APPROVED
Deputy General Director -
Project Director

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MONITORING REPORT

Co-destruction of HFC23 and SF6 at "KCKK Polymer Plant" Ltd

JI registration reference N: 0109

Version 1.0
01 October 2012

10th Monitoring period: 01.07.2012 – 30.09.2012

RU 1000201

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Project operator: HaloPolymer-Kirovo-Chepetsk, LLC

Reference

SECTION A.PROJECT AND MONITORING INFORMATION

A.1.Project title and reference

The project title: Co-destruction of HFC23 and SF6 at "KCKK Polimer Plant" Ltd

The sectoral scope: 11 Fugitive emissions from production and consumption of HFC and SF6

JI registration number: 0109

PDD reference: Version 1.1, Date 22 July 2008

PDD Verification: issued by Det Norske Veritas on the 27 November 2008

A.2.Monitoring period

1st Verification (monitoring period 01.04.2008 - 31.12.2008): issued by Bureau Veritas Certification Holding

2nd Verification (monitoring period 01.01.2009 - 31.12.2009): issued by Bureau Veritas Certification Holding

3rd Verification (monitoring period 01.01.2010 - 31.12.2010): issued by Bureau Veritas Certification Holding

4th Verification (monitoring period 01.01.2011 - 31.03.2011): issued by Bureau Veritas Certification Holding

5th Verification (monitoring period 01.04.2011 – 30.06.2011): issued by Bureau Veritas Certification Holding

6th Verification (monitoring period 01.07.2011 – 30.09.2011): issued by Bureau Veritas Certification Holding

7th Verification (monitoring period 01.10.2011 – 31.12.2011): issued by Bureau Veritas Certification Holding

8th Verification (monitoring period 01.01.2012 – 31.03.2012): issued by Bureau Veritas Certification Holding

9th Verification (monitoring period 01.04.2012 – 30.06.2012): issued by Bureau Veritas Certification Holding

10th Verification (monitoring period 01.07.2012 – 30.09.2012): in progress

11th Verification (monitoring period 01.10.2012 – 31.12.2012): expected on 01.02.2013

A.3.Project description

HaloPolymer Kirovo-Chepetsk, LLC (former KCKK Polymer plant Ltd) is the largest producer of fluoroplastics in Russia (over 70%) and the only producer of specialized grades of fluoroprenes, fluoroplastic suspensions, fluorinated liquids and lubricants. For further details about Polymer plant visit www.halopolymer.com.

The HCFC22 and SF6 production activity leads to a formation of dangerous wastes in liquid and gaseous forms, including the formation of GHG:

HFC23 waste is an inevitable by-product of HCFC22 production. The main sources of HFC23 waste emissions are the HCFC22 condensation and rectification columns in HCFC22 production line (in operation from 1951);
SF6 waste is an inevitable by-product of SF6 production. The main source of SF6 waste emissions is the SF6 rectification unit in SF6 production line (in operation from 1998).

The HFC23 and SF6 formation as by-products depend on the production volumes (the HCFC22 and SF6 production power are 23100 tons HCFC22 and 720 tons SF6 per year) and the quality (purity) of HCFC22 and SF6 produced.

The baseline scenario is the continuation of the existence practice under which the HFC23 and SF6 wastes were generally released to the atmosphere and would be inevitably released to the atmosphere in the lack of the destruction capacities and industrial safety requirements.

The project scenario envisages a total destruction of HFC23 and SF6 wastes from sources within the project boundary in the comparison of the baseline scenario under which the HFC23 and SF6 wastes would be released to the atmosphere.

A.4.Project methodology

Baseline methodology: The baseline is based on the selected elements of the approved CDM methodology AM0001: Incineration of HFC23 waste streams (version 05.1).

Monitoring methodology: The monitoring plan is based on the selected elements of the approved CDM methodology AM0001: Incineration of HFC23 waste streams (version 05.1).

The monitoring plan is revised in accordance with paragraph 41 of the Guidance on criteria for baseline setting and monitoring (version 03). See Appendix 3 for Revised Monitoring Plan.

A.5.Project implementation

The project implementation includes development, design, engineering, procurement, finance, construction, operation and maintenance of a system for collection, storage and thermal oxidation of HFC23 and SF6 wastes followed by treatment of combustion gases (absorption and neutralization) prior to safe disposal of all emissions and discharges.

The project implementation is finished in 2008. The destruction process has been started from 01.04.2008.

A.6.Project participants

Project operator and investor: HaloPolymer Kirovo-Chepetsk, LLC

Russian Federation, 613040 Kirovo-Chepetsk, Zavodskaya str., 17a
The owner of "KCKK Polymer plant" decided to change the brand name of a legal entity and the approval of the charter in the new edition. March 09, 2011 to the Unified State Register of Legal Entities entry was made to change the brand name of "KCKK Polymer plant" on “HaloPolymer Kirovo-Chepetsk" and re-charter in the new edition. Changing the name is not a reorganization, not alter the rights and responsibilities of the entity. Occurring in the text of the Report of the name of the investor "KCKK Polymer plant" and “HaloPolymer Kirovo-Chepetsk" are considered equal.

A.7.Project status
The project has a letter of approval from the Russian Federation (the Host Party) dd. 23.07.2010 and the Swiss Confederation (the Party involved other than Host) dd. 26.10.2010. CAR 01 (pending approval by Host Party) and CAR 02 (pending written project approval by Party B) from Determination Report issued by DNV remained open. The project goes under the Track 1, so there is no need to close these CARs in Determination Report issued by DNV.

A.7.1. Revisions to monitoring plan

No new revisions are introduced in the present monitoring report for the 3rd quarter of 2012, which is developed in full compliance with the revised monitoring plan that is presented in Appendix 3.

However revisions and deviations were included in the monitoring reports for previous periods. To provide transparency regarding what revisions and when they were introduced and verified the history of their introduction is presented further:

The first revisions to the monitoring plan were provided in the monitoring report for the 1st monitoring period of 01.01.2008 – 31.12.2008 in April of 2009. The revisions were associated with a change of the method of determining such key variables as the quantities of technological emissions of HFC-23 and SF6; the quantities of commercial HFC-23 and SF6 produced, the measurement of HFC-23 and SF6 concentrations in the waste, the volume of effluent gases and HFC-23 concentration, data storage etc. Those revisions were accepted and verified by AIE, i.e. Bureau Veritas Certification Holding SAS (Verification report No. Russia/0020-3/2009 rev.01 issued on 20 April 2009).The detailed description of the revisions and justification/explanation of those are provided in the Appendix 1. to the present monitoring report.

Subsequently, the second revisions were included in the monitoring report (version 2.0 issued on 21.05.2010) for monitoring period of 01.01.2009 – 31.12.2009. Apart from improvement of justification of the revisions introduced in the previous period, the new revisions were associated with determination of electricity consumption, the quantity of gaseous emissions; environmental monitoring issues; QC and QA procedure etc. The revisions were accepted and verified by Bureau Veritas Certification Holding SAS (Verification report No. Russia/0071-3/2010 rev.01 issued on 04 June 2010). The detailed description of the revisions and justification/explanation of those are provided in the Appendix 2 to the present Monitoring report.

In June of 2011 the methodology of monitoring based on the selected elements of the approved CDM methodology AM0001 “Incineration of HFC23 waste streams (version 05.1)” was reconsidered and eliminated by the project participant. Instead, an original JI-approach was applied for monitoring. Revisions introduced in the monitoring plan represent elimination of such factors as the cut-off conditions and baseline quantity of HFC23 an SF6 destroyed, which are, in first case, inapplicable due the absence of accurate and representative information, and, in the second case, are inapplicable due to erroneous use of the maximum permissible emissions as a measure of the state regulation of emissions of such gases and due to the absence of information that HFC23 and SF6 were historically destroyed. More detailed justification of revisions made contains in the Appendix 3.

The following monitoring reports (that were based on the revised monitoring plan) for the 3rd monitoring period of 01.01.2010 – 31.12.2010 and the 4th monitoring period of 01.01.2011-03.03.2011 (versions 2.1 issued on 24.06.2011) were developed and submitted for verification .The revisions, revised monitoring plan and revised monitoring reports were accepted and verified by Bureau Veritas Certification Holding SAS (Verification reports No. Russia-ver/0141/2010/rev.01 and No. Russia-ver/0142/2010/rev.01 issued on 28.06.2011). The description and explanation of the revisions are included Appendix 4.

The next monitoring report for the 5th monitoring period of 01.04.2011 -30.06.2011 did not include any new revisions and was developed in compliance with the revised monitoring plant. The monitoring report was verified by Bureau Veritas Certification Holding SAS (No. Russia-ver/0160/2011 issued 22.08.2011).

A.8.Emissions reductions

The expected and generated emission reductions are shown in table below:

Number of monitoring period	Length of the monitoring period	Generated emission reductions
1st monitoring period	01.04.08 – 31.12.08	598 984
2nd monitoring period	01.01.09 – 31.12.09	1 031 807
3rd monitoring period	01.01.10 – 31.12.10	3 548 915
4th monitoring period	01.01.11 – 31.03.11	884 976[1]
5th monitoring period	01.04.11 – 30.06.11	2 237 130
6th monitoring period	01.07.11 – 30.09.11	2 328 186
7th monitoring period	01.10.11 – 31.12.11	2 244 082
8th monitoring period	01.01.12 – 31.03.12	1 932 275
9th monitoring period	01.04.12 – 30.06.12	1 946 224
10th monitoring period	**01.07.12 – 30.09.12**	**2 140 389**
11th monitoring period	01.10.12 – 31.12.12	n/a

A.9.Contact information

Project operator:

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Holding company:

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[1] Note: The reason for preparing MR for three months instead of a year is the wish of the Buyer to contract the ERU from the project on quarterly basis.

SECTION B.MONITORING ACTIVITIES

B.1.Monitoring process

The monitoring process is executed according to the Corporate standard 6-020-2009 "GHG Utilization" (monitoring procedure). The key elements of monitoring process are described below:

Measurement of HFC23 / SF6 waste generated and supplied for destruction

Variables: q_HFC23_y, q_SF6_y, $q\_G\_HFC23_y$, $q\_G\_SF6_y$

$q\_G\_HFC23_y$ is the HFC23 waste generated during the quarter y, kg
$q\_G\_SF6_y$ is the SF6 waste generated during the quarter y, kg
q_HFC23_y is the HFC23 waste supplied for destruction during the quarter y, kg
q_SF6y is the SF6 waste supplied for destruction during the quarter y, kg

The measurement of HFC23 waste generated and supplied for destruction are performed based on the stationary mass flow meters incorporated in the Automated Process Control System (APCS). APCS provides automated processing, storage, registration and archiving of technological process data with functionality of data protection and security. The consistency of data is provided by means of software.

The measurement of HFC23 / SF6 waste generated are made by stationary mass flow meter (Siemens, Germany) installed on the outlet pipelines from emission sources. The readings are automatically collected, stored and processed by APCS.

The measurement of HFC23 / SF6 waste supplied for destruction is made by two down-in-line stationary mass flow meter (Siemens, Germany) installed on the inlet pipelines to the destruction unit. The readings are automatically collected, stored and processed by APCS. The APCS automatically calculates the conservative value of the HFC23 / SF6 waste supplied for destruction based on readings from two down-in-line mass flow meters.

The stationary mass flow meters are incorporated in Automated Process Control System (APCS) based on the hardware and software system CENTUM CS 3000 (Yokogawa, Japan). CENTUS CS 3000 system provides automated processing, storage, registration and archiving of technological process data with functionality of data protection and security. The consistency of data is provided by means of software.

The daily reports are automatically generated by APCS software and stored on the workstations (2 mirror hard drives), printed from workstations and copied to storage server every day. Reports include hourly readings of mass flow meters and the conservative calculation of the HFC23/SF6 waste supplied for destruction based on readings from two down-in-line mass flow meters.

The daily reports are stored on the workstation during 35 days and on the storage server during 10 years. The stored data is additionally archived to CD/DVD and stored during 10 years. The monthly printed reports are archived during 10 years.

The data from the daily reports are retrieved for any period by special software (internal audit program) which uses data from the storage server. This program is used for data gathering and printing. The monthly reports generated by the program are verified and archived.

Calculation of volume of effluent gases emitted from destruction Variables:

q_ND_y

q_ND_y is the volume of gaseous emissions from destruction process during the quarter y, m3

The measurement of effluent gases from the destruction unit is made by analytical method apart of the APCS from 01.09.2008 (stationary volume flow meter works improperly due to condensed moisture). For that purpose the speed of effluent gas is measured weekly by portable flow meter (Testo-425). The measurements are documented and summary reports are archived during 10 years. The measurements are used for calculation of effluent gases volume (average effluent gas speed for a period is multiplied by area of the venting pipe and length of period).

Calculation of HFC23 / SF6 mass content in HFC23 / SF6 waste generated and supplied for destruction

Variables: C_HFC23_y, C_SF6_y, $C\_G\_HFC23_y$, $C\_G\_SF6_y$

$C\_G\_HFC23_y$ is the average monthly content of HFC23 in HFC23 waste generated during the quarter y, %
$C\_G\_SF6_y$ is the average monthly content of SF6 in SF6 waste generated during the quarter y, %

C_HFC23_y is the average monthly content of HFC23 in HFC23 waste supplied for destruction during the quarter y, %
C_SF6y is the average monthly content of SF6 in SF6 waste supplied for destruction during the quarter y, %

The calculations of HFC23 / SF6 mass content are performed by laboratory weekly based on the gas samples from outlet pipelines from emission sources and inlet pipelines to the destruction unit. Gas samples are analyzed to measure HFC23 / SF6 volume contents and sample's density by chromatographs (Chromas GX-1000). The calculation of HFC23 / SF6 mass content is made under approved methods.
The mass HFC23 / SF6 contents are calculated based on volume contents and sample's density. HFC23 / SF6 mass content is calculated as: Xm = (M × Xv) / (Vm × p), where

M -molar mass (constants - 70,014 g/mole for HFC23 and 146,050 g/mole for SF6)

Xv - HFC23 / SF6 molar volume content in sample (%)

Vm - molar volume (constant - 24,04 dm3/mole for gas)

p - sample's density (g/dm3)

The results of analysis are regularly checked for repeatability and consistency.

The results of analysis are documented and archived, cross-checked with previous results. Background data and results are stored in laboratory. Monthly reports which include results of the weekly analysis are archived during 10 years.

Measurement of HFC23 / SF6 concentration in effluent gases from destruction process

Variables: $C\_ND\_HFC23_y$, $C\_ND\_SF6_y$

$C\_ND\_HFC23_y$ is the average monthly concentration of HFC23 in gas effluents during the quarter y, mg/m3
$C\_ND\_SF6_y$ is the average monthly concentration of SF6 in gas effluents during the quarter y, mg/m3

The measurement of HFC23 / SF6 concentration in effluent gases are performed by laboratory weekly based on the gas samples from the venting pipe after destruction unit. Gas samples are analyzed based on approved method, measurements are made by chromatographs (Chromas GX-1000).

The results of analysis are regularly checked for repeatability and consistency. The results of analysis are documented and archived, cross-checked with previous results. Initial data and results are stored in laboratory. Month and annual reports which include results of the weekly analysis are archived during 10 years.

Measurement of HFC23 recovered for sale

Variable:S_HFC23_y

S_HFC23_y is the HFC23 recovered for sale during the quarter y, t

The HFC23 quantity recovered for sale (if applicable) is determined as HFC23 gross output (commercial output measured by scales + change in inventory measured by level meter). The readings from level meters are taken at the end of each month and recorded. The readings from scales are recorded during the month. Based on the records the gross output of HFC23 is calculated monthly.

The HFC23 production is included in monthly production reports and passed to production accounting department which cross-checked data with production and accounting reports and prepared a summary report for GHG calculation.

Measurement of electricity consumption by the destruction process

Variable: EC_y

EC_y is the electricity consumption by the thermal destruction unit during the quarter y, MWh

The electricity consumption is measured by meters (feeders). The readings from feeders are gathered weekly and passed to electricity service organization which provided reports on electricity consumption during a month. These reports are used for GHG calculation.

Initial data treatment

The monthly reports which summarize the monitoring information are collected by project operator for verification and GHG calculation. These reports (or annual summary reports) are to be used to prepare monitoring reports.

B.2.Monitoring equipment

The monitoring equipment comprises mass flow meters, level meters, scales, chromatographs and other equipment. The key equipment is listed below:

Mass flow meters	Range	Relative error	Absolute error
SITRANS FC MASSFLO MASS 2100/6000 Ex DI 6 mm	0-60 kg/hour	0,5%	0,050 kg/hour
SITRANS FC MASSFLO MASS 2100/6000 Ex DI 3 mm	0-10 kg/hour	0,5%	0,005 kg/hour

The flow meters are installed on the outlet pipelines from emission sources (1×2 flow meters) and on the inlet to the destruction unit (2×2 parallel meters). The zero check of the parallel flow meters was conducted every week and didn't indicate that the flow meter was not stable. The readings from mass flow meters are automatically processed by APCS based on the CENTUM CS 3000.

In compliance with the requirements of the Federal Agency for Technical Control and Metrology all the monitoring equipment is regularly inspected, checked and calibrated (if necessary) during the monitoring period.

B.3.Monitoring data

The data presented in this monitoring report has been collected in line with the monitoring plan.

Measurement of HFC23/SF6 waste generated and supplied for destruction

Variables: q_HFC23_y, q_SF6_y, $q\_G\_HFC23_y$, $q\_G\_SF6_y$

$q_{\_G\_HFC23_y}$ is the HFC23 waste generated during the quarter y, kg
$q_{\_G\_SF6_y}$ is the SF6 waste generated during the quarter y, kg
$q_{\_HFC23_y}$ is the HFC23 waste supplied for destruction during the quarter y, kg
$q_{\_SF6y}$ is the SF6 waste supplied for destruction during the quarter y, kg

The daily data for calculation of q_HFC23_y, q_SF6_y, $q\_G\_HFC23_y$, $q\_G\_SF6_y$ is collected from storage server using APCS by server administrator and processed in MS Excel by the head of Environmental department. Supervisors by means of internal audit program and crosschecking with documented reports verify the summary results.

Calculation of the volume of effluent gases emitted from destruction

Variables: q_ND_y
q_NDy is the volume of gaseous emission from destruction process during the quarter y, m3

The data for calculation of q_NDy (flow speed of effluent gas) is provided by chief mechanic department and proceeded in MS Excel by the head of Environmental department. Supervisors verify the summery results and calculation.

