Monitoring report form
(Version 03.1)

Monitoring report

Title of the project activity	**HFC23 Decomposition Project of Zhejiang Juhua Co., Ltd, P. R. China**
Reference number of the project activity	**0193**
Version number of the monitoring report	01
Completion date of the monitoring report	21/02/2013
Registration date of the project activity	03/03/2006
Monitoring period number and duration of this monitoring period	32nd 01/01/2013 – 31/01/2013
Project participant(s)	Zhejiang Juhua Co., Ltd. JMD Greenhouse-Gas Reduction Co., Ltd. JGC Corporation Marubeni Corporation Daioh Construction Co., Ltd.
Host Party(ies)	People's Republic of China
Sectoral scope(s) and applied methodology(ies)	Sectoral scope 11 Approved baseline methodology: AM0001 Version 03 - Incineration of HFC 23 Waste Streams Approved monitoring methodology: AM0001 Version 03 - Incineration of HFC 23 Waste Streams
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	491,726 tCO2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	487,480 tCO2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

HFC23 (CHF_3) is a by-product from HCFC22 production. This project activity is to decompose the HFC23 generated from the registered HCFC22 production line No. 2-703 which was put into operation in February 2001 in Zhejiang Juhua Co., Ltd. China has no mandatory limitation on HFC23 emissions at present. Furthermore, the decomposition of HFC23 requires the installation of facilities with high technology and large amount of investment and has no economic benefit. Without the HFC23 decomposition project, the HFC23 generated in this company will be emitted directly to the atmosphere as waste gas.

The project has installed an incineration facility using a superheated steam decomposition technology. The set of superheated steam decomposition facility was imported from Japan, which is the most advanced technology of Japan to be utilized to do non-hazardous treatment of the HFC23 gas. The HFC23 is decomposed to hydrogen fluoride (HF) and carbon dioxide (CO_2) after the reaction.

The starting date of the project construction: 10/03/2006

The starting date of the project commissioning: 01/08/2006

The starting date of the first crediting period: 01/08/2006

The total emission reduction achieved in this monitoring period: 487,480 tCO_2e.

A.2. Location of project activity

Location of the project activity: Quzhou City, Zhejiang Province, People's Republic of China

The project activity is located in the plant area of Zhejiang Quhua Fluor-Chemistry Co., Ltd., that is a filiale of Zhejiang Juhua Co., Ltd. Zhejiang Juhua Co., Ltd is 6.5 kilometers south of the Quzhou City in western Zhejiang Province. To its east is the Wuxi River, to its west Jiangshan Port, to its south Loess Hill and to its north Zhegan Railway.

A.3. Parties and project participant(s)

Party involved **((host) indicates a host Party)**	**Private and/or public entity(ies) project participants (as applicable)**	**Indicate if the Party involved wishes to be considered as project participant (Yes/No)**
China (host)	Zhejiang Juhua Co., Ltd	No
Japan	JMD Greenhouse-Gas Reduction Co., Ltd. JGC Corporation Marubeni Corporation Daioh Construction Co., Ltd.	No

A.4. Reference of applied methodology

Approved baseline methodology: AM0001/Version 03-"Incineration of HFC23 waste streams"

Approved monitoring methodology: AM0001/Version 03-"Incineration of HFC23 waste streams"

Guidance on accounting eligible HFC-23 (EB39 annex 8), initially adopted on 16/05/2008

A.5. Crediting period of project activity

The first crediting period for the project is from 01/08/2006 to 31/07/2013 (renewable).

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

For this project activity, the project owner didn't carry out any retrofit or replacement of key components of the reactor/column/condenser system on the originating plant (No. 2-703 production plant) since the year 2002 up to now.

This Monitoring report covers the project activity from 01/01/2013 to 31/01/2013 as the 32nd monitoring period, which is the 5th monitoring period of the 7th project year. During this monitoring period, no special event occurred which may impact the applicability of the methodology.

In this monitoring period, the HFC23 decomposition facility was shut down from January 21, 2013 until on January 30, 2013 due to the shut down event of registered HCFC22 production No,2-703, as described in the following table.

