 06.08.2007.
307.	Act technical verification of account calculation facilities lower 1 kV №018514 dated 06.08.2007.
308.	Act-warrant №013113 dated 06.08.2007 on replacement (establishment, output) of electric

	meter for the consumer of legal entity.
309.	Multifunction heat meter CALMEX N. Serial number №1320-06. Calibration dates: 01.12.2006.
310.	Photo, multifunction heat meter CALMEX N. Serial number №1320-06.
311.	Multifunction heat meter CALMEX N. Serial number №1319-06. Calibration dates: 01.12.2006.
312.	Photo, multifunction heat meter CALMEX N. Serial number №1319-06.
313.	Photo, isolated heat network. Boiler-house MR Myrnyi.
314.	Electric energy consumption of boiler-house. 12.2008.
315.	Photo, pressure transducer «MIDA-13P». Serial number №06420811.
316.	Passport, pressure transducer «MIDA-13P». Serial number №06420811. Calibration dates: 08.07.2008.
317.	Photo, pressure transducer «Safir M». Serial number №08091859.
318.	Passport, pressure transducer «Safir M». Serial number №08091859. Calibration dates: 10.07.2008.
319.	Photo, pressure transducer «Safir M». Serial number №08122849.
320.	Passport, pressure transducer «Safir M». Serial number №08122849. Calibration dates: 10.07.2008.
321.	Photo, pressure transducer «Safir M». Serial number №07925657.
322.	Passport, pressure transducer «Safir M». Serial number №07925657. Calibration dates: 10.07.2008.
323.	Act of reception-handing over of reconstructed, repaired and modernized objects №669. Dates 28.12.2007.
324.	Act of reception-handing over of reconstructed, repaired and modernized objects №670, 671, 672. Dates 28.12.2007.
325.	Act of reception-handing over of reconstructed, repaired and modernized objects №673, 674, 675, 676. Dates 28.12.2007.
326.	Act of reception-handing over of reconstructed, repaired and modernized objects №186, 187, 188. Dates 31.12.2007.
327.	Act of reception-handing over of reconstructed, repaired and modernized objects №145. Dates 31.12.2007.
328.	Act №001195 about replacement, check of electric meters (in electric units lower 1000V). 03.06.2008.
329.	Act №004242 about replacement, check of electric meters (in electric units higher 1000V). 10.06.2008.
330.	Act №004241 about replacement, check of electric meters (in electric units higher 1000V). 10.06.2008.
331.	SNiP 2-3-79 (1998)
332.	State Buildings Norms (B.2.6-31:2006)
333.	KTM 204 Ukraine 244-941