Calculation of HFC23 / SF6 mass contents in HFC23 / SF6 waste generated and supplied for destruction

Variables: C_HFC23_y, C_SF6_y, $C\_G\_HFC23_y$, $C\_G\_SF6_y$

$C\_G\_HFC23_y$ is the average annual content of HFC23 in HFC23 waste generated during the quarter y, %
$C\_G\_SF6_y$ is the average annual content of SF6 in SF6 waste generated during the quarter y, %
C_HFC23_y is the average annual content of HFC23 in HFC23 waste supplied for destruction during the quarter y, %
C_SF6y is the average annual content of SF6 in SF6 waste supplied for destruction during the quarter y, %

The data for calculation of C_HFC23_y, C_SF6_y, $C\_G\_HFC23_y$, $C\_G\_SF6_y$ (results of analysis) is provided by laboratory and processed in MS Excel by the head of Environmental department. The summary results and calculation are verified by supervisors.

Measurement of HFC23 / SF6 concentration in effluent gases from destruction process

Variables: $C\_ND\_HFC23_y$, $C\_ND\_SF6_y$

$C\_ND\_HFC23_y$ is the average monthly concentration of HFC23 in gas effluents during the quarter y, mg/m3
$C\_ND\_SF6_y$ is the average monthly concentration of SF6 in gas effluents during the quarter y, mg/m3

The data for calculation of $C\_ND\_HFC23_y$, $C\_ND\_SF6_y$ (results of analysis) is provided by laboratory and processed in MS Excel by the head of Environmental department. The summary results and calculation are verified by supervisors.

Measurement of HFC23 waste recovered for sale

Variables: S_HFC23_y

S_HFC23_y is the HFC23 recovered for sale during the quarter y, t

The data for calculation ofS_HFC23_y is provided by production accounting department and processed in MS Excel by the head of Environmental department. The summary results and calculation are verified by supervisors. HFC23 was not recovered for sale in the third quarter of 2012.

Measurement of electricity consumption by destruction process

Variable:

EC_y is electricity consumption by the thermal destruction unit during the quarter y, MWh

The data for calculation of EC_y is provided by chief power engineer department and processed in MS Excel by the head of Environmental department. The summary results and calculation are verified by supervisors.

Predefined data for calculations

Predefined data for calculations are taken from PDD by the head of Environmental department (exception - see Appendix 2) and verified by the supervisors.

B.4. Environmental control

The environmental impact of the project in the monitoring period was assessed in terms of formation of gaseous, liquid and solid wastes.

The control of emissions of HFC23, SF6 and others pollutants in effluent gas from the destruction unit as well as their adherence to emission levels was conducted by accredited Laboratory of environmental protection in accordance with a schedule as:

HFC23, SF6, CO — 1 time per month
HCl, HF, Cl2, NO2 — 6 times per year

The quarterly emissions estimates are: CO (1,532 kg), HF (0,080 kg), HCl (0,557 kg), Cl2 (0,072 kg), NO2 (0,409 kg). The emissions of these pollutants didn't exceed the allowed levels. The dioxins formation in effluent gases was conducted 1 time and showed also satisfactory results.

Due to absorption and neutralization of effluent gases the following liquid wastes were produced: HF solution (29,86t), KOH solution (3,606 t). The liquid wastes were utilized as commercial products.

The wastes in solid form were not produced due to the project activity.

B.5.Quality assurance and quality control

Quality assurance and quality control are performed according to the registered PDD.

The quality of electronic calculations and electronic data transfer to the monitoring report is provided by the project owner. The background data is transmitted by the project owner in electronic form. Additionally the scanned copies of monthly reports are submitted. All the calculations are made automatically using MS Excel based on the formulas of monitoring plan. The quality of data inserted in MS Excel, formulas used in MS Excel is checked by audit service project owner which signs the MS Excel spreadsheets with background data and MR with final calculation.

All data will be stored in archive in electronic and paper form during 10 years, but not less than 2 years after the end of the crediting period or the last issue of ERUs.

B.6.Operational and administrative structure

The operational and management structure comprises Project operator and Holding company:

Project operator, HaloPolymer Kirovo-Chepetsk, LLC, operates the project and executes the monitoring plan, analyses data and prepares the monitoring reports.

Holding company, HaloPolymer, OJSC supervises the execution and progress of the project.

The monitoring procedures are executed by the project operator according to the Corporate standard 6-0202009 "GHG Utilization" (monitoring procedure) set forth by the Order of the Director #7 dated 11.01.2009. The monitoring data has to be recorded under established procedures and persons responsible for data collection and storage have been appointed.

SECTION C.CALCULATIONS OF GHG REDUCTIONS

C.1.Calculation process

The calculation process includes the following steps:

The calculation of key variables

Calculation of the project GHG emissions

Calculation of the baseline GHG emission

Calculation of the GHG leakages

Calculation of the GHG emission reductions

The calculation is performed in MS Excel based on the background data provided by the project owner. All the computations are made automatically using predefined formulas from the revised monitoring plan (see the subsections C2 and C3 below). The computations are shown in the subsection C2.1 below.

The key background data for calculation was inserted in MS Excel file as database (daily measurements of mass flow meters). Other background data was inserted manually from the summary reports. All the background data in MS Excel file was verified by project operator based on printed reports and internal audit program. The printed lists with background data from MS Excel file were signed.

C.2.The calculation of key variables

The calculations of key variables were made in MS Excel based on the verified background data.

The values of $q\_G\_HFC23_y$, $q\_G\_SF6_y$, q_HFC23_y, q_SF6_y were calculated as sum of daily values of these variables obtained from the database provided by the project operator.

The value of q_ND_y was calculated as the sum of monthly values which are the product of average speed of effluent gases during the month, the area of venting pipe and the length of the corresponding month (the shutdown time was not used in the calculation).

The values of $C\_G\_HFC23_y$, $C\_G\_SF6_y$, C_HFC23_y, C_SF6_y, $C\_ND\_HFC23_y$, $C\_ND\_SF6_y$ were calculated as the quarterly average of monthly values (the average values of mass content or concentration during the month).

The values of S_HFC23_y and EC_y were calculated as the sum of the monthly values. HFC23 was not recovered for sale in the second quarter of 2012, thus S_HFC23_y = 0.

In below table the input data for calculation of the key variables is presented.

Table C.2.1 Input data for calculation of key variables for the second quarter of 2012

Variable	Months			**Total / average**
	July 2012	August 2012	September 2012	**3Q 2012**
HFC23 waste supplied for destruction during the quarter y, q_HFC23y (kg)	58 477	60 299	65 722	**184 498**
SF6 waste supplied for destruction during the quarter y, q_SF6y (kg)	2 308	2 478	2 887	**7 674**
HFC23 waste generated during the quarter y, q_G_HFC23y (kg)	58 612	60 304	65 800	**184 715**
SF6 waste generated during the quarter y, q_G_SF6y (kg)	2 309	2 496	2 894	**7 699**
Volume of gaseous emissions from destruction process during the quarter y, q_NDy(m3)	347 960	332 164	344 597	**1 024 721**
Average monthly content of HFC23 in HFC23 waste supplied for destruction during the quarter y, C_HFC23y (%)	89,66	93,89	89,9	**91,15**

Average monthly content of SF6 in SF6 waste supplied for destruction during the quarter y, C_SF6y (%)	96,46	95,29	91,18	**94,31**
Average monthly content of HFC23 in HFC23 waste generated during the quarter y, C_G_HFC23y (%)	89,53	94,06	89,89	**91,16**
Average monthly content of SF6 in SF6 waste generated during the quarter y, C_G_SF6y (%)	96,82	95,37	90,98	**94,39**
Average monthly concentration of HFC23 in gas effluents during the quarter y, C_ND_HFC23y (mg/m3)	1	1	1	**1**
Average monthly concentration of SF6 in gas effluents during the quarter y, C_ND_SF6y (mg/m3)	0,1	0,1	0,1	**0,1**
HFC23 recovered for sale during the quarter y, S_HFC23y (t)	0	0	0	**0**
Electricity consumption by the thermal destruction unit during the quarter y, ECy (MWh)	34,54	34,25	27,68	**96,47**

The main project metrics for the fourth quarter were calculated according to the formulas:

Formula C 2.1 $G\_HFC23_y = q\_G\_HFC23_y \times 10^{-3} \times C\_G\_HFC23_y \times 10^{-2}$

G_HFC23_y is the HFC23 generated during the quarter y, tonnes

$q\_G\_HFC23_y$ is the HFC23 waste generated during the quarter y, kg

$C\_G\_HFC23_y$ is the average monthly content of HFC23 in HFC23 waste generated during the quarter y.

Formula C 2.2 $G\_SF6_y = q\_G\_SF6_y \times 10^{-3} \times C\_G\_SF6_y \times 10^{-2}$

G_SF6_y is the SF6 generated during the quarter y, tonnes

$q\_G\_SF6_y$ is the SF6 waste generated during the quarter y, kg

$C\_G\_SF6_y$ is the average monthly content of SF6 in SF6 waste generated during the quarter y.

Formula C 2.3 $Q\_HFC23_y = q\_HFC23_y \times 10^{-3} \times C\_HFC23_y \times 10^{-2}$

Q_HFC23_y is the quantity of HFC23 supplied for destruction during the quarter y, t

C_HFC23_y is the average monthly content of HFC23 in HFC23 waste supplied for destruction during the quarter y, %

Formula C 2.4 $Q\_SF6_y = q\_SF6_y \times 10^{-3} \times C\_SF6_y \times 10^{-2}$

Q_SF6_y is the quantity of SF6 supplied for destruction during the quarter y, t

C_SF6_y is the average monthly content of SF6 in SF6 waste supplied for destruction during the quarter y, %

Formula C 2.5 $ND\_HFC23_y = q\_ND_y \times C\_ND\_HFC23_y \times 10^{-9}$

ND_HFC23_y is the quantity of HFC23 not destroyed in the unit during quarter, t

$C\_ND\_HFC23_y$ is the average monthly concentration of HFC23 in gas effluents during the quarter y, mg/m3

Formula C 2.6 $ND\_SF6_y = q\_ND_y \times C\_ND\_SF6_y \times 10^{-9}$

ND_SF6_y is the quantity of $SF6_y$ not destroyed in the unit during quarter, t

$C\_ND\_SF6_y$ is the average monthly concentration of $SF6_y$ in gas effluents during the quarter y, mg/m3

Formula C 2.7 $L\_HFC23_y = (G\_HFC23_y - Q\_HFC23_y - S\_HFC23_y) \times GWP\_HFC23$

L_HFC23_y is the HFC23 leaks to the atmosphere within the project boundary during the quarter, y

S_HFC23_y is the HFC23 recovered for sale during the quarter y, t

GWP_HFC23 is the Global Warming Potential (GWP) that converts 1 tone of HFC23 to tones of CO2 equivalent, t CO_2-e/t.

The approved GWP value for HFC23 is 11 700 t CO_2-e/t for the first commitment period under the Kyoto Protocol

Formula C 2.8 $L\_SF6_y = (G\_SF6_y - Q\_SF6_y) \times GWP\_SF6$

L_SF6_y is the SF6 leaks to the atmosphere within the project boundary during the quarter, y

GWP_SF6 is the Global Warming Potential (GWP) for conversion of 1 ton of SF6 o tons of CO2 equivalent, t CO2-e/t. The approved GWP value for SF6 is 23 900 t CO2-e/t for the first commitment period under the Kyoto Protocol.

The quarterly results of calculation are shown in table below:

Table C.2.2 The values of key variables

HFC23 generated from HCFC22 production		**HFC23 supplied for destruction**	
$q\_G\_HFC23_y$, kg	184 716	q_HFC23_y, kg	184 498
$C\_G\_HFC23_y$,%	91,16	C_HFC23_y,%	91,15
G_HFC23_y, t	**168,39**	Q_HFC23_y, t	**168,17**
HFC23 leaked before destruction		**HFC23 not destructed after destruction**	
-		q_ND_y, m3	1 024 722
-		$C\_ND\_HFC23_y$, mg/m3	1,000
L_HFC23_y, t	0,22	ND_HFC23_y, t	0,001025
SF6 generated from SF6 production		**SF6 supplied for destruction**	
$q\_G\_SF6_y$, kg	7 699	q_SF6_y, kg	7 674
$C\_G\_SF6_y$,%	94,39	C_SF6_y,%	94,31
G_SF6_y, t	7,27	Q_SF6_y, t	7,24
SF6 leaked before destruction		**SF6 not destructed after destruction**	
-		q_ND_y, m3	1 024 721
-	-	$C\_ND\_SF6_y$, mg/m3	0,1
L_SF6_y, t	0,03	ND_SF6_y, t	0,000102

C.3.Calculation of the project GHG emissions

The project GHG emissions during the third quarter of 2012 were calculated using the following formula:

Formula C3.1 $PE_y = ND\_HFC23_y \times GWP\_HFC23 + ND\_SF6_y \times GWP\_SF6 + Q\_HFC23_y \times EF_{CO2,HFC23}$

where

ND_HFC23_y is the quantity of HFC23 not destroyed in the unit during the quarter y, t;

ND_SF6_y is the quantity of SF6 not destroyed in the unit during the quarter y, t;

Q_HFC23_y is the quantity of HFC23 supplied for destruction into the unit during the quarter y, t;

$EF_{CO2,HFC23}$ is the emissions factor that determines the amount of CO2 generated per 1 tone of destroyed HFC23. According to CDM methodology AM0001, $EF_{CO2,HFC23}$ = 0,62857 t CO2-e/t;

GWP_HFC23 is the Global Warming Potential (GWP) that converts 1 tone of HFC23 to tones of CO2 equivalent, t CO_2-e/t. The approved GWP value for HFC23 is 11 700 t CO_2-e/t for the first commitment period under the Kyoto Protocol;

GWP_SF6 is the Global Warming Potential (GWP) for conversion of 1 ton of SF6 o tons of CO2 equivalent, t CO2-e/t. The approved GWP value for SF6 is 23 900 t CO2-e/t for the first commitment period under the Kyoto Protocol.

The project GHG emissions		
PEy	t CO2-e	120

C.4.Calculation of the baseline GHG emissions

The baseline GHG emissions during the third quarter of 2012 were calculated with using the following formulas:

Formula C4.1 $BE_y = Q\_HFC23_y \times GWP\_HFC23 + Q\_SF6_y \times GWP\_SF6$

The baseline GHG emissions		
BE_y	t CO2-e	**2 140 561**

C.5.Calculation of the GHG leakages

The GHG leakages during the third quarter of 2012 were calculated using the following formula:

Formula C5.1 $LE_y = ECy \times EF_{CO2,ELEC,2012} \times 10^{-3}$

$EF_{CO2,ELEC,2012}$ CO2 emissions factor for grid electricity during the year 2012. According to Operational Guidelines for Project Design Documents of Joint Implementation Projects. Volume 1. General guidelines. Version 2.3. Ministry of Economic Affairs of the Netherlands. May 2004. GHG emission factor for grid electricity consumed in 2012 in Russia equals to 534 kg CO_2/MWh,

GHG leakage		
LE_y	t CO2-e	52

C.6. Calculation of GHG emission reductions

The GHG emission reductions during the third quarter of 2012 were calculated

using the following formula:

Formula C6.1 $ER = BEy - PE_y - LE_y$

The GHG emission reductions		
ER_y	t CO2-e	**2 140 389**

APPENDIX 1. REVISIONS TO MONITORING PLAN ADOPTED FOR MONITORING PERIOD OF 01.01.2008-31.12.2008

D.7 Planned deviations			
# of formula or table	As stated in PDD	Applied in monitoring	Reason of deviation
1	2	3	4

D.1, Description of monitoring plan chosen, p.1	1. The quantity of technological emissions of HFC23 and SF6from HCFC22 and sulfur hexafluoride production lines is measured continuously by mass flow meters installed on the unloading pipelines from emission sources. Content of HFC23 and SF6 is measured by laboratory chromatographs once a week or more often in case of technological mode change.	1.The quantity of technological emissions of HFC23 and SF6from HCFC22 and sulfur hexafluoride production lines is measured continuously by mass flow meters installed on the outlet pipelines from emission sources. The HFC23 and SF6 mass content inHFC23/SF6 waste produced is calculated based onvolume content and sample's density (measured by chromatograph once a week or more often in case of technological mode change) using analytical method.	The HFC23 / SF6 mass content is calculated due to absence of direct method to measure HFC23 / SF6 mass content in HFC23 / SF6 waste. This deviation doesn't influence the GHG reductions calculation. HFC23 / SF6 mass content is calculated based on approved method No. 01/38-09/171 as: Xm = (M * Xv) / (Vm * p), where M – molar mass (constants - 70,014 g/mole for HFC23 and 146,050 g/mole for SF6) Xv – HFC23 / SF6 molar volume content in sample (%) to be measured using approved method MZ-111-2007 Vm – molar volume (constant - 24,04 dm3/mole for gas) p – sample's density (g/dm3) to be measured using approved method MZ-110-2008
1	2	3	4

D.1, Description of monitoring plan chosen, p.2	2.The quantity of HFC23 and SF6 supplied to the thermal hydrolysis unit is measured continuously by two down-the-line flow meters installed on each waste feeding line. Content of HFC23 and SF6 is measured by laboratory chromatographs once a week or more often in case of technological mode change.	2The HFC23 / SF6 waste quantity supplied to the thermal hydrolysis unit is measured continuously by two down-the-line flow meters installed on each waste feeding line (readings are automatically recorded hourly). The HFC23 / SF6 mass content in the HFC23/SF6 waste produced is calculated based on volume content and sample's density (measured by chromatograph once a week or more often in case technological mode change) using analytical method.	The HFC23 / SF6 mass content is calculated due to absence of direct method to measure HFC23 / SF6 mass content in HFC23 / SF6 waste. This deviation doesn't influence the GHG reductions calculation. HFC23 / SF6 mass content is calculated based on approved method No. 01/38-09/171 as: Xm = (M * Xv) / (Vm * p), where M – molar mass (constants - 70,014 g/mole for HFC23 and 146,050 g/mole for SF6) Xv – HFC23 / SF6 molar volume content in sample (%) to be measured using approved method MZ-111-2007 Vm – molar volume (constant - 24,04 dm3/mole for gas) p – sample's density (g/dm3) to be measured using approved method MZ-110-2008