Shut down Date	Reason for shutting down	Shut-down duration	Production line stopped
21/01/2013	Due to the shut down event of the registered HCFC22 production line No. 2-703	220 hours and 14 minutes (Started from 10:19,January 21,2013 until 14:33, January 30,2013)	No.2-703 production line was shut down for equipment maintenance from January 21,2013 until January 30,2013

For conservative principle, the analysis of the effluent gas is weekly performed for normal operation period and at each time when any of the 8 identical incinerator stops to check the quantity of HFC23 un-decomposed. All the analysis results in this monitoring period are not detected.

The emission reductions are dominated by the quantity of HFC23 destroyed. To measure this quantity accurately, 2 series with 2 flow meters in each series (2*2) are used. We have put in place a system which automatically accumulates the lower periodic readings of the two flow meters in use. In this monitoring period, the measured amount of HFC23 decomposed was 34.11532 MT, however, the capped amount of HFC23 used to calculate the emission reduction was 32.94570MT in accordance with the requirement of EB39 Annex 8. Therefore, 1.16962 MT HFC23 decomposed in excess of the cap has been deducted and has not been used to calculate the emission reduction in this monitoring period.

In this monitoring period, all of the measurement instruments have been calibrated as per the requirement of methodology AM0001 (Detail information refers to Section D). For HFC23 flow meters, weekly zero check of the flow meters was strictly conducted and zero checks indicated that flow meters were stable in this monitoring period. The two series of HFC23 flow meters were fully calibrated by an officially accredited entity.

In November 2012, the project owner delegated an officially accredited entity (Quzhou Environment Testing Center) to analyze the environmental monitoring items in gaseous effluents (not including Dioxin) and water effluents, it also delegated another officially accredited entity (Zhejiang Province Environment Monitoring Center) to analyze Dioxin in the gaseous effluents in November 2012, all of results meet the requirements of local environmental regulations. (The previous environmental monitoring items were analyzed in May, 2012). Details are as follows.

Monitored data for gaseous effluents

Parameter	China Standards		UNEP benchmark	Actual analysis
Dioxin	[1]GB18484-2001	≤0.5 ng I-TEQ/m^3	≤1.0 ng I-TEQ/m^3	0.010 ng I-TEQ/m^3
CO		≤100 mg/m^3	≤100 mg/m^3	Not detected
HCl	Grade 2 of GB16297-1996	≤100 mg/m^3	≤100 mg/m^3	8.54 mg/m^3
HF		≤9 mg/m^3	≤5 mg/m^3	3.92 mg/m^3
Cl_2		≤65 mg/m^3	-	4.20 mg/m^3
NO_X		≤240 mg/m^3	≤250 mg/m^3	Not detected

Monitored data for liquid effluents

Parameter	China Standards		Actual analysis
pH	Grade 1 of GB8978-1996	6~9	7.23
COD		≤100 mg/L	＜5 mg/L
BOD		≤20 mg/L	2.30 mg/L
n-H		-	0.56 mg/L
SS		≤70 mg/L	14 mg/L
phenol		≤0.5 mg/L	0.040 mg/L
Cu		≤0.5 mg/L	＜0.01 mg/L
Zn		≤2.0 mg/L	＜0.05 mg/L
Mn		≤2.0 mg/L	＜0.05 mg/L
Cr		≤1.5 mg/L	0.015mg/L

This project uses the superheated steam decomposition technology to destruct the HFC23 generated in one HCFC22 production line (No.2-703) of the company. The decomposition technology used in this project encompasses HFC23 destruction facility, neutralization facility, waste gas disposal equipment and waste water disposal equipment. Similar to the HFC23 decomposition technology described in the approved methodology AM0001, the system sends the recovered HFC23 (with slight amount of HCFC22) to the reactor and increase the temperature to 800 ～1000℃. After complex reactions, HFC23 (with slight amount of HCFC22) is completely destructed (>99.999%) to HF, CO_2 and HCl. After that, the acidic gases of HF and HCl are neutralized with Ca $(OH)_2$, and then treated in the waste gas disposal equipment and the waste water disposal equipment.

In this HFC23 decomposition facility, there are 8 identical incinerators in parallel. Two of them as a group, if one or some of the incinerators stop, the other incinerators can continue their operation. Under general condition, it is sufficient to run 6 incinerators for decomposition, the other incinerators act as back-up. The project owner alternately checks and maintains the 8 incinerators.