D.1, Description of monitoring plan chosen, p. 3	3.The volume of effluent gases from the unit is measured by a volumetric meter. HFC23 content in the gases is measured by laboratory chromatograph once a week.	3. The volume of effluent gases from the unit is calculated based on the average flow speed (measured by portable flow meter weekly) and the length of the monitoring period (the shutdown time is not considered for conservatism). The HFC23 and SF6 mass contents in the influent gases are measured by chromatograph (sample analysis is performed once a week).	In August of 2008 the volume meter installed on effluent gas line after a column 5/8 failed. The reason of improper ability– a significant amount of condensed moisture carried away by a stream of gas after columns of sanitary treatment. From 09/01/2008 the decision was made to define the flow of effluent gases once a week by thermo anemometer «TESTO – 425». As a result of direct measurement velocity of an air stream (υ, km/s) is defined. Monthly gasflow is defined by the formula: $q\_ND_y^* = \upsilon_{cp} F 3600 * T$, **(D.3-4)** Where F - the area of air duct, m3 υ_{cp} - monthly average value of air stream velocity, km/s T (Operating time) isthe operating time of thethermohydrolysis unit, hour/month. The change of method of determining the effluent gas flow q _ NDy was approved by the positive decision of the expert organization (Appendix D-4). Note: Considering the conclusion of the expert organization (Appendix D-5) instead of parameter T (operating work) «the quantity of thermohydrolysis reactor operating work hours per month» the calendar fund of working hours is used in the formula (D.3-4)
TableD.1.1.1, Parameter q_ND_y Column 3	Volume flow sensor	Portable thermoanemometer	
TableD.1.1.1, Parameter q_ND_y Column 5	(m) Measured	(m) Measured + (c) calculated	
TableD.1.1.1, Parameter q_ND_y Column 6	Every month (measurement every hour)	Every month (measurement every week)	
TableD.1.1.1, Parameter q_ND_y Column 8	Electronic and paper	paper	

D.1, Description of monitoring plan chosen, p. 5	5.The quantity of produced SF6is determined on a monthly basis as a sum of the product loaded into cylinders and containers (measured by scales) and the finished product left in the collector (measured by the collector level meter).	5. The quantity of produced SF6is determined on a monthly basis as a sum of the product loaded into cylinders and containers (measured by scales) and of the residual products in tanks (measured by tank-level gauge) and by deduction from the sum obtained of residual products in tanks on a first date of a month passed.	In PDD for SF6 output determining the surplus of final product on the first day of month passed was not taken into account.
D.1, Description of monitoring plan chosen of, p. 4	4.The quantity of produced HCFC22 is determined on a monthly basis as a sum of commercial HCFC22 output (measured by collector level meter) and the readings of the mass flow meter of tetrafluorethylene (monomer -4) production further multiplied by HCFC22 consumption factor for monomer-4 production.	The quantity of produced HCFC22 is determined on a monthly basis as a sum of - quantity of inventories of HCFC-22 and monomer-4 multiplied by HCFC-22 consumption factor for monomer-4 production. (is determined by level gauges in collector tanks and by method of inventory measurement). , - quantity of commercial HCFC-22 output (it is measured by a mass flow meter), - quantity of monomer-4 passed for production of shops 76, 145 and 22 (measured bymass flow meters) with multiplication by HCFC-22 consumption factor for monomer-4 production, and subtraction of HCFC-22 quantity of inventory and a monomer-4 with multiplication by HCFC-22 consumption factor for monomer-4 production on the beginning of accounting (is determined by level gauges in collector tanks and by method of inventory measurement).	In PDD, for determination of the current HCFC-22 production the inventories surplus of HCFC-22and monomer-4 in the beginning and end of an accounting month were not taken into account. Quantity of commercial HCFC-22 produced is measured by mass flow meter. *Note. Factors of raw materials and power consumption are established annually the next year on the basis of actual norms of the consumption for a fiscal year. The consumption factor of HCFC-22 for monomer-4 production for 2008 has been established by “Norms of the consumption of raw materials, materials and power in shop 76 for 2008” № 01/08/1411кt dd 12/13/2007, approved by the chief engineer of plant.

D.1, Description of monitoring plan chosen, p 6	6 The quantity of HFC23 recovered for sale is determined on a monthly basis as a sum of the amount of the product loaded into cylinders and containers (measured by scales) and finished product left in the collector (measured by the level meter of the finished product collector).	6.The quantity of HFC23 recovered for sale is determined on a monthly basis as a sum of the amount of the product loaded into cylinders and containers (measured by scales) and a residual product in co;;ectors (measured by the level meters) and by subtraction from the sum of the residual product in collectorson the 1st day of a month passed.	In PDD, theresidual finish product on the first day of the month passed for HFC23 output determinination were not be considered
Table D.1.1.1, parameter C_HFC23_y Column 5	(m) Measured	(m)Measured + (c)calculated	The method allowing making direct measurement of HFC-23 mass content in gas emissions is absent. HFC-23 and SF6 mass content are calculated by the formula : $X_M = \frac{MX}{24.04\,\rho}$, **(D.3 -5)** where M- molecular mass of component determined (70.014 for HFC-23 and 146.050 forSF6), g/mole X- volume (mole) ratio of component determined from test gotten by direct measurement by the method MZ -111-2007, % 24.04 – molar volume of gas, driven to temperature 200C and pressure 760 mm.HG, dm3/mole ρ – density of test, determined by the method MZ 110-2008, g/dm^3
Table D.1.1.1, parameter $CGHFC23_y$ Column 5	(m) Measured	(m)Measured + (c)calculated	
Table D.1.1.1, parameter C_SF6_y Column 5	(m) Measured	(m)Measured + (c)calculated	
Table D.1.1.1, parameter *C_G_HFC-23* *C_C_SF6*	(m) Measured	(m)Measured + (c)calculated	

Table D.1.1.1, parameter S_HFC23_y Column 8	ElectronicandPaper	Paper	Readings of level gauge of collectors are provided for only in paper.
Table D.1.1.1, parameter P_HCFC22_y Column 5	ElectronicandPaper	Paper	Readings of level gauge of collectors are provided for only in paper. Electronic report on mass flowmeters readings for month is formed and printed on paper medium on 0.00 hour of 1-st date of month. Readings of meters are set to zero. Electronic storage is not provided.
Table D.1.1.1, parameter P_SF6_y Column 8	ElectronicandPaper	Paper	Readings of level meters of collectors is provided only in paper.Fill in of a product is made on scales on the automated system of a filling in with electronic printing of the specification on quantity ofproduct filled. Electronic storage is not provided.
Table D.1.1.1, parameter EC_y Column 8	Electronic	Paper	Readings of meter is provided only in paper. . Electronic storage is not provided.

Table D.1.1.1, parameter $CNDSF6_y$ Column 9	Measured weekly. If thethermal hydrolysis unit stops additional analyses are performed to estimate SF6 leaks. .	Measurements are made once a week.	Measurement of SF6 and HFS-23 concentration in emissions during reactor stops is not provided because at a reactor stop cutoff valves on pipelines of SF6 and HFS-23 supply are automatically shut (during 0,5 s) and entry of gases in the reactor is stops. Considerable volume (3,8 m3) and high temperature (1100-1300oC) of reaction zone cause a delayed action of thermo destruction process - by results of measurement for temperature decrease in a zone of reaction from 1200^{o}C to 1100^{o}C it is required not less than 30 seconds. Preservation of the high temperatures in the reactor during specified time provides full destruction of residual quantities of trifluoromethane and SF6, being in flame of torch and incoming from pipelines at the moment of a stop. Absence of greenhouse gases in emissions after the furnace during the period of stops is confirmed by actual measurement and the positive conclusion of the expert organization (Annex D-5).
Table D.1.1.1, parameter $CNDHFC23_y$ Column 9	Measured weekly. If the thermal hydrolysis unit stops additional analyses are performed to estimate SF6 leaks.	Measurements are made once a week.	
D.1-10 Parameter value $P\_HCFC22_{Hist,max}$	16956.5	12717.375	Monitoring of parameter was introduced from the 1st April 2008. In emission reduction calculations¾from16956.5 was assumed.
D.1-11 Parameter value $P\_SF6_{Hist,max}$	219.9	164.925	Monitoring of parameter was introduced from the 1st April 2008. In emission reduction calculations ¾from219.9 was assumed.
D.1-15 Parameter value $MPE\_HFC23_{Hist,min}$	83.4	65.55	Monitoring of parameter was introduced from the 1st April of 2008. In emission reduction calculations ¾from83.4 was assumed.

D.1-16 Parameter value $MPE\_SF_{6\,Hist,\min}$	6.02	4.515	Monitoring of parameter was introduced from the 1st April 2008. In emission reduction calculations ¾from6.02 was assumed.
D.1-17 Value of emission factor	$EF_{CO2,grid,2008}$ = 565 $kgCO_2$/MWh	$EF_{CO2,grid,2008}$ = 504 $kgCO_2$/MWh	CO2 emission factor for electricity generation consumed from the grid is taken from Operational Guidelines for Project Design Documents of Joint Implementation Project. Volume 1: General guidelines, Ministry of Economic Affairs of the Netherlands, May 2004, Version 2.3
D.1-17 Formula for calculation	$Ly=ECy*\_EFCO2,grid,y*10^{-3}$	$Ly=ECy*\_EFCO2,grid,y*10^{-3}*1,2$	Electricity loss factor in the grid of 1.2 is taken into account in the formula.

APPENDIX 2. REVISIONS TO MONITORING PLAN ADOPTED FOR MONITORING PERIOD OF 01.01.2009 – 31.12.2009

Revision 1	**Registered PDD / Intended deviation / Explanation and Justification**
D.1. Description of monitoring plan chosen Item 1	The quantity of technological emissions of HFC23 and SF6 from HCFC22 and SF6 production lines is measured continuously by mass flow meters installed on the outlet pipelines from emission sources. Content of HFC23 and SF6 is measured by laboratory chromatographs once a week or more often in case technological mode change.
	The HFC23 / SF6 waste quantity generated by production process is continuously measured by mass flow meter installed on the outlet pipelines from emission sources (readings are automatically recorded hourly). The HFC23 / SF6 mass content in the HFC23 / SF6 waste produced is calculated based on volume content and sample's density (measured by chromatograph once a week or more often in case technological mode change) using analytical method.
	Clarification. The HFC23/SF6 mass content is calculated due to absence of direct method to measure of HFC23 / SF6 mass content in HFC23 / SF6 waste. The deviation doesn't influence the GHG reduction calculation. HFC23 / SF6 mass content is calculated based on approved method No. 01/38-09/171 as: Xm = (M * Xv) / (Vm * p), where M - molar mass (constants - 70,014 g/mole for HFC23 and 146,050 g/mole for SF6) Xv - HFC23 / SF6 molar volume content in sample (%) to be measured using approved method MZ-111-2007 Vm - molar volume (constant - 24,04 dm3/mole for gas) p - sample's density (g/dm3) to be measured using approved method MZ-110-2008
Revision 2	**Registered PDD / Intended deviation / Explanation and Justification**
D.1. Description of monitoring plan chosen Item 2	The quantity of HFC23 and SF6 supplied to the thermal hydrolysis unit is measured continuously by two down-the-line flow meters installed on each waste feeding line (readings are automatically recorded hourly). Content of HFC23 and SF6 is measured by laboratory chromatographs once a week or more often in case technological mode change.
	The HFC23 / SF6 waste quantity supplied to the thermal hydrolysis unit is measured continuously by two down-the-line flow meters installed on each waste feeding line (readings are automatically recorded hourly). The HFC23 / SF6 mass content in the HFC23 / SF6 waste produced is calculated

	based on volume content and sample's density (measured by chromatograph once a week or more often in case technological mode change) using analytical method.
	The HFC23/SF6 mass content is calculated due to absence of direct method to measure of HFC23 / SF6 mass content in HFC23 / SF6 waste. The deviation doesn't influence the GHG reduction calculation. HFC23 / SF6 mass content is calculated based on approved method No. 01/38-09/171 as: Xm = (M * Xv) / (Vm * p), where

	M - molar mass (constants - 70,014 g/mole for HFC23 and 146,050 g/mole for SF6) Xv - HFC23 / SF6 molar volume content in sample (%) to be measured using approved method MZ-111-2007 Vm - molar volume (constant - 24,04 dm3/mole for gas) p - sample's density (g/dm3) to be measured using approved method MZ-110-2008
Revision 3	**Registered PDD / Intended deviation / Explanation and Justification**
D.1. Description of monitoring plan chosen Item 3	The volume of effluent gases from the unit is measured by a volumetric meter. HFC23 content in the gases is measured by laboratory chromatograph once a week.
	The volume of effluent gases from the unit is calculated based on the average flow speed (measured by portable flow meter weekly) and the length of the monitoring period (the shutdown time is not considered for conservatism). The HFC23 and SF6 mass contents in the influent gases are measured by chromatograph (sample analysis is performed once a week).
	The volume meter works improperly due to condensed moisture in effluent gases. Therefore, from 01.09.2008 the volume of effluent gases from the unit is calculated based on the effluent gas flow speed (m/sec) measured by portable flow meter weekly and the length of the monitoring period (the shutdown time is not considered to provide conservative estimations) as: q_NDy = V * F * T, where: V - monthly average gas flow speed (m/sec) F - sectional area of gas outlet pipe (m2) T - length of period (sec) This method is approved by independent expert. This deviation leads to the more conservative GHG reductions calculation.

Revision 6	**Registered PDD / Intended deviation / Explanation and Justification**
D.1. Description of monitoring plan chosen Item 6	The quantity of HFC23 recovered for sale is determined on a monthly basis as a sum of the amount of the product loaded into cylinders and containers (measured by scales) and finished product left in the collector (measured by the level meter of the finished product collector).
	The HFC23 quantity recovered for sale (if applicable) is determined monthly as HFC23 gross output (commercial output measured by scales + change in inventory measured by level meter).
	Clarification. According to the registered PDD the HFC23 inventory is not included in calculation. Therefore, the gross output (commercial output + change in inventory) should be determined.
Revision 7	**Registered PDD / Intended deviation / Explanation and Justification**
D.1. Description of monitoring plan chosen Item 7	Electricity consumption is measured by an electricity meter.
	Electricity consumption is measured by an electricity meter and calculated annually.
	Clarification. The more detailed description is provided. The deviation doesn't influence the GHG reduction calculation.
Revision 8	**Registered PDD / Intended deviation / Explanation and Justification**
D.1. Description of monitoring plan chosen Item 8	The quantity of gaseous emissions (CO, HCl, HF, Cl2, organic carbon, dioxins and NOx) is measured in compliance with the current environmental standards of Russia.
	The quantities of gaseous emissions (HFC23, SF6, HCl, HF, Cl2, CO, NO2 and dioxins) are measured in compliance with the current environmental standards of Russia.

	The HFC23, SF6 emissions are included, organic carbon is excluded. The deviation doesn't influence the GHG reduction calculation.
Revision 9	**Registered PDD / Intended deviation / Explanation and Justification**
D.1. Description of monitoring plan chosen Item 9	The amount of liquid effluents and its parameters (pH, COD BOD, suspended solids, fluorides and metals) are not measured as only utilizable wastes are generated in the production process.
	The quantities of liquid effluents (HF solution, KOH solution) are measured annually.
	The quantities of liquid influents are measured. The deviation doesn't influence the GHG reduction calculation.
Revision 10	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived ID 1. q_HFC23_y	Data variable: Quantity of HFC23 wastes supplied to destruction process Source of data: Mass flow meter Data unit: kg Determination method: (m) measured in parallel by two flow meters Recording frequency: Monthly (measured not less than once per hour) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: Measured directly before the unit. Monthly data is the sum of the accumulated data. Readings are taken at least once an hour and the lowest reading of the two flow meters is chosen.
	Data variable: HFC23 waste quantity supplied to destruction process Source of data: 2 mass flow meters Data unit: kg Determination method: (m) measured Recording frequency: Monthly (hourly readings) Proportion of data to be monitored: 100%

	How will the data be archived: Electronic and paper Comment: Measured in parallel by 2 mass flow meters directly before the unit. Readings are taken hourly and processed by APCS,

	the lowest reading is chosen automatically by APCS. Monthly data is the sum of the accumulated data.
	Clarification. The deviation doesn't influence the GHG reduction calculation.
Revision 11	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived ID 2. C_HFC23_y	Data variable: Concentration of HFC23 supplied to destruction process Source of data: Chromatograph Data unit: % Determination method: (m) measured Recording frequency: Monthly (weekly measurements) Proportion of data to be monitored: - How will the data be archived: Electronic and paper Comment: -
	Data variable: HFC23 mass content in HFC23 waste supplied to destruction process Source of data: Chromatograph Data unit: % Determination method: (m) measured, (c) calculated Recording frequency: Monthly (weekly measurements) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: Mass content is calculated based on volume content and density using approved method. Monthly data is the average of the calculated data.
	The HFC23/SF6 mass content is calculated due to absence of direct method to measure HFC23 / SF6 mass content in HFC23 / SF6 waste. The deviation doesn't influence the GHG reduction calculation. HFC23 / SF6 mass content is calculated based on approved method No. 01/38-09/171 as: Xm = (M * Xv) / (Vm * p), where M - molar mass (constants - 70,014 g/mole for HFC23 and 146,050 g/mole for SF6)

	Xv - HFC23 / SF6 molar volume content in sample (%) to be measured using approved method MZ-111-2007 Vm - molar volume (constant - 24,04 dm3/mole for gas)

	p - sample's density (g/dm3) to be measured using approved method MZ-110-2008
Revision 12	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived ID 3. q_ND_y	Data variable: Volume of gaseous effluent from the unit Source of data: Volumetric flow meter Data unit: m3 Determination method: (m) measured Recording frequency: monthly (measurements once per hour) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: -
	Data variable: Volume of gaseous effluent from the unit Source of data: Portable flow meter Data unit: m3 Determination method: (m) measured, (c) calculated Recording frequency: monthly (weekly measurements) Proportion of data to be monitored: 100% How will the data be archived: Paper Comment: Calculated conservatively based on effluent gas flow speed and length of the period.
	The volume meter works improperly due to condensed moisture in effluent gases. Therefore, from 01.09.2008 the volume of effluent gases from the unit is calculated based on the effluent gas flow speed (m/sec) measured by portable flow meter weekly and the length of the monitoring period (the shutdown time is not considered to provide conservative estimations) as: q_NDy = V * F * T, where: V - monthly average gas flow speed (m/sec)

	F - sectional area of gas outlet pipe (m2) T - length of period (sec)

	This method is approved by independent expert. The data is archived only in paper form. The deviation doesn't influence the GHG reduction calculation.
Revision 13	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived ID 4. $C\_ND\_SF6_y$	Data variable: Concentration of SF6 in gaseous effluents from the unit Source of data: Chromatograph Data unit: mg/m3 Determination method: (m) measured Recording frequency: monthly Proportion of data to be monitored: - How will the data be archived: Electronic and paper Comment: Measured weekly. If the thermal hydrolysis unit stops additional analysis are performed to estimate SF6 leaks.
	Data variable: SF6 concentration in gaseous effluents from the unit Source of data: Chromatograph Data unit: mg/m3 Determination method: (m) measured Recording frequency: monthly (weekly measurements) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: If the SF6 concentration is not detectible than the value is conservatively taken to be equal 0,1 mg/m3. Monthly data is the average of the calculated data.
	Additional analysis to estimate HFC23 / SF6 leaks is not performed if the thermal hydrolysis unit stops. The preservation of high temperature in destruction unit during min 30 sec provides full destruction of residual HFC23 / SF6 gases and, therefore, prevents HFC23 / SF6 leaks. Absence of HFC23 / SF6 leaks if the thermal hydrolysis unit stops is confirmed by independent expert. The deviation doesn't influence the GHG reduction calculation.

Revision 14	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.1. Data to be collected	Data variable: Concentration of HFC23 in gaseous effluents from the unit

in order to monitor emissions from the project, and how these data will be archived ID 5. $C\_ND\_HFC23_y$	Source of data: Chromatograph Data unit: mg/m3 Determination method: (m) measured Recording frequency: monthly Proportion of data to be monitored: - How will the data be archived: Electronic and paper Comment: Measured weekly. If the thermal hydrolysis unit stops additional analysis are performed to estimate HFC23 leaks.
	Data variable: HFC23 concentration in gaseous effluents from the unit Source of data: Chromatograph Data unit: mg/m3 Determination method: (m) measured Recording frequency: monthly (weekly measurements) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: If the HFC23 concentration is not detectible than the value is conservatively taken to be equal 1,0 mg/m3. Monthly data is the average of the calculated data.
	Additional analysis to estimate HFC23 / SF6 leaks is not performed if the thermal hydrolysis unit stops. The preservation of high temperature in destruction unit during min 30 sec provides full destruction of residual HFC23 / SF6 gases and, therefore, prevents HFC23 / SF6 leaks. Absence of HFC23 / SF6 leaks if the thermal hydrolysis unit stops is confirmed by independent expert. The deviation doesn't influence the GHG reduction calculation.
Revision 15	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived	Data variable: Quantity of HFC23 recovered for sale Source of data: Scales and level meter in the collector Data unit: t Determination method: (m) measured

	Recording frequency: monthly Proportion of data to be monitored: 100%

ID 6. S_HFC23_y	How will the data be archived: Electronic and paper Comment: -
	Data variable: HFC23 quantity recovered for sale Source of data: Scales and level meter in the collector Data unit: t Determination method: (m) measured Recording frequency: Monthly Proportion of data to be monitored: 100% How will the data be archived: Paper Comment: Not applied if there is no HFC23 recovered for sale from HFC23 waste or there is no technical possibility.
	The data is archived only in paper form. The deviation doesn’t influence the GHG reduction calculation.
Revision 16	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived ID 7. $q\_G\_HFC23_y$	Data variable: Quantity of HFC23 wastes at the outlet of shop No. 76 Source of data: Mass flow meter Data unit: kg Determination method: (m) measured Recording frequency: monthly (readings are recorded weekly) Proportion of data to be monitored: 100% How will the data be archived: Electronic Comment: -
	Data variable: HFC23 waste quantity generated

	Source of data: Mass flow meter Data unit: kg Determination method: (m) measured

	Recording frequency: Monthly (hourly readings) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: Measured by mass flow meter directly after emission sources. Readings are taken hourly and processed by APCS. Monthly data is the sum of the accumulated data.
	Clarification. The deviation doesn't influence the GHG reduction calculation.
Revision 17	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived ID 8. $q\_G\_SF6_y$	Data variable: Quantity of SF6 wastes at the outlet of rectification column of shop No. 2 Source of data: Mass flow meter Data unit: kg Determination method: (m) measured Recording frequency: Monthly (readings are recorded weekly) Proportion of data to be monitored: 100% How will the data be archived: Electronic Comment: -
	Data variable: SF6 waste quantity generated Source of data: Mass flow meter Data unit: kg Determination method: (m) measured Recording frequency: Monthly (hourly readings) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper

	Comment: Measured by mass flow meter directly after emission sources. Readings are taken hourly and processed by APCS. Monthly data is the sum of the accumulated data.
	Clarification. The deviation doesn't influence the GHG reduction calculation.

Revision 18	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived ID 9. q_SF6_y	Data variable: Quantity of SF6 wastes supplied for destruction from shop No. 2 Source of data: Mass flow meter Data unit: kg Determination method: (m) measured in parallel by flow meter Recording frequency: Monthly (measured not less than once per hour) Proportion of data to be monitored: 100% How will the data be archived: Electronic Comment: Measured directly before the unit. Monthly data is the sum of the accumulated data. Readings are taken at least once an hour and the lowest reading of the two flow meters is chosen.
	Data variable: SF6 waste quantity supplied for destruction Source of data: 2 mass flow meters (in parallel) Data unit: kg Determination method: (m) measured Recording frequency: Monthly (hourly readings) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: Measured in parallel by 2 mass flow meters directly before the unit. Readings are taken hourly and processed by APCS, the lowest reading is chosen automatically by APCS. Monthly data is the sum of the accumulated data.
	Clarification. The deviation doesn't influence the GHG reduction calculation.
Revision 19	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of	Data variable: Concentration of HFC23 in wastes at the outlet of shop No. 76 Source of data: Chromatograph

greenhouse gases by sources within the	Data unit: % Determination method: (m) measured

project boundary, and how such data will be collected and archived ID 10. $C\_G\_HFC23_y$	Recording frequency: Monthly (readings are recorded weekly) Proportion of data to be monitored: -How will the data be archived: Electronic and paper Comment: -
	Data variable: HFC23 mass content in HFC23 waste generated Source of data: Chromatograph Data unit: % Determination method: (m) measured Recording frequency: Monthly (weekly measurements) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: Mass content is calculated based on volume content and density using approved method. Monthly data is the average of the calculated data.
	The HFC23/SF6 mass content is calculated due to absence of direct method to measure HFC23 / SF6 mass content in HFC23 / SF6 waste. The deviation doesn’t influence the GHG reduction calculation. HFC23 / SF6 mass content is calculated based on approved method No. 01/38-09/171 as: Xm = (M * Xv) / (Vm * p), where M - molar mass (constants - 70,014 g/mole for HFC23 and 146,050 g/mole for SF6) Xv - HFC23 / SF6 molar volume content in sample (%) to be measured using approved method MZ-111-2007 Vm - molar volume (constant - 24,04 dm3/mole for gas) p - sample's density (g/dm3) to be measured using approved method MZ-110-2008
Revision 20	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of	Data variable: Concentration of SF6 in wastes at the outlet of rectification column of shop No. 2 Source of data: Chromatograph

greenhouse gases by sources within the project boundary, and how such data will be collected and	Data unit: % Determination method: (m) measured Recording frequency: Monthly (readings are recorded weekly)

archived ID 11. $C\_G\_SF6_y$	Proportion of data to be monitored: - How will the data be archived: Electronic and paper Comment: -
	Data variable: SF6 mass content is SF6 waste generated Source of data: Chromatograph Data unit: % Determination method: (m) measured and (c) calculated Recording frequency: Monthly (weekly measurements) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: Mass content is calculated based on volume content and density using approved method. Monthly data is the average of the calculated data.
	The HFC23/SF6 mass content is calculated due to absence of direct method to measure of HFC23 / SF6 mass content in HFC23 / SF6 waste. The deviation doesn't influence the GHG reduction calculation. HFC23 / SF6 mass content is calculated based on approved method No. 01/38-09/171 as: Xm = (M * Xv) / (Vm * p), where M - molar mass (constants - 70,014 g/mole for HFC23 and 146,050 g/mole for SF6) Xv - HFC23 / SF6 molar volume content in sample (%) to be measured using approved method MZ-111-2007 Vm - molar volume (constant - 24,04 dm3/mole for gas) p - sample's density (g/dm3) to be measured using approved method MZ-110-2008
Revision 21	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived	Data variable: Concentration of SF6in wastes supplied for destruction from shop No. 2 Source of data: Chromatograph Data unit: % Determination method: (m) measured

	Recording frequency: Monthly (readings are recorded weekly) Proportion of data to be monitored: -

ID 12. C_SF6_y	How will the data be archived: Electronic and paper Comment: -
	Data variable: SF6 mass content in SF6 waste supplied for destruction Source of data: Chromatograph Data unit: % Determination method: (m) measured and (c) calculated Recording frequency: Monthly (weekly measurements) Proportion of data to be monitored: 100% How will the data be archived: Electronic and paper Comment: Mass content is calculated based on volume content and density using approved method. Monthly data is the average of the calculated data.
	The HFC23/SF6 mass content is calculated due to absence of direct method to measure HFC23 / SF6 mass content in HFC23 / SF6 waste. The deviation doesn't influence the GHG reduction calculation. HFC23 / SF6 mass content is calculated based on approved method No. 01/38-09/171 as: Xm = (M * Xv) / (Vm * p), where M - molar mass (constants - 70,014 g/mole for HFC23 and 146,050 g/mole for SF6) Xv - HFC23 / SF6 molar volume content in sample (%) to be measured using approved method MZ-111-2007 Vm - molar volume (constant - 24,04 dm3/mole for gas) p - sample's density (g/dm3) to be measured using approved method MZ-110-2008

Revision 24	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.3.1. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project ID 15. EC_y	Data variable: Electricity consumption for destruction process Source of data: Meter Data unit: MWh Determination method: (m) measured Recording frequency: Monthly Proportion of data to be monitored: 100% How will the data be archived: Electronic Comment: -
	Data variable: Electricity consumption for destruction process Source of data: Meter Data unit: MWh Determination method: (m) measured Recording frequency: Monthly Proportion of data to be monitored: 100% How will the data be archived: Paper Comment: -
	The readings are recorded only in paper form. The electronic form is not used. The deviation doesn't influence the GHG reduction calculation.
Revision 25	**Registered PDD / Intended deviation / Explanation and Justification**
D.1.5. Where applicable, in accordance with procedures as required by the host Party,	Gaseous effluents (CO, HCl, HF, Cl2, dioxin and NOX) are regularly measured at the thermal destruction unit in accordance with the approved rules. The enterprise files annual consolidated reports on emissions as per the official annual statistical form 2-TP (air) Air protection data, which contains information on amounts of trapped and neutralized atmospheric pollutants, itemized

information on the collection and archiving of information on the environmental impacts of the project	emissions from specific sources, number of emission sources, measures on reduction of emissions to the atmosphere, emissions from particular groups of pollution sources. The enterprise is subject to regular control by state bodies of environmental supervision. The Head of Environmental Department of "KCKK Polimer Plant" Ltd. is responsible for collection, storage and analysis of data regarding the environmental impact of the project in the region.
	Gaseous effluents (HFC23, SF6, CO, HCl, HF, Cl2, NO2 and dioxins) are measured in compliance with the current environmental standards of Russia: HFC23, SF6, CO - 1 time per month HCl, HF, Cl2, NO2 - 6 time per year Dioxins - 1 time per year The enterprise is subject to regular control by state bodies of environmental supervision and has the following reporting obligations as per official annual statistic forms: statistical form 2-tp (air) Data on Atmospheric Air containing information on the quantities of trapped and destroyed air pollutants, detailed emissions of specific pollutants, number of emission sources, emission reduction actions and emissions from separate groups of pollutant sources. The Head of Environmental Department is responsible for collection, storage and analysis of data regarding the environmental impact of the project.
	Clarification. The more detailed description is provided.
Revision 26	**Registered PDD / Intended deviation / Explanation and Justification**
D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored ID 1. q_HFC23_y ID 9. q_SF6_y	Low uncertainty level Measured by two down-the-line flow meters. Instrument error ±0.5%. Following the conservative approach the least value of the two flow meters is taken into consideration at each data reading. If the readings of the flow meters differ by greater than twice their claimed accuracy then measures are taken to remedy the fault. Flow meters shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology. The zero check on the flow meters shall be conducted every week. If the zero check indicates that the flow meter is not stable, an immediate calibration of the flow meter shall be undertaken.
	Low uncertainty level Measured by two down-the-line mass flow meters. Instrument error ±0,5%. Readings are automatically collected, stored, processed and protected from any corrections by APCS. APCS should automatically calculate the conservative value by taking the least value of the two mass flow meters at each data reading.

	The daily reports with corresponding accumulated data from APCS should be archived in electronic form. The data should be verified monthly and the reports with corresponding verified data should be archived in paper form.

	Mass flow meters shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology. The zero check on the flow meters shall be conducted every week. If the zero check indicates that the flow meter is not stable, an immediate calibration of the flow meter shall be undertaken. If the readings of the mass flow meters differ by greater than twice their claimed accuracy then measures are taken to remedy the fault.
	Clarification. The more detailed description is provided.
Revision 27	**Registered PDD / Intended deviation / Explanation and Justification**
D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored ID 2. C_HFC23_y ID 10. $C\_G\_HFC23_y$ ID 11. $C\_G\_SF6_y$ ID 12. C_SF6_y	Low uncertainty level Cross-checked with the previous chromatograph analysis. Frequency of recalibration is in compliance with the requirements of the Federal Agency for Technical Control and Metrology. Relative error of used methodologies correspondingly is: ID 2 - 5%, ID 10 -5%, ID 11 -5%, ID 12 -5%.
	Low uncertainty level Calculated by approved method (relative error - 5%) based on sample's analysis. Sample's analysis includes volume content and density analysis measurements by chromatograph. The measurements and calculation of mass content should be performed by laboratory personnel (assistant), documented in paper form and archived in electronic form. The results are to be verified. The data should be cross-checked with the previous data and summarized in the monthly reports. Chromatographs shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology: absolute calibration - 1 time per year, calibration measurement - 1 time per quarter.
	Clarification. The more detailed description is provided.
Revision 28	**Registered PDD / Intended deviation / Explanation and Justification**
D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored ID 4. $C\_ND\_SF6_y$ ID 5. $C\_ND\_HFC23_y$	Medium uncertainty level Cross-checked with the previous chromatograph analysis. Frequency of recalibration is in compliance with the requirements of the Federal Agency for Technical Control and Metrology. Relative error of used methodologies correspondingly is: ID 4 - 20%, ID 5 -24%.
	Law uncertainty level Measured by chromatograph (relative error: ID 4 - 20%, ID 5 - 25%) under approved method. The accuracy of the measurements has little influence on accuracy of GHG emission reduction calculations. To provide conservative estimation the concentration of HFC23 and SF6 is taken to be equal 1,0

	mg/m3 for HFC23 and 0,1 mg/m3 for SF6 correspondingly if the HFC23 or SF6 concentration is not detectible by chromatographs.

	The measurements of concentration should be performed by laboratory personnel (assistant), documented in paper form and archived in electronic form. The analysis results are to be verified. The data should be cross-checked with the previous data by the head of laboratory and summarized in the monthly report. Chromatographs shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology: absolute calibration - 1 time per year, calibration measurement - 1 time per quarter.
	Clarification. The more detailed description is provided The more detailed description is provided.
Revision29	**Registered PDD / Intended deviation / Explanation and Justification**
D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored ID 3. q_ND_y	Low uncertainty level Flow meter is subject to regular calibration. The accuracy of the equipment has little influence on accuracy of GHG emission reduction calculations.
	Low uncertainty level Measured by portable flow meter and calculated based on the calendar length of period (hours/period). To provide conservative estimate the shutdown time of the destruction unit is not included in calculation. The accuracy of the equipment and the method has little influence on accuracy of GHG emission reduction calculations. Portable flow meter is subject to regular calibration in compliance with the requirements of the Federal Agency for Technical Control and Metrology.
	Clarification due to change of measurement method.
Revision 30	**Registered PDD / Intended deviation / Explanation and Justification**
D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored ID 6. S_HFC23_y	Low uncertainty level Cross-checked with accounting reports.
	Low uncertainty level Measured by scales and level meter in the collector. The measurements should be performed by shop personnel, documented and archived in paper form. The background data should be verified and summarized in the monthly reports. The monthly reports should be cross-checked with accounting reports.

	The equipment shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology.
	Clarification. The more detailed description is provided.

Revision 31	**Registered PDD / Intended deviation / Explanation and Justification**
D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored ID 7. $q\_G\_HFC23_y$ ID 8. $q\_G\_SF6_y$	Low uncertainty level Instrument error ±0.5%. Frequency of recalibration is in compliance with the requirements of the Federal Agency for Technical Control and Metrology.
	Low uncertainty level Measured by mass flow meter. Instrument error ±0,5%. Readings are automatically collected, stored, processed and protected from any corrections by APCS. The daily reports with corresponding accumulated data should be archived in electronic form. The data should be verified monthly and the reports with corresponding verified data should be archived in paper form. Mass flow meters shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology. The zero check on the mass flow meter shall be conducted on demand. If the zero check indicates that the mass flow meter is not stable, an immediate calibration of the mass flow meter shall be undertaken.
	Clarification. The more detailed description is provided.
Revision 33	**Registered PDD / Intended deviation / Explanation and Justification**
D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored	Low uncertainty level Electricity meter is subject to regular calibration.
	Low uncertainty level
ID 15. EC_y	Measured by electricity feeders and calculated. The equipment shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology.
	Clarification. The more detailed description is provided.