This decomposition technology does not use fossil fuel, instead uses electric heater to obtain the decomposition temperature. Therefore, it can be used under comparatively lower temperature (800 ～ 1000℃) and in small scale incinerator. Characteristics of the employed technology are described as follows:

[1] There is no regulation for Dioxin and CO in the Grade 2 of the Integrated Air Pollution Emission Standard (GB16297-1996), for compliance with the conservative principle, the Pollution Control Standard for Hazardous Waste Incineration (National Standards of P.R.C. GB18484-2001) is cited.

High safety: A series of decomposition reactions happen under slight vacuum (-50～-100 mmH_2O) and thus no leakage of the noxious decomposed gases like HF, HCl will happen.

Good maintainability: The combustion chamber is small and thus it is easy to check and replace the corroded materials in the reactor. Moreover, since the decomposition reaction happens under lower temperature, corrosion of the combustion chamber caused by acidic gases is comparatively lower.

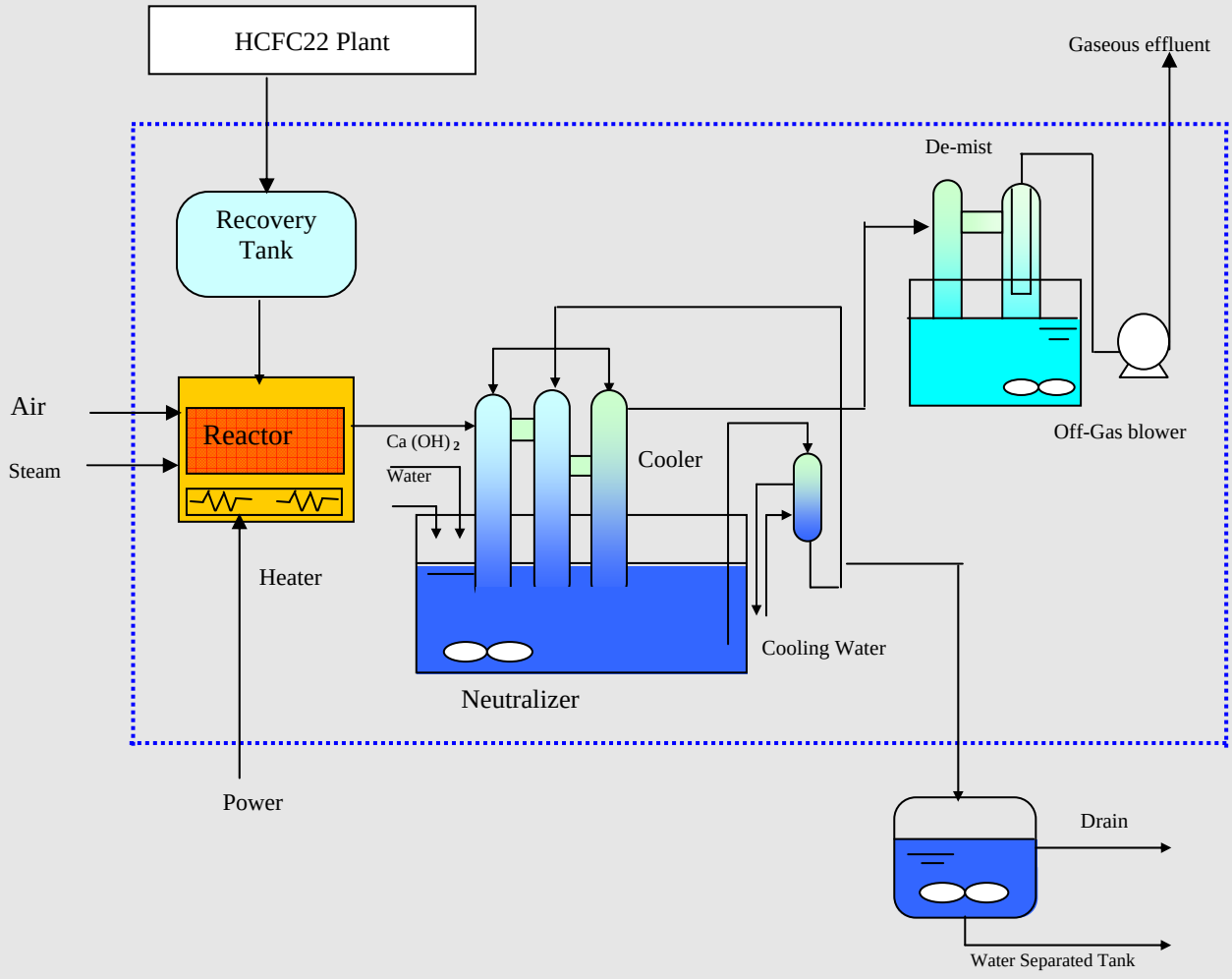
Small spatial space: Since the reactor chamber is very small, the whole volume of the facility is small too.