Revision 34	Registered PDD / Intended deviation / Explanation and Justification
D.3. Please describe the operational and management structure that the project operator will apply in implementing the monitoring plan	The monitoring plan described above was set forth by the Order of the Director of the Plant №153 dated 01.04.2008. According to this document all readings in line with the monitoring plan have to be recorded under an established procedure and persons responsible for data collection and storage appointed, namely - technologists of the corresponding shops (2, 22, 76) and chief power engineer of the enterprise starting on April 1, 2008. Production Manager - Deputy Director for Ecology, was appointed responsible for the execution of the Order. The terms and procedures identified for day-to-day records handling and dealing with erroneous measurements are provided in the following documents: 1. MethodologiesM-256-2-2007, MZ-57-2007 and MZ-111-2007. 2. "Calculation algorithms" to performance specification for technological programming of circuits APB, APS, APR and APM database "Unit for thermal destruction of FOC". All input data is regularly collected. The Head of Technical Department and the Head of Environmental Department of "KCKK Polimer Plant" Ltd. are responsible for data submission and execution of reporting documentation under the project. Calculations of emission reductions will be prepared by Camco International on annual basis (by February 15) as required by the Russian JI Regulation. All data will be stored at least for two years after the last ERU tranche under the project. Additional details of procedures for unit operation, maintenance and personnel training are described in Annex 4.
	The operational and management structure comprises Project operatorand Holding company. The monitoring procedures are executed by the Project operator according to the Corporate standard 6-020-2009 "GHG Utilization" (monitoring procedure) set forth by the Order of the Director №7 dated11.01.2009. According to the mention papers all readings in line with the monitoring plan have to be recorded under an established procedures and persons responsible for data collection and storage appointed starting on 01.04.2008. The monitoring report is prepared by the Project operator. The project execution is supervised by the Holding company Halopolymer.
	Clarification. Operational and management structure is advanced as described in Corporate standart 6-020-2009 "GHG Utilization" for better monitoring process.

APPENDIX3.JUSTIFICATION OF REVISIONS TO MONITORING PLAN AND REVISED MONITORING PLAN

In compliance with the paragraph 40 of the "Guidance on criteria for baseline setting and monitoring, Version 02" the project participants are encouraged to improve the monitoring process and its results. Revisions, if any, to the monitoring plan to improve the accuracy and/or applicability of information collected shall be justified by the project participants and shall be submitted for the determination referred to in paragraph 37 of the JI guidelines by the AIE. In this case the AIE shall determine whether the proposed revisions improve accuracy and/or applicability of information collected, compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishments of monitoring plans and in case of a positive determination, shall proceed with the determination referred to in paragraph 37 of the JI guidelines.

Revisions introduced in the monitoring plan of the project design document (PDD) of the above project[2] represent elimination of such factors *as the cut-off conditions and baseline quantity of HFC23 and* SF_6 *destroyed*, which are, in first case, inapplicable due the absence of accurate and representative information, and, in the third case, are inapplicable due to erroneous use of the maximum permissible emissions as a measure of the state regulation of emissions of such gases and due to the absence of information that HFC23 and SF_6 were historically destroyed in the old thermal hydrolysis unit.
Below the reasons of elimination of these factors from the monitoring plant are provided in a greater detail.

Revision 1: Cut-off conditions

Baseline emissions in the monitoring plan of the PDD are made with allowance for cut-off conditions (formulas D.1-10 and D.1-11).

$$G\_HFC23_y \le MIN\left\{P\_HCFC22_y;\ P\_HCFC22_{Hist,\max}\right\}\times w_h$$

$$G\_SF_{6y} \le MIN\left\{P\_SF_{6y};\ P\_SF_{6Hist,\max}\right\}\times w_s,$$

where P_HCFC22_y -is the amount of HCFC22 produced at "KCKK Polimer Plant" Ltd. during the year y, t;

P_SF_{6y} -is the amount of saleable SF6 produced at "KCKK Polimer Plant" Ltd. during the year y, t;

$P\_HCFC22_{Hist,\max}$ -is the maximum annual amount of HCFC22 produced at the plant during the historical periodFor $P_HCFC22_{Hist\max}$the maximum annual volume of HCFC22 production at "KCKK Polimer Plant" Ltd. during the period of 2002-2004 was taken. According to Section B.1$P_HCFC22_{Hist\max}$ *= 16 956.5 t (2004);*

$P\_SF_{6Hist,\max}$ -is the maximum annual amount of saleable SF6 produced at the plant during the historical period, t. For $P_SF6_{Histmax}$the maximum annual volume of saleable SF6

[2] A JI-specific approach is used for monitoring with the elements of approved CDM methodology AM0001/Version 05.1 "Incineration of HFC23 waste streams", which are associated with the application of this methodology for determining SF6 emission reductions and introduction of the maximum permissible emissions as a measure of the state regulation of HFC-23 and SF6 emissions.

produced at "KCKK Polimer Plant" Ltd. during the 2002-2004 was taken. According to Section B.1 $P\_SF6_{Hist\ max}$ = 219.9 t (2004);

w_h - is the fraction of HFC23 per unit of HCFC-22 produced at the plant. For the fraction w_h its minimum average annual value according to actual data of "KCKK Polimer Plant" Ltd. during the period 2002-2004 were assumed. According to Section B.1 w_h = 1.06% (2004);

w_s - is the fraction of SF_6 contained in waste flows from rectification column of SF_6 production per unit of saleable SF_6 produced at the plant. For the fraction w_s its minimum average annual value according to actual data of "KCKK Polimer Plant" Ltd. during the period 2002-2004 was assumed. AccordingtoSectionB.1 w_s= 1.40% (2002).

Justification of inapplicability of the maximum annual amount of HCFC22 produced at the plant during the historical period 2002-2004.

The values of annual amounts of HCFC22 produced in 2002-2004 were provided in the table B.1-1 “Data needed for calculation of GHG emission reductions” of PDD:

Table 1. Annual amounts of HCFC22 produced in 2002-2004 provided in the PDD

Designation	Unit	2002	2003	2004
P_HCFC22y	t	13 135,4	10 562,7	16 956,5

But these values are inaccurate and therefore cannot be representative. It should be noted that historically until 2003 the Plant had no reliable method for the calculation of the actual output of HCFC22 as it was not a target product and its production (except of saleable HCFC-22 that made 4-6% of overall HCFC-22 production) was not monitored.[3]
From 2003 separate norm of consumption HCFC22 per unit of M-4 produced was accepted. However this consumption norm was determined on the base of parameters measured during HCFC-22 production process with the use of metering equipment of lower accuracy class than those of nowadays. For example, the measurement of quantities of HCFC-22, monomer-4, fluoroplastics was implemented with use of buoy level gages with accuracy class of 1.5 and diaphragm flowmeters with diaphragm manometers (accuracy class 2-2.5). In 2005 under modernization of monitoring system at the Plant the new high precision metering devices were introduced. From 2005 on, more accurate radar level gages “VEGA” (accuracy class 0.5) and mass flow meters “PROMASS” (accuracy class 0.15) are used to control output of products including HCFC22 at the Plant.The high quality and accuracy of measurements are provided through automatization of the processes by introduction at the Plant of the workstation[4].Below is the table showing the old norms of HCFC-22 consumption per unit of M-4 produced that were before 2005 and the new norms that were introduced after 2005.

Table 2. Norm of HCFC-22 consumption per M-4 produced at KCKK Polymer Plant[5]

Designation	Unit	2002	2003	2004	2005	2006
HCFC-22	t/t	No norms	2,14	2,14	2,12	2,07

[3]Reference On setting consumption norms on HCFC-22 production
[4]Reference On instrumentation control of HCFC-22 production
[5] Reference On norms on consumption of HCFC-22 per unit of M-4 produced.

consumption per unit of M-4 produced		existed				

For 2011 the norm of HCFC-22 consumption per unit of M-4 equals to 2,054 t/t. The recalculation of HCFC-22 production during 2002-2004 with the use of this more accurate norm gives divergence from the values of HCFC produced in 2002-2004 provided in the PDD.

Table 3. Divergence in values HCFC-22 production in 2002-2004[6]

Designation	Unit	2002	2003	2004
HCFC-22 production recalculated according to PDD	t	13 135	10 563	16 957
HCFC-22 production recalculated according to 2011 norm	t	12 029	9 970	15 363
Absolute divergence	т	-1107	-593	-1594
Relative divergence	*%*	*-9,2*	*-5,9*	*-10,4*

The divergence in values of HCFC-22 production in 2002-2004 is considerable ranging within -5,9% till -10,4%. Therefore the values of HCFC-22 production in 2002-2004 in PDD are inaccurate and, hence, cannot be applicable for setting the cut-off condition for the baseline GHG emissions calculation.
As was provided in the PDD the cut-off conditions were set to exclude the possibility of manipulating the production process to increase the quantity of waste. However HCFC22 production at the Plant does, in no way, associated with manipulation as this product is manufactured exclusively to meet delivery obligations in front of purchasers and for being a feedstock for fluoroplastics production.

In the following tables the figures on production of fluoroplastics, gross output of HCFC22 and stocks as well as the average prices for 2000-2007 are presented[7]:

[6]Reference from HaloPolymerKirovo-Chepetsk. Calculations of HCFC-22 production .
[7]Referencedataprovidedbytheeconomic department of “HaloPolimerKirovo-Chepetsk”

Table 4. HCFC22 output and average shipping price

Year	HCFC22					
	Gross output	Output for sale	Stocks of finished goods as of the 1st January	Stocks of semi-finished goods as of 1st January	Stocks of goods-in-process as of the 1st January	Average shipping price, Rubles/t
2000	19159	376,96	4,46	0	0	43613
2001	17113	74,377	6,8	0	0	52921
2002	13135	154,214	0	0	0	41825
2003	10563	59,812	0	0	0	42598
2004	16957	13,72	0	0,02	0,88	45455
2005	18117	15,44	0	0	27,22	48075
2006	16487	7,14	0	0	41,4	62470
2007	17922	388,759	0	0	52,898	57848

Table 5. Production of F-4 and average shipping price

Year	F-4					
	Gross output	Output for sale	Stocks of finished goods as of the 1st January	Stocks of semi-finished goods as of 1st January	Stocks of goods-in-process as of the 1st January	Average shipping price, Rubles/t
2000	6957,00	6407,55	55,88	10,73	118,15	158031
2001	6302,90	5861,87	16,87	5,68	107,5	163008
2002	4947,00	3865,35	270,36	5,67	117,02	164606
2003	3682,50	3 058,17	445,15	4,63	249,71	144458
2004	5722,50	4881,56	33,21	0	43,15	129115
2005	6499,90	5777,64	79,99	14,4	89,99	136792
2006	5986,70	4909,23	364,68	13,5	84,79	121944
2007	6546,00	5000,69	225,99	2,73	58,91	140199

It follows from the above tables that the Plant does not manufacture HCFC22 in excessive quantities purposefully intending to increase the formation of HFC23. The quantity of HCFC22 production depends on the impact of the favorable situation on the market what is confirmed by positive HCFC22 price rise dynamics. Moreover the increase of F-4 prices stimulates production and, hence, increased consumption of HCFC22 for F-4 production. At the same time there is no overstocking of HCFC22, it confirmed by insignificant figures of stocks of goods-in-process.

Resume:

1. Values presented in the table B1-1 of PDD, on the base of which the maximum annual amount of HCFC-22 produced at the Plant during the historical period are defined, are not accurate. Those values were defined with use of old consumption norms that were calculated on the base of parameters measured during HCFC-22 production process with the use of metering equipment of lower accuracy class.
2. Recalculation of historical HCFC-22 production of the period of 2002-2004 with the new accurate norms of 2011 year gives more precise values, which considerably (from -5,9%

up to- 10,4%) deviate from those of provided in PDD.

3. Any manipulations associated with artificial overstating of HCFC22 production to increase purposefully formation of HFC23 are ruled out at the Plant.

In connection with above such factor as *themaximumannual amount of HCFC22 produced at the plant during the historical period 2002-2004* is inapplicable and therefore it must be eliminated as the cut-off condition for calculation of the baseline GHG emissions from the monitoring plan of the mentioned project.

Justification of inapplicability of minimum average annual value of fraction of HFC23 per unit of HCFC-22 produced at the plant according to actual data of "KCKK Polimer Plant" Ltd. during the period 2002-2004.

The values of the fraction of HFC23 per unit of HCFC-22 produced in 2002-2004 were provided in the line w_h.of the table B.1-1 “Data needed for calculation of GHG emission reductions” of PDD:

Table6. Fraction of HFC23 per unit of HCFC-22 produced in 2002-2004 as per PDD

Designation	Unit	2002	2003	2004	2005	2006
w_h	%	1,31	1,59	1,06	1,15	1,41

However these figures cannot be justified by the Plant’s data as it is quite unclear what the point was (or the points were) which data were taken from for defining w_h. The matter is that this factor can be calculated given the results of composition analysis of the HCFC-22 production as after synthesis reactor so in the other HCFC22 production line points. Therefore the above figures are not justified and, thus, are not representative.

The accurate and justified figures of the fraction of HFC23 per unit of HCFC-22 produced in 2002-2006 are obtained from the monthly technical reports on production of fluoroplastics, monomer-4 and HCFC-22 for this period[8]. The averaged data on HCFC-22 composition are recorded in the technical reports from the logs of control of raw HCFC-22 production.The control is provided for ensuring the desired quality of HCFC-22. Performance control data including HFC23 concentration are periodically registered with those logs.Each gas sampling result is registered and signed by the operator with indication of the date, time, and position where HCFC-22 raw gas was measured including gas content with HFC-23 concentration. The averaging of HFC23 concentration is made taking into account the time of HCFC reactor’s operation and periodicity of sampling. So, averaging HFC23 content on the annual base is giving the accurate w_h values, which are backed by the documentary evidences. Therefore the average annual fractions of HFC23 validated by approved technical reports are actual and reliable information.Based on these data the following $w_h$values were obtained.

Table 7. Actual average annual values of the fraction of HFC23 per unit of HCFC-22 in 2002-2004 obtained from the technical reports and deviation from w_h values in PDD[9]

Designation	Unit	2002	2003	2004
w_h	%	1,67	1,89	2,19

[8]Reference “Scanned copies of technical reports on production of fluroplastics, M-4, HCFC-22 for the period of 2002-2006”. As examples the January reports of each year in 2002-2006 are provided.
[9]Reference “On findings of synthesis-gas control during HCFC-22 production”

Deviation from w_h values in PDD	%	27,48	18,87	106,60

As can be seen by comparison of the above tables 6 and 7 the divergence between the wh values in PDD and those obtained through averaging actual annual data from the technical reports is considerable.
Direct measurements of the waste HFC-23 gas fed to destruction under the project give more accurate results. Data on the waste gas are directly measured in the points set at the pipelines offtaking after the rectification column to the destruction unit. Based on measurements the mass flow, chemical composition and density of the gas are defined. Devices used for measurements of these data undergo periodically through calibration and testing procedure in compliance with the requirements of the Federal Agency for Technical Control and Measurements and have the high accuracy level.

Resume:

1. Data provided in the table B1-1 of PDD, on the base of which the minimum value of the fraction of HFC23 per unit of HCFC-22 produced at the plant in the period of 2002-2004, cannot be justified by the Plant's documentary evidences therefore these data are not representative.
2. The representative data on values of the fraction of HFC23 per unit of HCFC-22 produced at the Plant can only be obtained from the monthly technical reports on production of fluoroplastics, monomer-4 and HCFC-22. Given averaging, on a yearly basis, the w_h values based on the data of the technical reports differ considerably from PDD w_h values.
3. In connection with above *theminimum average annual value of fraction of HFC23 per unit of HCFC-22 produced at the "KCKK Polimer Plant" Ltdduring the period 2002-2004* must be eliminated as the cut-off condition for calculation of the baseline GHG emissions from the monitoring plan of the mentioned project.

Justification of inapplicability of the factors «the maximum annual volume of saleable SF_6 produced at "KCKK Polimer Plant" Ltd. during the 2002-2004» and « the fraction of SF6 contained in waste flows from rectification column of SF6 production per unit of saleable SF6 produced at the plant ».

In PDD the values of annual volume of saleable SF_6 produced at "KCKK Polimer Plant" Ltd. and the fraction of SF6 contained in waste flows from rectification column of SF6 production per unit of saleableSF_6 produced at the plant during the 2002-2005 are provided in table "Data needed for calculation of GHG emission reductions":

Table 8.Annual volumes and the fraction of SF_6 contained in waste flows from rectification column of SF_6 production per unit of saleableSF6 produced at the Plant during the 2002-2005

Designation	Unit	2002	2003	2004	2005
P_SF_6y	t	157,80	158,2	219,90	391
w_s	%	1,4	3,04	2,28	1,4

The cut-off conditions are represented by the following:
The maximum annual amount of saleable SF6 produced at the plant during the historical period is 219.9 t (2004).For the fraction w_s its minimum average annual value according to actual data of "KCKK Polimer Plant" Ltd. during the period 2002-2004 was assumed. According to Section B.1 ws = 1.40% (2002).

However, these conditions are inapplicable by the following reason:
According to the applicability criteria provided inAM0001/Version 05.1 "Incineration of HFC23 waste streams", the production facility must has an operating history at least of three years between the beginning of the year 2000 and has been in operation from 2005 until the start of the project activity.

However, the operation activity for production of SF_6 started at the KCKK Polimer Plant only in 2006. Equipment for production of SF_6 was installed in 1998, and in 1998-2006 the starting-up and adjustment works as well as the experimental-industrial tests were implemented. Therefore this methodology and the cut-off conditions are not applicable for SF_6 utilization project activity at the Plant.

Besides, as can be seen from the table 8 the values of w_s are not stable from year to year that can be explained by the adjustment period.
From 2006 on, subject to adjustment of the process, the production operations started[10]. In 2006-2010 the output of saleable SF_6 rose up by 50% on average as compared with the adjustment period. The formation of the waste SF_6 became more stable showing only two plateaus: one of 3,5% in 2007-2008 and then a slide down to about 2%in 2009-2010. The figures on saleable and $w_s$are presented in the following table:

Table 9. Actual values of saleable SF_6 and w_s from the start of operation activity at the Plant

Designation	Unit	2006	2007	2008	2009	2010
P_SF_6y	t	449	280	359	322	344
w_s	%	1,3	3,5	3,5	2,0	1,9

Therefore the maximum annual volume of saleable SF_6 produced at "KCKK Polimer Plant" Ltd. during the 2002-2004 and the fraction of SF_6 contained in waste flows from rectification column of SF_6 production per unit of saleable SF6 produced at the plant are not applicable as the cut-off conditions for the monitoring of the baseline emissions.
General resume on cut-off conditions:

Thus, the cut-off conditions imposed under the PDD are inaccurate or are not representative and must be eliminated from the monitoring. Therefore for enhancing accuracy and applicability of data used for the monitoring the GHG baseline emissions will be defined as HFC23 and SF6 waste streams quantities supplied to destruction unit per the reporting period, which will be obtained through direct and on-line measurement of waste HFC-23 and SF6 gas flow with the use of the certified and calibrated measurement devices.

Revision 2: Baseline quantity of HFC23 and SF6 destroyed during the year

Baseline GHG emissions during the year are defined according to the formula D.1-12 provided in the monitoring plant of PDD:

$$BEy=(Q\_HFC23y - B\_HFC23y)*GWP\_ HFC23 + (Q\_ SF_{6,y} - B\_SF_{6,y})*GWP\_ SF_{6,y}$$

where Q_ HFC23y – is the quantity of HFC23 supplied for destruction into the unit during the year *y*, t;
B_ HFC23y – is the baseline quantity of HFC23 destroyed during the year *y*, t;
Q_ $SF_{6,y}$ – is the quantity of SF6 supplied for destruction into the unit during the year *y*, t;
B_$SF_{6,y}$ – is the baseline quantity of HFC23 destroyed during the year y, t.

[10]Referencedd.08.06.2011 № 01/62-13/20 "On formation of waste SF_6".

At the same time, according to the formula D.1-15:
$B\_HFC23y=G\_HFC23y – S\_HFC23y – MPE\_HFC23_{Hist,min}$,
If B_HFC23y<0, then we take B_HFC23y=0;
and according to the formula D1.-16
$B\_SF_{6,y}=G\_SF_{6,y} – MPE\_SF_{6,y\,Hist,min}$,
if $B\_SF_{6,y}<0$, then we take B_HFC23y=0;

where G_HFC23y – is the amount of HFC23 generated in HCFC22 production line during the year y,t;
$G\_SF_{6,y}$ – is the amount of SF6 contained in waste flows from the rectification column of SF6 production during the year y, t;
S_HFC23y – Quantity of HFC23 recovered for saleduring the year y, t;
$MPE\_HFC23_{Hist,min}$- is the minimum level of the maximum permissible emissions (MPE) of HFC23 to the atmosphere from sources within the project boundary (condensation and rectification column of HCFC22 production line and rectification column of saleable HFC23 production line) during the year *y*based on historical data (2002-2004), t. According to Section B. 1 $MPE\_HFC23_{Hist,min}$= 83,4 t.
$MPE\_SF_{6,y\,Hist,min}$ - is the minimum level of the maximum permissible emissions (MPE) of SF6 to the atmosphere from sources within the project boundary (SF6 rectification column) during the year y based on historical data (2002-2004), t. According to Section B. 1 $MPE\_SF_{6,y\,Hist,min}$= 6,02 t.

The revision introduced in the monitoring plan of PDD envisages canceling the application of the minimum level of the maximum permissible emissions (MPE) of HFC23 and SF_6 to the atmosphere from sources within the project boundary on a ground that MPE was erroneously taken in the PDD for the fraction of the waste stream required to be destroyed by the regulations.
The methodology AM0001/Version 05.2 "Incineration of HFC23 waste streams prescribes to define "the baseline quantity of HFC-23 destroyed as the quantity of the HFC-23 waste streams required to be destroyed by the applicable regulation or:

$B\_HFC\_23=Q\_HFC23_y*r_y$

Where:

r_y is the fraction of the waste stream required to be destroyed by the regulations that apply during the year. In the absence of regulations requiring the destruction of HFC-23 waste, r_y = 0. Absent regulations on HFC-23 emissions, the HFC23 waste is typically released to the atmosphere so the baseline is zero destruction."
The government environmental control is stipulated by the federal laws such as "On environment protection", "On atmosphere air protection", "On epidemiological welfare of population", Decrees of the Government of Russian Federation dd. 15.01.2001 от 15.01.2001 № 31 «On approval of Regulation on the government control over protection of atmospheric air» and dd. 23.08.2000 № 622 «On approval of Regulation on the government monitoring service for state of the environment». None of these legislatorial documents does provide for the requirement of obligatory destruction of the HFC-23 and SF_6 waste stream. Due to low hazard grade the payments for emissions of HFC23 and SF_6 are not collected as according to Decree of the Government of RF dd. 12.06.2003 № 344 "On norms of payments for emissions in the atmospheric air" the norms of payments are not provided for".
Besides, plants themselves elaborate projections of maximum permissible emissions of polluting substances in atmospheric air with a purpose <u>to meet the requirements of hygienic criteria of the quality of atmospheric air (MPC)</u> within and beyond sanitary-protection zone (SPZ), including the territories of human settlements,.
Thus, <u>it is MPC on the boundary of sanitary-protection zone of a plant that is a measure of the government control.</u> Values of MPE of polluting substances in the atmosphere are defined by a plant itself subject to compliance with MPC on the boundary of SPZ.

According to the environment department of *HaloPolimer Plant Kirovo-Chepetsk Ltd*: "The monitoring of the content in atmospheric air of HFC23 and SF_6 is not a subject of the government and production - industrial control due to the low hazard of these substances and to the small quantity of their gross emissions. Payments for emissions of HFC23 and SF_6 are not collected as according to Decree of the Government of RF dd. 12.06.2003 # 344 "On norms of payments for emissions in the atmospheric air" the norms of payments are not provided for".

According to the reference provided by the laboratory of environment protection of *HaloPolimer Plant Kirovo-Chepetsk Ltd*»[11]: "Calculation of diffusion of emissions for the Plant according to UPRZA program "Ecolog", ver. 3.0 demonstrated that possible maximum permissible emissions made 330 g/s for HFC23 and 600 g/s for SF_6. At the same time MPC of human settlements is not exceeded, the maximum pollution level of the atmospheric air makes 0,96-0,98 units of MPC. Subject to possible irregularity of the maximum emission (g/s) from the medium emission (g/s) by 3 times the gross emission of HFC23 makes 3500 t/y, of SF6 6300 t/y".

It means, in fact, that the Plant could, without a damage to environment, and without breaking the environmental legislation, in 2010 (as in any year of the considered period of 2000-2012) emit in the atmosphere all waste HFC23 and SF_6 not destroying any of it. At the same time the set MPC would not be exceeded. Besides, there are no data in place which could confirm that *HaloPolimer Plant Kirovo-Chepetsk Ltd* historically destroyed HFC23 and SF_6, which are not the hazard substances. The legislation does not provide for compulsory destruction of HFC23 and SF6 therefore utilization of these gases were not monitored. Moreover, available facts prove the contrary. Prior the project became operational it is fluorine-organic compounds (FOC) of the first and third degree of hazard that were destructed in the thermal pyrolysis unit in the first place. The total quantity of those FOC exceeded the capacity of the old destruction unit. As of process regulation the maximum volume of gaseous FOC supply into the unit is under of 16 m^3/h (70-80 kg/h) and of liquid FOC is 40 l/h (6-8 kg/h). The total capacity of gaseous and liquid FOC destruction unit is under 90 kg/h (the maximum projected capacity is 1000 kg/h). However, incomplete pyrolysis of FOC can lead to formation of carbon monoxide and emissions of toxic FOC, including tetrafluorineethylene (TFE), hexafluorineprpylene (HFP), trifluorinechlorethylene (TFCE) and perfluorineisobutylene in the atmosphere. Therefore, FOC were supplied in the thermal hydrolysis unit at increased loads which were up 130 kg/h[12], which ruled out the possibility of the supply of additional volumes of other non-hazard gases such as HFC23 and SF_6. It means that waste HFC23 and SF_6 were emitted in full.

Resume:

1. Use of the minimum level of the maximum permissible emissions of HFC23 and SF_6 in the atmosphere from sources within the project boundary is inapplicable from the methodological viewpoint as there are not regulations in the Russian Federation requiring the destruction of HFC-23 and SF_6 waste streams.
2. To exceed MPC *HaloPolimer Plant Kirovo-Chepetsk Ltd* will have to increase HFC23 emissions higher than 3500 t/y and SF6 emissions higher than 6300 t/y. But it is physically impossible given the production level in 2010 that was 291,52 t of HFC23 and 344,202 t of SF_6.
3. Historically the Plant did not destroy HFC23 and SF_6. Due to the absence of hazard the government monitoring of these gases was not implemented and payments for their emissions were not collected.
4. Therefore all baseline waste HFC23 and SF_6 were emitted in atmosphere.

i.e. the formula D 1-12 of the monitoring plan must be as below:

$BEy=Q\_HFC23y*GWP\_ HFC23 + Q\_ SF_{6,y} *GWP\_ SF_{6,y}$

[11]ReferenceofLaboratory of environment protection of HaloPolimer Plant Kirovo-Chepetsk Ltd dd 17.02.2010 № 01/43-03/73
[12]Technical reports on production of perfluorcarbon liquids and lubricants, SF6 and carbon fluorine. KCKK Polimer Plant,2008

Revised Monitoring Plan

D.1. Description of monitoring plan chosen:

The monitoring system is based on the approved CDM methodology AM0001 (Version 05.1) "Incineration of HFC23 waste streams". The monitoring

includes measurements of the following parameters (see Figure D.1-1):

1. The HFC23 / SF6 waste quantity generated by production process is continuously measured by mass flow meter installed on the outlet pipelines from emission sources (readings are automatically recorded hourly). The HFC23 / SF6 mass content in the HFC23 / SF6 waste produced is calculated based on volume content and sample's density (measured by chromatograph once a week or more often in case technological mode change) u sing analytical method.
2. The HFC23 / SF6 waste quantity supplied to the thermal hydrolysis unit is measured continuously by two down-the-line flow meters installed on each waste feeding line (readings are automatically recorded hourly). The HFC23 / SF6 mass content in the HFC23 / SF6 waste produced is calculated based on volume content and sample's density (measured by chromatograph once a week or more often in case technological mode change) using analytical method.
3. The volume of effluent gases from the unit is calculated based on the average flow speed (measured by portable flow meter weekly) and the length of the monitoring period (the shutdown time is not considered for conservatism). The HFC23 and SF6 mass contents in the influent gases are measured by chromatograph (sample analysis is performed once a week).
4. The HFC23 quantity recovered for sale (if applicable) is determined monthly as HFC23 gross output (commercial output measured by scales + change in inventory measured by level meter).
5. Electricity consumption is measured by an electricity meter and calculated annually.
6. The quantities of gaseous emissions (HFC23, SF6, HCl, HF, Cl2, CO, NO2 and dioxins) are measured in compliance with the current environmental standards of Russia.
7. The quantities of liquid effluents (HF solution, KOH solution) are measured in compliance with the current environmental standards of Russia.

All the measuring equipment meets up-to-date standards and is subject to regular calibration.

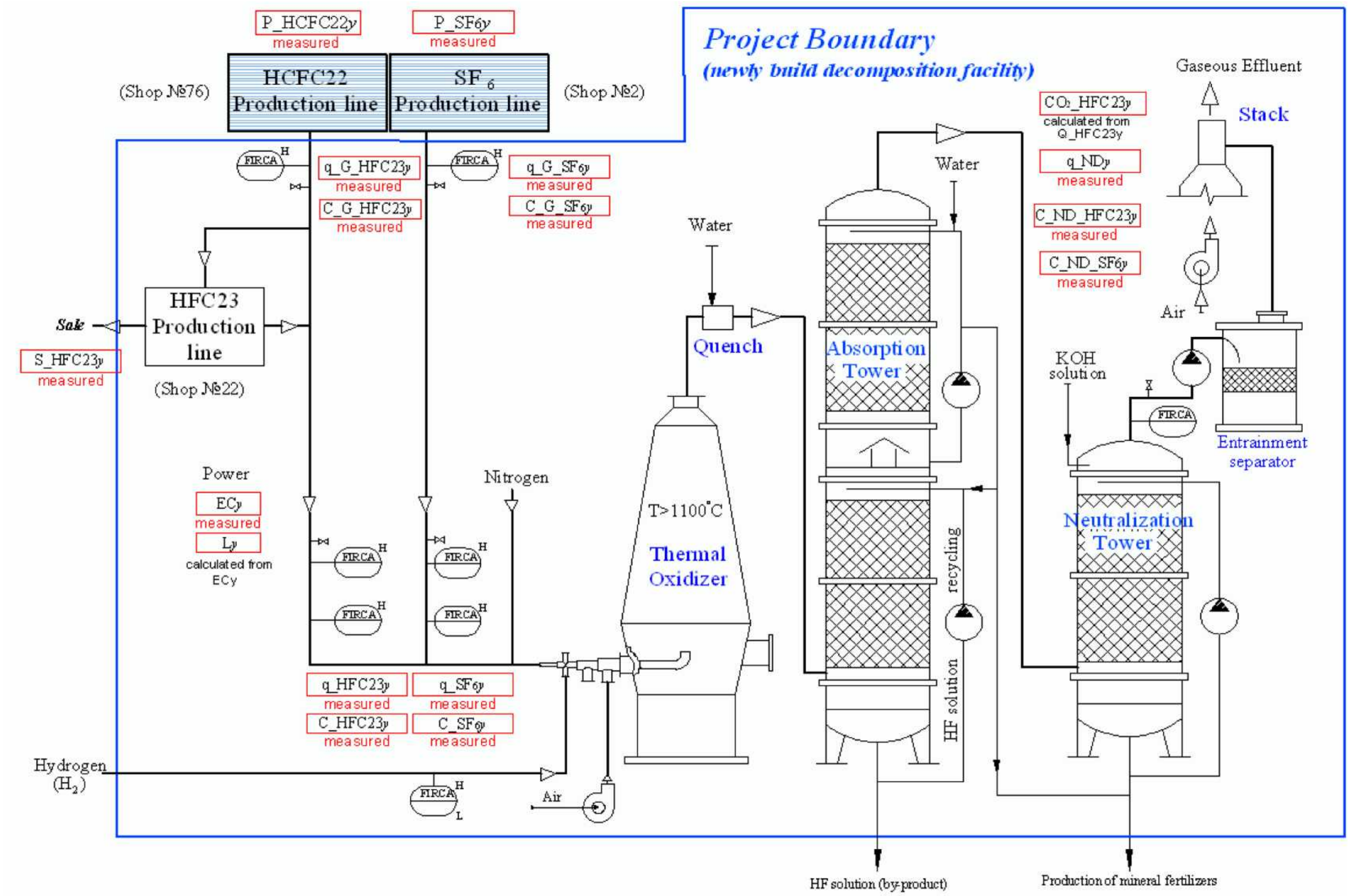

Figure B.1-1. The principal monitoring diagram

D.1.1.Option 1–Monitoring of the emissions in the project scenario and the baseline scenario:

D.1.1.1.Data to be collected in order to monitor emissions from the project, and how these data will be archived:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
1. q_HFC23_y	HFC23 waste quantity supplied to destruction process	2 mass flow meters in parallel	Kg	(m) measured	Monthly (hourly readings)	100%	Electronic and paper	Measured in parallel by 2 mass flow meters directly before the unit. Readings are taken hourly and processed by APCS, the lowest reading is chosen automatically by APCS. Monthly data is the sum of the accumulated data.
2. C_HFC23_y	HFC23 mass content in HFC23 waste supplied to destruction process	Chromatograph	%	(m) measured (c) calculated	Monthly (weekly measurements)	100%	Electronic and paper	Mass content is calculated based on volume content and density using approved method. Monthly data is the average of the calculated data.
3. q_ND_y	Volume of gaseous effluent from the unit	Portable flow meter	m3	(m) measured (c) calculated	Monthly (weekly measurements)	100%	Paper	Calculated conservatively based on effluent gas flow speed and length of the period.

4. $C\_ND\_SF6_y$	SF6 concentration in gaseous effluents from the unit	Chromatograph	mg/m3	(m) measured	Monthly (weekly measurements)	100%	Electronic and paper	If the SF6 concentration is not detectible than the value is conservatively taken to be equal 0,1mg/m3. Monthly data is the average of the calculated data.
5. $C\_ND\_HFC23_y$	HFC23 concentration in gaseous effluents from the unit	Chromatograph	mg/m3	(m) measured	Monthly (weekly measurements)	100%	Electronic and paper	If the HFC23 concentration is not detectible than the value is conservatively taken to be equal 1,0 mg/m3. Monthly data is the average of the calculated data.

D.1.1.2. Description of formulae used to estimate project emissions (for each gas, source etc.; emissions in units of CO_2 equivalent):

The project GHG emissions during the year y, t $C0_2$-e:

$E\_DP_y = ND\_HFC23_y \times GWP\_HFC23 + ND\_SF6_y \times GWP\_SF6_y + Q\_HFC23_y \times EF$, (D.1-1)

where ND_HFC23_y is the quantity of HFC23 not destroyed in the unit during the 1st Quarter 2012, t;

ND_SF6_y is the quantity of SF6 not destroyed in the unit during the 1st Quarter 2012, t;

Q_HFC23_y is the quantity of HFC23 supplied for destruction into the unit during the 1st Quarter 2012, t;

EF is the emissions factor that determines the amount of CO2 generated per 1 tone of destroyed HFC23. According to AM0001, EF = 0,62857 t CO_2-e/t;

GWP_HFC23 is the Global Warming Potential (GWP) that converts 1 tone of HFC23 to tones of CO2 equivalent, t CO_2-e/t. The approved GWP value for HFC23 is 11 700 t CO_2-e/t for the first commitment period under the Kyoto Protocol;

GWP_SF6 is the Global Warming Potential (GWP) for conversion of 1 ton of SF6 o tons of CO2 equivalent, t CO2-e/t. The approved GWP value for SF6 is 23 900 t CO2-e/t for the first commitment period under the Kyoto Protocol.