High-energy efficiency: Since the facility uses superheated steam decomposition technology, the decomposition temperature is rather low. No fossil fuel is used, so the consumption of process water for waste gas disposal is reduced.

The superheated steam decomposition technology utilized in the project is a proven one and has been used in more than 22 facilities in Japan.

For detailed technical process please refer to Figure 1.

Figure 1: HFC23 Decomposition Project Boundary



B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan or applied methodology

Not applicable.

B.2.2. Corrections

Not applicable.

B.2.3. Permanent changes from registered monitoring plan or applied methodology
Revised monitoring plan was approved by CDM EB on 05/11/2007.

B.2.4. Changes to project design of registered project activity
Not applicable.

B.2.5. Changes to start date of crediting period
On June 23, 2006, the participant submitted a request to change the start date of crediting period of this project activity from 01/01/2007 to 01/08/2006, the request was approved by EB.

B.2.6. Types of changes specific to afforestation or reforestation project activity
Not applicable.

SECTION C. Description of monitoring system
Project organizational structure

This HFC23 decomposition facility is operated by staff of Zhejiang Quhua Fluor-chemical Co., Ltd (Zhejiang Quhua Fluor-Chemistry Co., Ltd is a filiale of Zhejiang Juhua Co. Ltd.). In order to monitor the project emission reductions and leakage, the project operator has established the operational and administration structure as shown in the figure 2. Details are illuminated as follows:

1、Project Operator, Zhejiang Quhua Fluor-chemical Co., Ltd has nominated Mr. Wang Aiguo as Chinese CDM Project Director, who supervises the operation manager and monitoring manager. Their respective responsibilities are as follows：

1) Chinese CDM project director: Receive the report from operation manager and monitor manager; Review and approve relevant data and reports; Manage the CDM project jointly with the Japanese side; Coordinate with the Chinese Government and stakeholders; Submit the monitoring report to DOE.

2) Operation manager: Based on the operation manual, take care of the project operation management and supervision, and is responsible to the operational manual includes, inter alia, operation and management rules for the incineration equipment, organization of the staff and their corresponding responsibilities, emergency procedures, internal auditing and review procedures for project operation.

3) Monitor manager: Based on monitoring manual, take care of the monitor of emission reduction and leakage data, including environment influence, and is responsible to the monitoring manual includes, inter alia, monitoring plan, procedures for the adjustment of monitoring data, for dealing with uncertainties and for monitoring improvement.

2、The Japanese CDM project director is also responsible for the management of the CDM project jointly with Chinese side, provide the plan for project implementation, operation and maintenance etc., and coordinate with Japan Government.

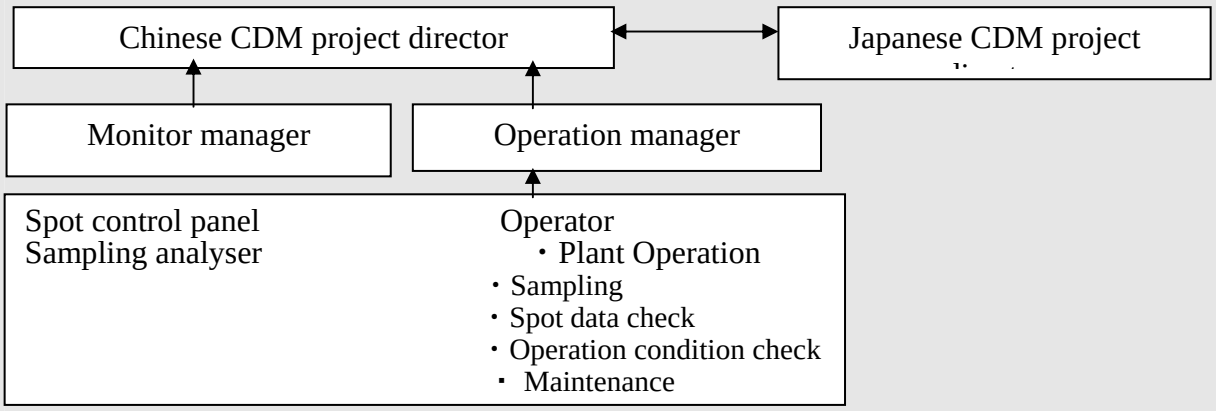


Figure 2：Operational and Management Structure

Quality Management System

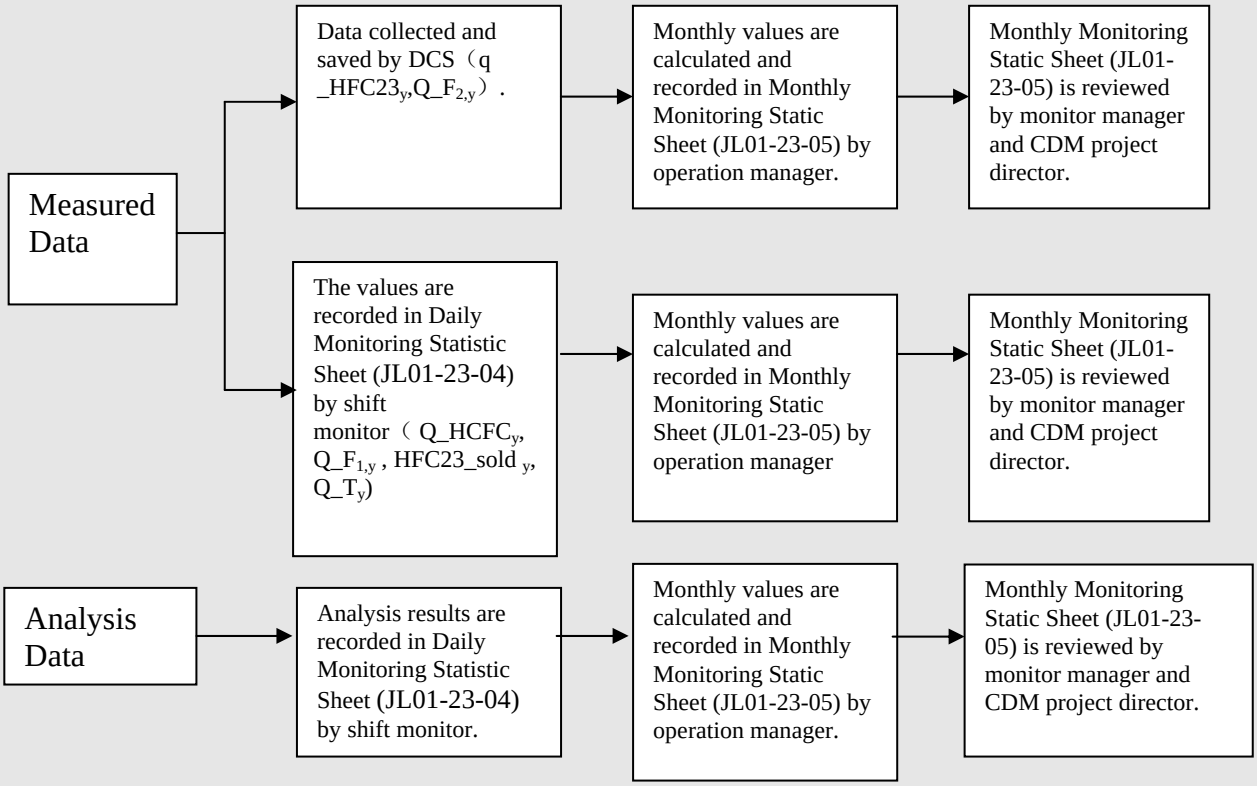
This CDM project is integrated into ISO 9001:2008 Quality Management System and ISO 14001:2004 environmental management system of the company.

Organizational structure, position, roles and responsibilities are defined. Data transfer and reporting procedures are prescribed and documented.

The necessary competencies for personnel performing work affecting project quality are determined, and training to satisfy these needs is provided.