$ND\_HFC23_y = q\_ND_y \times C\_ND\_HFC23_y \times 10^{-9}$, (D.1-2)

$ND\_SF6_y = q\_ND_y \times C\_ND\_SF6_y \times 10^{-9}$, (D.1-3)

$Q\_HFC23_y = q\_HFC23_y \times 10^{-3} \times C\_HFC23_y \times 10^{-2}$, (D.1-4)

where q_ND_y is volume of gaseous emissions from destruction process during the 1st Quarter 2012, m^3;

q_HFC23_y is the amount of HFC23 wastes supplied for destruction during the 1st Quarter 2012, kg;

$C\_ND\_HFC23_y$ is the average concentration of HFC23 in gaseous emissions from the unit during the 1st Quarter 2012, mg/m^3;

$C\_ND\_SF6_y$ is the average concentration of SF6 in gaseous emissions from the unit during the 1st Quarter 2012, mg/m^3;

C_HFC23_y is the average concentration of HFC23 in wastes supplied for destruction during the 1st Quarter 2012, %;

D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
6. S_HFC23_y	HFC23 quantity recovered for sale	Scales and level meter in the collector	t	(m) measured	Monthly	100%	Paper	Not applied if there is no HFC23 recovered for sale from HFC23 waste or there is no technical possibility
7. $q\_G\_HFC23_y$	HFC23 waste quantity generated	Mass flow meter	kg	(m) measured	Monthly (hourly readings)	100%	Electronic and paper	Measured by mass flow meter directly after emission sources. Readings are taken hourly and processed by APCS. Monthly data is the sum of the accumulated data.
8. $q\_G\_SF6_y$	SF6 waste quantity generated	Mass flow meter	kg	(m) measured	Monthly (hourly readings)	100%	Electronic and paper	Measured by mass flow meter directly after emission sources. Readings are taken hourly and

								processed by APCS. Monthly data is the sum of the accumulated data.
9. q_SF6_y	SF6 waste quantity supplied for destruction	2 mass flow meters (in parallel)	kg	(m) measured	Monthly (hourly readings)	100%	Electronic and paper	Measured in parallel by 2 mass flow meters directly before the unit. Readings are taken hourly and processed by APCS, the lowest reading is chosen automatically by APCS. Monthly data is the sum of the accumulated data.
10. $C\_G\_HFC23_y$	HFC23 mass content in HFC23 waste generated	Chromatograph	%	(m) measured	Monthly (weekly measurements)	100%	Electronic and paper	Mass content is calculated based on volume content and density using approved method. Monthly data is the average of the calculated data.
11. $C\_G\_SF6_y$	SF6 mass content in SF6 waste generated	Chromatograph	%	(m) measured (c) calculated	Monthly (weekly measurements)	100%	Electronic and paper	Mass content is calculated based on volume content and density using approved method. Monthly data is the average of the calculated data.
12. C_SF6_y	SF6 mass contents in SF6 waste supplied for destruction	Chromatograph	%	(m) measured (c) calculated	Monthly (weekly measurements)	100%	Electronic and paper	Mass content is calculated based on volume content and density using

								approved method. Monthly data is the average of the calculated data.

D.1.1.4.Description of formulae used to estimate .baseline emissions (for each gas, source etc.; emissions in units of CO2 equivalent):

At first HFC23 and SF_6 leaks to the atmosphere within the project boundary are calculated <u>according to actual data</u> during the Quarter y, t:

$L\_HFC23_y = (G\_HFC23_y - Q\_HFC23_y - S\_HFC23_y) x GWP\_HFC23$, (D.1-5)

$L\_SF6_y = (G\_SF6_y - Q\_SF6_y) x GWP\_SF6$,

$G\_HFC23_y = q\_G\_HFC23_y \times 10^{-3} \times C\_G\_HFC23_y \times 10^{-2}$, (D.1-6)

Q_HFC23y = q_HFC23y x 10-3 x C_HFC23y x 10-2 (D.1-7)

where G_HFC23_y iis the HFC23 generated during the 1st Quarter 2012, t

$G_SF6_y$is the SF6 generated during the 1st Quarter 2012, t

Q_HFC23y is the HFC23 supplied for destruction during the 1st Quarter 2012, t

Q_SF6_y is the quantity of SF6 supplied for destruction to the unit during the 1st Quarter 2012, t;

S_HFC23_y is the amount of HFC23 recovered for sale during the 1st Quarter 2012, t.

q_HFC23y is the HFC23 waste supplied for destruction during the 1st Quarter 2012, kg

C_HFC23y is the average annual concentration of HFC23 in HFC23 waste supplied for destruction during the 1st Quarter 2012, %

$G\_SF6_y = q\_G\_SF6_y \times 10^{-3} \times C\_G\_SF6_y \times 10^{-2}$, (D.1-8)

$Q\_SF6_y = q\_SF6_y \times 10^{-3} \times C\_SF6_y \times 10^{-2}$, (D.1-9) where $q\_G\_HFC23_y$ is the HFC23 waste generated during the 1st Quarter 2012, kg

$q\_G\_SF6_y$ is the SF6 waste generated during the 1st Quarter 2012, kg

q_SF6_y is the SF6 waste supplied for destruction during the 1st Quarter 2012, kg

$C\_G\_HFC23_y$ is the average concentration of HFC23 in HFC23 waste generated during the 1st Quarter 2012, %

$C\_G\_SF6_y$ is the average concentration of SF6 in SF6 waste generated during the 1st Quarter 2012, %

C_SF6y is the average concentration of SF6 in SF6 waste supplied for destruction during the 1st Quarter 2012, %

Baseline GHG emissions during the Quarter y, t $C0_2$-e:

$$BE_y = Q\_HFC23_y \times GWP\_HFC23 + Q\_SF6_y \times GWP\_SF6, \quad (D.1\text{-}10)$$

D.1.2.Option 2 - Direct monitoring of emission reductions from the project (values should be consistent with those in section E.):

D.1.2.2. Description of formulae used to calculate emission reductions from the project (for each gas, source etc.; emissions / emission reductions in units of CO2 equivalent):

This section is not applicable to this project.

D.1.2.1. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived:								
ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

D.1.3.Treatment of leakage, in the monitoring plan:

As shown in Section B, only GHG emissions due to grid electricity consumption for operation of the new FOC thermal destruction unit are significant leakages.

D.1.3.1. If applicable, please describe the data and information that will be collected in order to monitor Leakage effects of the project:								
ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
15. ECy	Electricity consumption for destruction process	Meter	MWh	(m) measured	Monthly	100%	Paper	

D.1.3.2. Description of formulae used to estimate leakage (for each gas, source etc.; emissions in units of CO_2 equivalent):

Leakages due to grid electricity consumption during the Quarter y are calculated as follows, t $C0_2$:

$L_y = EC_y x EF_{CO2,grid,y} x 10^{-3}$, (D.1-11)

Where ECy is electricity consumption by the thermal destruction unit during the 1st Quarter 2012, MWh;

$EF_{CO2,grid,y}$ is the $C0_2$ emissions factor for grid electricity during the year y, kg CO2/MWh. According to Operational Guidelines for Project Design Documents of Joint Implementation Projects.Volume 1.General guidelines.Version 2.3.Ministry of Economic Affairs of the Netherlands. May 2004. GHG emission factor for grid electricity consumed in Russia varies for different years of the crediting period (2008-2012) as follows: $EF_{CO2,grid,2008}$ = 565 kg CO_2/MWh, $EF_{CO2,grid,2009}$= 557 kg CO_2/MWh, $EF_{CO2,grid,2010}$= 550 kg CO_2/MWh, $EF_{CO2,grid,2011}$= 542 kg CO_2/MWh, $EF_{CO2,grid,2012}$= 534 kg CO_2/MWh;

D.1.4. Description of formulae used to estimate emission reductions for the project (for each gas, source etc.; emissions/emission reductions in units of CO_2 equivalent):

Emission reductions during the year y measured in t CO2e are calculated as follows:

ERy = BEy - E_DPy - Ly (D.1-12)

D.1.5. Where applicable, in accordance with procedures as required by the host Party, information on the collection and archiving of information on the environmental impacts of the project:

Gaseous effluents (HFC23, SF6, CO, HCl, HF, Cl2, NO2 and dioxins) are measured in compliance with the current environmental standards of Russia:

HFC23, SF6, CO — 1 time per month

HCl, HF, Cl2, NO2 — 6 time per year

Dioxins — 1 time per year

The enterprise is subject to regular control by state bodies of environmental supervision and has the following reporting obligations as per official annual statistic forms: statistical form 2-tp (air) Data on Atmospheric Air containing information on the quantities of trapped and destroyed air pollutants, detailed emissions of specific pollutants, number of emission sources, emission reduction actions and emissions from separate groups of pollutant sources.

The Head of Environmental Department is responsible for collection, storage and analysis of data regarding the environmental impact of the project.

D.2.Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:		
Data *(Indicate table and ID number)*	Uncertainty level of data (high/medium/low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
Table D.1.1.1 ID 1 Table D.1.1.3 ID 9	low	Measured by two down-the-line mass flow meters. Instrument error ±0,5%. Readings are automatically collected, stored, processed and protected from any corrections by APCS. APCS should automatically calculate the conservative value by taking the least value of the two mass flow meters at each data reading. The daily reports with corresponding accumulated data from APCS should be archived in electronic form. The data should be verified monthly and the reports with corresponding verified data should be archived in paper form. Mass flow meters shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology. The zero check on the flow meters shall be conducted every week. If the zero check indicates that the flow meter is not stable, an immediate calibration of the flow meter shall be undertaken. If the readings of the mass flow meters differ by greater than twice their claimed accuracy then measures are taken to remedy the fault.

Table D.1.1.1 ID 2 Table D.1.1.3 ID 10 Table D.1.1.3 ID 11 Table D.1.1.3 ID 12	low	Calculated by approved method (relative error - 5%) based on sample's analysis. Sample's analysis includes volume content and density analysis measurements by chromatograph. The measurements and calculation of mass content should be performed by laboratory personnel (assistant), documented in paper form and archived in electronic form. The results are to be verified. The data should be cross-checked with the previous data and summarized in the monthly reports. Chromatographs shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology: absolute calibration - 1 time per year, calibration measurement - 1 time per quarter.
Table D.1.1.1 ID 4 Table D.1.1.1 ID 5	low	Measured by chromatograph (relative error: ID 4 - 20%, ID 5 - 25%) under approved method. The accuracy of the measurements has little influence on accuracy of GHG emission reduction calculations. To provide conservative estimation the concentration of HFC23 and SF6 is taken to be equal 1,0 mg/m3 for HFC23 and 0,1 mg/m3 for SF6 correspondingly if the HFC23 or SF6 concentration is not detectible by chromatographs. The measurements of concentration should be performed by laboratory personnel (assistant), documented in paper form and archived in electronic form. The analysis results are to be verified. The data should be cross-checked with the previous data by the head of laboratory and summarized in the monthly report. Chromatographs shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology: absolute calibration - 1 time per year, calibration measurement - 1 time per quarter.
Table D.1.1.1 ID 3	low	Measured by portable flow meter and calculated based on the calendar length of period (hours/period). To provide conservative estimate the shutdown time of the destruction unit is not included in calculation. The accuracy of the equipment and the method has little influence on accuracy of GHG emission reduction calculations. Portable flow meter is subject to regular calibration in compliance with the requirements of the Federal Agency for Technical Control and Metrology.
Table D.1.1.3 ID 6	low	Measured by scales and level meter in the collector. The measurements should be performed by shop personnel, documented and archived in paper form. The background data should be verified and summarized in the monthly reports. The monthly reports should be cross-checked with accounting reports. The equipment shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology.

Table D.1.1.3 ID 7 Table D.1.1.3 ID 8	low	Measured by mass flow meter. Instrument error ±0,5%. Readings are automatically collected, stored, processed and protected from any corrections by APCS. The daily reports with corresponding accumulated data should be archived in electronic form. The data should be verified monthly and the reports with corresponding verified data should be archived in paper form. Mass flow meters shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology. The zero check on the mass flow meter shall be conducted on demand. If the zero check indicates that the mass flow meter is not stable, an immediate calibration of the mass flow meter shall be undertaken.
Table D.1.3.1 ID 13	low	Measured by electricity feeders and calculated. The equipment shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology.

D.3. Please describe the operational and management structure that the project operator will apply in implementing the monitoring plan:

The operational and management structure comprises Project operator and Holding company.

The monitoring procedures are executed by the Project operator according to the Corporate standard 6-020-2009 "GHG Utilization" (monitoring procedure) set forth by the Order of the Director #7 dated11.01.2009. According to the mention document all readings in line with the monitoring plan have to be recorded under an established procedures and persons responsible for data collection and storage appointed starting on 01.04.2008.

The monitoring report is prepared by the Project operator.

The data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project.

The project execution is supervised by the Holding company Halopolymer.

APPENDIX 4. REVISIONS TO MONITORING PLAN ADOPTED FOR THE 3RD AND 4TH MONITORING PERIODS

Deviation 1	**Registered PDD / Description / Justification**
D.1 Description of monitoring plan chosen The HCFC-22 quantity produced	The HCFC22 quantity produced is determined monthly as a sum of HCFC22 gross output (commercial output measured by mass meter + change in inventory measured by level meter) and monomer-4 gross production (commercial output measured by mass meter + change in inventory measured by level meter) multiplied by HCFC22 consumption factor for monomer-4 production.
	Correction: This paragraph was removed from D.1 as HCFC22 quantity produced is not monitored as HCFC-22 production is eliminated from the monitoring plan
	Justification: The quantity of HCFC-22 produced was previously determined subject to the requirement of the cut-off condition. The cut-off condition set the maximum annual HCFC-22 quantity that is eligible for crediting (P_HCFC22,max) that is the lower value between: (a) the actual HCFC-22 production in year y (P_HCFC22); and (b) the maximum historical HCFC-22 production level ($P\_HFCF22_{Hist,max}$) at this plant (in tonnes of HCFC22) during any of the last three years between 2002-2004. According to the new revisions to the monitoring plan presented in detail in Appendix 1 the cut-off conditions are eliminated from the monitoring as the values for determining the maximum annual HCFC-22 quantity in 2002-2004 were incorrect. Therefore the quantity of HCFC-22 produced is unnecessary to determine in the monitoring of emission reduction of this project as well.
Deviation 2	**Registered PDD / Description / Justification**
D.1 Description of monitoring plan chosen The SF6 quantity produced	The SF6 quantity produced is determined monthly as SF6 gross output (commercial output measured by scales + change in inventory measured by level meter).
	Correction: This paragraph was removed from D.1 as SF-6 quantity produced is not monitored as SF-6 production is eliminated from the monitoring plan
	Justification: The quantity of SF6 produced was previously determined subject to the requirement of the cut-off condition. The cut-off condition set the maximum annual SF6 quantity that is eligible for crediting (P_SF6y,max) that is the lower value between: (a) the actual SF6 production in year y (P_SF6y); and (b) the maximum historical SF6 production level ($P\_SF6_{Hist,max}$) at this plant (in tonnes of SF6) during any of the last three years between 2002-2004. According to the new revisions to the monitoring plan presented in detail in Appendix 1 the cut-off conditions are eliminated from the monitoring as the values for determining the maximum annual SF6 quantity in 2002-2004 were not applicable. Therefore the quantity of SF6 produced is unnecessary to determine in the monitoring of emission reduction of this project as well.

Deviation 3	**Registered PDD / Description / Justification**
D 1.1.3 Item 13. P_HCFC22y, HCFC22 quantity produced	Data for application of the cut-off condition
	Correction: HCFC22 quantity producedis not monitored as cut-off condition is eliminated from the monitoring plan
	Justification: Please see above justification to deviation 1
Deviation 4	**Registered PDD / Description / Justification**
D 1.1.3 Item 14. P_SF6y, SF6 quantity produced	Data for application of the cut-off condition
	Correction: SF6 quantity producedis not monitored as cut-off condition is eliminated from the monitoring plan
	Justification: Please see above justification to deviation 2
Deviation5	**Registered PDD / Deviation / Justification**
Subsection 1.1.4., formulas D 1.10 – D 1-11	Further baseline calculations are made <u>with allowance for the cut-off conditions:</u> G_HFC23y<MIN{ P_HCFC22y; P_HCFC22hist,max} x w_h (D.10) G_SF6y<MIN{ P_SF6y: P_SF6hist,max} x Ws, (D.11) whereP_HCFC22_y is the amount of HCFC22 produced at "KCKK Polimer Plant" Ltd. during the year y, t; P_SF6_y is the amount of saleable SF6 produced at "KCKK Polimer Plant" Ltd. during the year y, t; P_HCFC22_{hismax} is the maximum annual amount of HCFC22 produced at the plant during the historical period, t. For $P\_HCFC22_{his\_max}$ we take the maximum annual volume of HCFC22 production at "KCKK Polimer Plant" Ltd. during the period of 2002-2004. According to Section B.1 $P\_HCFC22_{histmax}$=16 956,5 t(2004); P_SF6hist,maxis the maximum annual amount of saleable SF6 produced at the plant during the historical period, t. For P_SF6hist,maxwe take the maximum annual volume of saleable SF6 produced at "KCKK Polimer Plant" Ltd. during the 2002-2004. According to Section B.1 P_SF6hist,max'= 219,9 t (2004); whis the fraction of HFC23 per unit of HCFC22 produced at the plant. For the fraction whwe assume its minimum average annual value according to actual data of "KCKK Polimer Plant" Ltd. during the period 2002-2004. According to Section B.1 wh= 1,06% (2004); w_s is the fraction of SF6 contained in waste flows from rectification column of SF6 production per unit of saleable SF6 produced at the plant. For the fraction wswe assume its minimum average annual value according to actual data of "KCKK Polimer Plant" Ltd. during the period 2002-2004. According to SectionB.1 ws= 1,40% (2002).
	Corrections: the formulas are not applicable for the calculation of the baseline emissions as the cut-off conditions are eliminated from the monitoring plan
	Justification: Please see above justifications to deviations 1 and 2
Deviation 6	**Registered PDD / Deviation / Justification**
Subsection 1.1.4, formulas D.1-12-D.1-16	BEy= (Q_HFC23y- B_HFC23y) x GWP_HFC23 + (Q_SF6y- B_SF6y)x GWP_SF6, (D.1-12) where B_HFC23_y is the baseline quantity of HFC23 destroyed during the year y, t; B_SF6y is the baseline quantity of SF6 destroyed during the year y, t. Q_HFC23y= G_HFC23y- S_HFC23y- L_HFC23y,(D.1-13) Q_SF6y= G_SF6y- L_SF6y, (D.1-14) B_HFC23y= G_HFC23y- S_HFC23y- MPE_HFC23_Mst,min, if B_HFC23y< 0, then we take that B_HFC23y= 0,(D.1-15)

	B_SF6y= G_SF6y- MPE_SF6hist,min, if B_SF6y< 0, then we take that B_SF6y= 0, (D.1-16) where G_HFC23_y is the amount of HFC23 generated in HCFC22 production line with allowance for the cut-off condition (D.1-10) during the year y, t; G_SF6_y is the amount of SF6 with allowance for the cut-off condition (D.1-11) contained in waste flows from the rectification column of SF6 production during the year y, t
	Correction: the formulas D.1-12-D.1-16are not applicable for the calculation of the baseline emissions as: 1. the cut-off conditions are eliminated from the monitoring plan; 2. MPE was erroneously taken for a state measure of regulation of HFC-23 and SF6 emissions. The baseline GHG emissions is determined according to the formula: BEy= Q_HFC23y x GWP_HFC23 + Q_SF6y x GWP_SF6
	Justification: Please see above justification to deviation 1 and 2.The use of MPE (the minimum level of the maximum permissible emissions) of HFC23 and SF6 in the atmosphere from sources within the project boundary is inapplicable from the methodological viewpoint as there are no regulations in the Russian Federation requiring the destruction of HFC-23 and SF6 waste streams.
Deviation7	**Registered PDD / Deviation / Justification**
Table D 2., ID 13, ID 14	Measured by mass meters and level meter. The measurements should be documented and archived in paper form. The background data should be verified and summarized in the monthly reports. The monthly reports should be cross-checked with production and accounting reports. The equipment shall be calibrated in compliance with the requirements of the Federal Agency for Technical Control and Metrology.
	Correction: this QC&QA is not applicable as the volumes of HCFC-22 and SF6are not monitored because monitoring are eliminated from the monitoring plan
	Justification: The reasons for elimination of HCFC-22 and SF6 production quantities from the monitoring plan are presented above in the justifications to deviation 1 and 2. Therefore these are quantities are not measured and there is no need to exercise QC&QA procedure for the measuring equipment designated for determining such substances.

APPENDIX 5.STATUS OF QA AND QC PROCEDURES

Department	Equipment name	Factory number	Verification date	
			Last	Next
27	Mass flow meter «Sitrans FC MassFlo»	7ME411419722N517	02.02.2009	02.02.2013
27	Mass flow meter «Sitrans FC MassFlo»	7ME411421822N018	02.02.2009	02.02.2013
27	Mass flow meter «Sitrans FC MassFlo»	7ME411421722N018	02.02.2009	02.02.2013
27	Mass flow meter «Sitrans FC MassFlo»	7ME411431822N028	02.02.2009	02.02.2013
27	Mass flow meter «Sitrans FC MassFlo»	7ME411421522N018	02.02.2009	02.02.2013
27	Mass flow meter «Sitrans FC MassFlo»	7ME411421922N018	12.03.2009	12.03.2013
104	Meter СА4уи672м	395405	March 2011	March 2015
104	Meter СА4УИ672М	012302	June 2009	June 2013
20	Thermoanemometer TESTO 425	01026331	30.09.2011	01.10.2012

APPENDIX 6. INDEPENDENT EXPERT'S OPINION ON JUSTIFICATION OF REVISIONS TO MONITORING PLAN

Заключение эксперта

по Обоснованию изменений к плану мониторинга проектно-технической документации **«Совместное сжигание HFC-23 и SF6 на предприятии ООО «Завод полимеров КЧХК»** на ООО «Галополимер Кирово-Чепецк»

г. Санкт-Петербург 21 июня 2011 года

Касательно максимального объёмы хладона-22, произведённого в исторический период 2002-2004 годов

В Проектно-технической документации(ПТД)указаны количества Х-22, произведённые в 2002-2004 годах. Однако эти данные не являются точными, и следовательно, они нерепрезентативны. В Обосновании указывается, что с 2003 года нормы расхода Х-23 на производство М-4 на Заводе определены на основании измерений, сделанных с помощью измерительных средств КИПиА, имеющих низкий класс точности и высокую погрешность измерений. Начиная с 2005 года в результате модернизации измерительного оборудования, включая замену старых буйковых уровнемеров (класс точности 1.5) и диафрагменных расходомеров с дифманометрами (класс точности 2-2.5) более точными радарными уровнемерами VEGA (класс точности 0.5) и массовыми расходомерами «PROMASS» (класс точности 0.15), а также внедрения АРМ повысилось качество и точность измерений. Соответственно уточнилась норма расхода Х-22 на единицу М-4. При пересчёте количеств Х-22, произведённого в 2002-2004 году, с использованием новой более точной нормы, утверждённой на 2011 год, обнаружилась несходимость результатов (от -5,9% до –10,4%) по сравнению с количествами Х-22, определёнными в ПТД по старым, менее точным, нормам за этот же период. Т.о. данные по количествам Х-22, произведённым в 2002-2004 годах согласно ПТД не являются точными и на этом основании данное ограничивающее условие должно быть исключено из мониторинга сокращений при определении выбросов парниковых газов по базовой линии.

***Вывод**: Эти доводы являются совершенно справедливыми, так как в процессе эксплуатации технической установки, при помощи средств измерения КИПиА постоянно отслеживается потребление сырья, а также выход готового продукта. Количество произведённого Х-22 можно отследить по следующей методике:*

Количество хладона 22 в незавершённом производстве (НЗП) + Количество М-4 (на производство фторопластов)× норму расхода Х-22/М-4 + количество товарного Х-22.

При этом количество Х-22 в НЗП, товарного Х-22 и М-4 определяется с использованием уровнемеров и расходомеров. Норма расхода Х-22/М-4 устанавливается по результатам замеров Х-22 и М-4 за предыдущий период.

По результатам мониторинга технологического процесса технологом цеха по итогам месяца составляется технический отчёт, в котором приводится фактическое потребление сырьевых ресурсов, их сравнение с плановыми и объяснение причин отклонений. Если в результате применения более точных средств КИПиА отмечается изменение расхода сырья и выхода продукта, то производится корректировка расходных норм. Поэтому совершенно очевидно, что норма расхода Х-22 на М-4, установленная на 2011 год будет наиболее точной при определении производства Х-22 за любой предыдущий период, включая 2002-2004 годы.

Следовательно, определение количества Х-22, произведённого в 2002-2004 годах согласно ПТД является неточным, так как измерено с большой погрешностью и использование этих показателей для определения максимального годового объёма Х-22, произведённого на ООО «Завод полимеров КЧХК»» в период 2002-2004 годов, является недопустимым.

<u>Касательно минимальной процентной доли выхода Х-23 на единицу Х-22 за 2002-2004 годы.</u>

В Обосновании указывается, что значения, представленные в ПТД, не являются обоснованными, так как невозможно определить из какой точки (или каких точек) происходил отбор проб для определенияw_h.Этот показатель можно определить по результатам анализа состава образующейся газовой смеси после реактора синтеза или на других стадиях технологического процесса. Поэтому, указанные выше цифры не являются обоснованными и, следовательно, не являются репрезентативными.

В Обосновании также указывается, что в качестве достоверного источника информации, который может представить обоснованные данные для определения доли образования w_h. является технические отчеты, составляемые технологом цеха. Усреднённые данные по составу Х-22 заносятся в технические отчёты из журналов по контролю газа-сырца. Этот контроль осуществляется для обеспечения требуемого качества Х-22. Контрольные производственные показатели, включая концентрацию Х-22, периодически регистрируются в данных журналах. Результат каждого отбора газа регистрируется и подписывается оператором с указанием даты, времени и позиции, где происходили измерения, включая концентрацию Х-23. Усреднение концентрации Х-23 производится с учётом времени работы реактора синтеза Х-22 и периодичности отбора проб. Таким образом, усреднение значений концентраций Х-23 на годовой основе предоставляет более точные значения w_h, которые подтверждаются документально. Поэтому среднегодовые значения долей Х-23 ,обоснованные утверждёнными техническими отчётами ,являются фактической и пользующейся доверием информацией.

Далее в Обосновании приводится сравнение значений доли Х-23 на единицу Х-22, произведённого в 2002-2004 годах, полученных в результате усреднения фактических показателей из технических отчётов со значениями указанной доли за тот же период согласно ПТД. Данное сравнение показало значительное расхождение результатов: от 18,87% до 106,6%.

Вывод:

Показатель доли выхода Х-23 из произведённого Х-22 можно определить по усреднённым результатам анализа состава образующейся смеси газа-сырца как после реактора синтеза так и на других стадиях технологического процесса. В зависимости от места отбора проб результат анализа состава газа-сырца будет разный, так как в технологической схеме происходит последовательная очистка Х-22 от примесей.

Из сказанного выше следует, что значения доли Х-23 приведённые в ПТД могли быть получены в результате усреднения отдельных результатов анализа состава газа-сырца, отобранных из каких-то неопределённых точек. Поэтому, данные показатели не могут быть репрезентативными.

С другой стороны совершенно справедливым является довод, что технический отчёт технолога цеха, в котором выпускается Х-22, является достоверным источником информации, так как в *нём регистрируются усреднённые данные измерений фактического состава Х-22, включая концентрацию Х-23. При этом измерения производятся на основании отбора газа в различных точках реактора синтеза, и, таким образом, обеспечивается репрезентативность выборки. Эти действия прописываются внутризаводскими регламентами и значения доли Х-23 на основе данных, приведённых в технических журналах являются вполне обоснованными и правильными.*

Следовательно, средние значения доли Х-23 на единицу Х-22произведённые в 2002-2004 годах на ООО «Завод полимеров КЧХК» в период 2002-2004 годов не являются репрезентативными. В этой связи они также должны быть исключены из мониторинга сокращений для определения ограничивающего условия, каким является минимальная среднегодовая доля Х-23 на единицу произведённого Х-22 в период 2002-2004 годов.

Касательно таких ограничивающих условий как «максимальный годовой объём товарного SF6 произведённого ООО «Завод полимеров КЧХК»» в 2002-2004 годы и «минимальной процентной доли SF6 (ws) , содержащейся в отбросных потоках из ректификационной колонны гексафторида серы на единицу товарного SF6 (P_SF6y) произведённого в 2002-2004».

В Обосновании указывается на то, что данные показатели в ПТД используется некорректно, так как в период 2002-2004 гг. оборудование по производству гексафторида серы проходило период наладочных работ и опытно-промышленных испытаний. Это подтверждается количествами произведённого в 2002-2004 годах SF6, которое составляло примерно половину среднегодового объёма, выпущенного 2007-2010 годах после того как начался этап промышленного выпуска товарного гексафторида серы Этап наладки производства характеризуется нестабильностью значения показателяw_s.Ниже приведены значения этих показателей, представленных в ПТД:

Обозначение	Ед. изм	2002	2003	2004
P_SF_6y	т	157,80	158,2	219,90
w_s	%	1,4	3,04	2,28

Период пуско-наладочных работ практически любого производства характеризуется нестабильностью показателей, и производство гексафторида не является исключением, что видно из представленной выше таблицы.

Промышленный выпуск SF6 на ООО «Завод полимеров КЧХК» начался с 2006 года. С 2007 года производствоSF6 составляет в среднем 326 тонн в год, и содержание отбросного SF6 стабилизировалось на уровне 2% в 2009-2010 годах.

Вывод: Следовательно, использование таких ограничивающих условий как «максимальный годовой объём товарного SF6 произведённого ООО «Завод полимеров КЧХК»» в 2002-2004 годы» и «минимальная процентная доля SF6 (ws) , содержащаяся в отбросных потоках из ректификационной колонны гексафторида серы на единицу товарного SF6 (P_SF6y) произведённого на ООО «Завод полимеров КЧХК» в 2002-2004 годы является некорректным в связи с несопоставимостью условий работы установки на этапе опытно-промышленных испытаний и на этапе промышленного производства.

На этом основании данные ограничивающие условия должны быть устранены из мониторинга сокращений при определении выбросов парниковых газов по базовой линии.

В ПТД указывается, что ограничивающие условия вводятся, чтобы исключить возможные манипуляции, связанные с учетом количества образующихся отходов. Однако как указывается в Обосновании производство хладона 22 и SF6 на предприятии никоим образом не связано с манипуляциями, так как эта продукция производится исключительно для того, чтобы выполнить производственную программу в соответствии с обязательствами по поставке продукта покупателям, а также, чтобы обеспечить производство фторопластов Следует отметить, что получение хл-22 из хлороформа и фтористого водорода всегда сопровождается образованием хл-23. Процесс этот неконтролируем и содержание хл-23 может достигать 3,8%. Кроме того некоторое количество хл-23 образуется при отмывке сырца хл-22 растворами щелочей. Содержание SF6 в отбросных потоках определяется равновесной упругостью ее паров и не может быть изменено.

Мнение эксперта:

ОБЩИЙ ВЫВОД:

Ознакомившись с доводами, представленными в Обосновании, считаю что:

1. **Указанные выше ограничивающие условия не являются точными и репрезентативными для использования в мониторинге при определении выбросов базовой линии.**
2. **Подходы, выражающиеся в устранении из мониторинга сокращений данных ограничивающих условий, являются правильными и обоснованными.**
3. **Наиболее точным в отражении реальной ситуации по выбросам базовой линии является прямой мониторинг выбросов Х-23 и SF6, выражающийся в измерении фактических количеств отбросных газов, содержащих Х-23 и SF6 и их концентрации, подаваемых на деструкцию в проектной установке термогидролиза.**

Список литературы:

1. Проектно-техническая документация «Совместная утилизация выбросов хладона-23 и гексафторида серы на предприятии ООО «Завод полимеров КЧХК»».
2. Обоснование изменений план-мониторинга проектно-технической документации проекта «Совместная утилизация хладона-23 и гексафторида серы на предприятии ООО «Завод полимеров КЧХК»»

Эксперт, доктор технических наук Д.Д. Молдавский

Дата: 21.06.2011

APPENDIX 7.LETTER OF APPROVAL

Пошиену В.С.
17.08.2010

МИНИСТЕРСТВО ЭКОНОМИЧЕСКОГО РАЗВИТИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
(МИНЭКОНОМРАЗВИТИЯ РОССИИ)

ул. 1-я Тверская-Ямская, д. 1,3, Москва, ГСП-3, А-47, 125993
Тел. (495) 694-03-53, Факс (495) 251-69-65
E-mail: mineconom@economy.gov.ru
http://www.economy.gov.ru

4.08.2010г. № Д07-1040

На № ______________ от ______________

Директору
ООО «Завод полимеров КЧХК»

П.И. Бойко

613040, Кировская обл.,
г. Кирово-Чепецк, пер.Пожарный, 7

Уважаемый Павел Иванович!

Информируем, что Ваш инвестиционный проект «Совместная утилизация выбросов хладона-23 и гексафторида серы на предприятии ООО «Завод полимеров КЧХК» утвержден приказом Минэкономразвития России от 23 июля 2010 г. № 326 в соответствии с Положением о реализации статьи 6 Киотского протокола к Рамочной конвенции ООН об изменении климата, утвержденным постановлением Правительства Российской Федерации от 28 октября 2009 г. № 843 «О мерах по реализации статьи 6 Киотского протокола к Рамочной конвенции ООН об изменениях климата».

Приложение: на 3 л. в 1 экз.

Заместитель директора
Департамента государственного регулирования тарифов, инфраструктурных реформ и энергоэффективности

О. Б. Плужников

И.Н. Атрохова
495 691 91 05
Департамент государственного регулирования тарифов, инфраструктурных реформ и энергоэффективности

ООО «Завод полимеров КЧХК»
Индекс 1922
Дата 17.08.2010

1	3

Перечень копии проекта

МИНИСТЕРСТВО ЭКОНОМИЧЕСКОГО РАЗВИТИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
(МИНЭКОНОМРАЗВИТИЯ РОССИИ)

П Р И К А З

23 июля 2010 г. **Москва** **№** 326

Об утверждении перечня проектов, осуществляемых в соответствии со статьей 6 Киотского протокола к Рамочной конвенции ООН об изменении климата

В соответствии с пунктом 2 постановления Правительства Российской Федерации от 28 октября 2009 г. № 843 «О мерах по реализации статьи 6 Киотского протокола к Рамочной конвенции ООН об изменении климата» (Собрание законодательства Российской Федерации, 2009, № 44, ст. 5240) приказываю:

Утвердить прилагаемый перечень проектов, осуществляемых в соответствии со статьей 6 Киотского протокола к Рамочной конвенции ООН об изменении климата.

Министр Э.С. Набиуллина

Министерство экономического развития Российской Федерации * Департамент управления делами №3

Минэкономразвития России
Вн.№ 326
от 23.07.2010 1л.+2л.

Утвержден
приказом Минэкономразвития России
от 23.07.2010 № 326

ПЕРЕЧЕНЬ
проектов, осуществляемых в соответствии со статьей 6 Киотского протокола к Рамочной конвенции ООН об изменении климата

1. Инвестиционный проект «Сбор газа на Самотлорском месторождении» (инвестор проекта - ОАО «Самотлорнефтегаз»).

2. Инвестиционный проект «Проект совместного осуществления на Еты-Пуровском месторождении» (инвестор проекта - ОАО «Газпромнефть»).

3. Инвестиционный проект «Утилизация попутного нефтяного газа на Комсомольском месторождении» (инвестор проекта - ОАО НК «Роснефть»).

4. Инвестиционный проект «Утилизация попутного нефтяного газа на Восточно-перевальном нефтяном месторождении» (инвестор проекта - ОАО «РИТЭК»).

5. Инвестиционный проект «Утилизация попутного нефтяного газа на Средне-Хулымском нефтяном месторождении» (инвестор проекта - ОАО «РИТЭК»).

6. Инвестиционный проект «Расширение Южно-Балыкского газоперерабатывающего завода» (первая фаза) (инвестор проекта - ОАО «СИБУР Холдинг»).

7. Инвестиционный проект «Реконструкция доменных печей № 5 и № 6 ОАО «Нижнетагильский металлургический комбинат» (инвестор проекта - ОАО «Нижнетагильский металлургический комбинат»).

8. Инвестиционный проект «Внедрение ресурсосберегающих технологий на ОАО «Уральская Сталь», г. Новотроицк, Россия» (инвестор проекта - ОАО «Уральская Сталь»).

9. Инвестиционный проект «Утилизация дегазационного метана в шахтах ОАО «СУЭК-Кузбасс» (инвестор проекта - ОАО «СУЭК-Кузбасс»).

10. Инвестиционный проект «Строительство ПГУ-400 на Шатурской ГРЭС, ОГК-4» (инвестор проекта - ОГК-4).

11. Инвестиционный проект «Повышение эффективности использования водных ресурсов на Братской ГЭС (БГС)» (инвестор проекта - ОАО «Иркутскэнерго»).

12. Инвестиционный проект «Перевод двух котлов Амурской ТЭЦ-1 с угля на природный газ с установкой экологически чистого оборудования» (инвестор проекта - Дальневосточная генерирующая компания).

13. Инвестиционный проект «Совместная утилизация выбросов хладона-23 и гексафторида серы на предприятии ООО «Завод полимеров КЧХК» (инвестор проекта - ООО «Завод полимеров КЧХК»).

14. Инвестиционный проект «Утилизация выбросов хладона-23 на предприятии ОАО «Галоген» (инвестор проекта - ООО «Галоген»).

15. Инвестиционный проект «Модернизация выпарного хозяйства филиала ОАО «Группа Илим» в г. Коряжме» (инвестор проекта - ОАО «Группа Илим»).

Копия верна.