The emergency procedures for the monitoring system are established. Once error or emergency issues occurred during the operation and monitoring of the project, regulations on the Project Operation Manual and the CDM Monitoring Manual will be followed. No special event occurred during this monitoring period.

Bellow is showed the information flow.



In order to monitor emission reductions from the project activity, the monitoring points shown in the following figure 3 are monitored.

All the monitoring points shown in the line diagram are strictly monitored in accordance with the requirement specified in the applied monitoring methodology and monitoring plan.

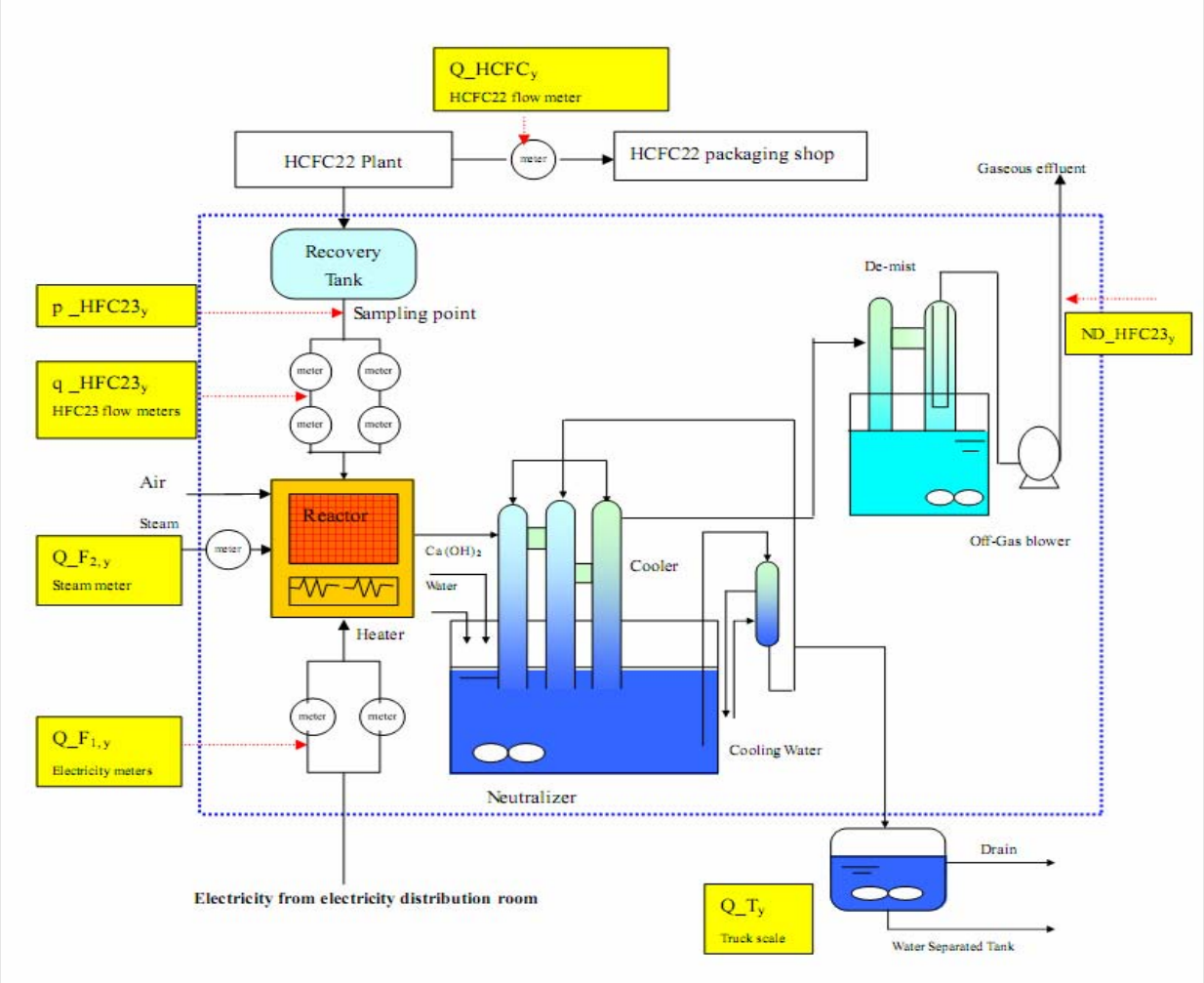


Figure 3: Monitoring system line diagram

ID number	Data type	Data variable	Data unit	Reference
1. q _HFC23$_y$	Mass	Quantity of HFC23 supplied to the decomposition process	kg- HFC23	D.2.1
2. P_HFC23$_y$	%	Purity of the HFC23 supplied to the decomposition process	%	D.2.2
3.Q_HCFC$_y$	Mass	The quantity of HCFC22 produced in the plant	t-HCFC22	D.2.3
4. HFC23_sold $_y$	Mass	HFC23 sold by the facility	t- HFC23	D.2.4
5. ND_HFC23$_y$	Mass	The quantity of Un-decomposed HFC23 of gaseous effluent	kg-HFC23	D.2.5
6. Q_F$_{1,y}$	Energy	Electricity consumption by the decomposition process	KWh	D.2.6
7. Q_F$_{2,y}$	Energy	Steam consumption by the decomposition process	t- steam	D.2.7
8. E_F$_{1,y}$	Energy	CO_2 emission factor of electricity supply	t-CO_2 / kWh	D.2.9
9. E_F$_{2,y}$	Energy	CO_2 emission factor of steam supply	t-CO_2 / t-steam	D.2.10
10. Q_T$_y$	Mass	Solid waste	t-sludge	D.2.8
11.E_sludge$_{,y}$	Energy	CO_2 emission factor of the consumption of diesel oil during transportation of sludge to landfill.	t-CO_2 / t-sludge	D.2.11

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Data / Parameter:	GWP_HFC23
Unit:	t CO_2e / t-HFC23
Description:	Global Warming Potential value for HFC23
Source of data:	AM0001 version 03
Value(s) applied:	14,800
Purpose of data:	Calculation of baseline emissions and project emissions
Additional comment:	As per EB 69 Annex 3 and decision 4/CMP7, for the Second commitment period under the Kyoto Protocol, Global Warming Potential values used shall be those provided by the Intergovernmental Panel on Climate Change in its Fourth Assessment Report("2007 IPCC GWP values")

Data / Parameter:	EF
Unit:	t CO_2e / t-HFC23
Description:	Emission factor for the carbon in the HFC23 into CO_2
Source of data:	AM0001 version 03
Value(s) applied:	0.62857
Purpose of data:	Calculation of project emissions
Additional comment:	

Data / Parameter:	$QHCFC22_{HIST}$
Unit:	t-HCFC22
Description:	The maximum annual HCFC22 production that is eligible for crediting as determined and fixed in the registered PDD.
Source of data:	Registered PDD
Value(s) applied:	16,517
Purpose of data:	Calculation of baseline emissions
Additional comment:	Based on the historical production records HCFC production for the years between beginning of the year 2002 and the end of the year 2004.This data has be reported in the registered PDD.

Data / Parameter:	W
Unit:	fraction
Description:	Minimum of historical HFC23 generation rate that is eligible for crediting as determined and fixed in the registered PDD.
Source of data:	Registered PDD
Value(s) applied:	3.0%
Purpose of data:	Calculation of baseline emissions

Additional comment:	Based on the historical HFC23 generation rate (HFC23/ HCFC22)for the years between beginning of the year 2002 and the end of the year 2004.This data has be reported in the registered PDD. For this project activity, the project owner didn't carry out any retrofit or replacement of key components of the reactor/column/condenser system on the originating plant (No. 2-703 production plant) since the year 2002 up to now. It's valid to establish the w rate using the historical data of waste generation rate from No. 2-703 production plant

D.2. Data and parameters monitored

Data / Parameter:	D.2.1 q _HFC23$_y$
Unit:	kg-HFC23
Description:	Quantity of HFC23 supplied to the decomposition process
Measured/ Calculated / Default:	Measured by flow meters.
Source of data:	Monthly Monitoring Statistic Sheet/Monthly DCS Screen Dump
Value(s) of monitored parameter:	34458.88 kg-HFC23 (34.45888MT) Details please refer to appendix ER calculation spreadsheet section 1

Monitoring equipment:	**Type:** flow meters **Accuracy:** 0.35% **Serial number:** 14003777 (tag number: FT-0110A) 14002466 (tag number: FT-0110B) 14002101 (tag number:FT-0110C) 14003199 (tag number:FT-0110D) **Calibration frequency:** Calibrated every six months with a zero check being conducted weekly. If the zero check indicates that flow meter is not stable, an immediate calibration of the flow meter shall be undertaken. (As per AM0001) **Date of last calibration and validity:** For this project, there are four flow meters FT-0110A&B and FT-0110C&D (2 series each with 2 meters were installed and put into operation alternatively). FT-0110A&B flow meters were calibrated on 20/11/2012 by an officially accredited entity, valid to 19/05/2013. FT-0110C&D flow meters were calibrated on 14/11/2012 by an officially accredited entity, valid to 13/05/2013. The previous calibrations of the FT-0110A&B flow meters were conducted on 21/05/2012 and FT-0110C&D were conducted on 16/05/2012 respectively. Zero check of the flow meters was conducted weekly on every Thursday and zero checks indicated that flow meters were stable in this monitoring period. In this monitoring period, the weekly zero check of HFC23 flow meters were conducted on 27/12/2012， 03/01/2013, 10/01/2013，17/01/2013，24/01/2013, 31/01/2013 respectively. In this project, Distributed Control System (DCS) collects and records each second reading of the two functioning meters and automatically takes the lower reading for accumulation of q_HFC23_y. The monthly quantity of HFC23 waste flows (q_HFC23_m) is the sum of the lower periodic reading of the two functioning HFC23 flow meters. $q\_HFC23_m = \Sigma \min^{m} (q\_HFC23_{1,t}, q\_HFC23_{2,t})$ t= number of period in a month The reported value of q_HFC23_y in this monitoring period is the sum of the monthly quantity of HFC23 supplied to the decomposition process from 01/01/2013 to 31/01/2013.
Measuring/ Reading/ Recording frequency:	Measured and recorded continuously by DCS
Calculation method (if applicable):	N/A
QA/QC procedures:	The flow meters shall be calibrated every six months by an officially accredited entity. The zero check on the flow meters is conducted every week. If the zero check indicates that flow meter is not stable, an immediate calibration of the flow meter shall be undertaken.
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

Data / Parameter:	D.2.2 P_HFC23$_y$
Unit:	%
Description:	Purity of the HFC23 supplied to the decomposition process
Measured/ Calculated / Default:	Measured
Source of data:	Monthly Monitoring Statistic Sheet/Weekly Purity Report / GC
Value(s) of monitored parameter:	99.00300% Details please refer to appendix ER calculation spreadsheet section 2
Monitoring equipment:	**Type:** Agilent 6890N (GC-TCD) **Accuracy class:** 0.05%(permissible error) **Serial number:** US10621017 **Calibration frequency:** Every two years (according to Chinese national standard JJG 700-1999,Verification Regulation of Gas Chromatograph) **Date of last calibration and Validity:** The GC was calibrated on 16/07/2012 by an officially accredited entity, Valid to 15/07/2014. The previous calibration of the GC was conducted on 17/07/2010 by an officially accredited entity. Besides, the GC was recalibrated on 23/12/2012, 23/01/2013 respectively as required by the approved methodology AM0001/Version 03. An average of weekly analysis value of the purity of the HFC23 conducted on every Thursday is considered as the monthly purity of the HFC23 supplied to the decomposition process. The reported value of P_HFC23$_y$ in this monitoring period is the weighted average value of the monthly purity of the HFC23 supplied to the decomposition process from 01/01/2013 to 31/01/2013.
Measuring/ Reading/ Recording frequency:	Measured and recorded weekly
Calculation method (if applicable):	N/A
QA/QC procedures:	Measured using gas chromatography. The gas chromatography shall be recalibrated monthly.
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

Data / Parameter:	D.2.3 Q_HCFC$_y$
Unit:	t-HCFC22
Description:	The quantity of HCFC22 produced in the plant
Measured/ Calculated / Default:	Measured
Source of data:	Monthly Monitoring Statistic Sheet /Daily Monitoring Statistic Sheet
Value(s) of monitored parameter:	1098.19 t-HCFC22 Details please refer to appendix ER calculation spreadsheet section 3

Monitoring equipment:	**Type:** flow meters **Accuracy class:** 0.2% **Serial number**: 766597 **Date of last calibration and validity:** The HCFC22 mass flow meter (S/N: 766597) was calibrated by an officially accredited entity on 07/06/2012 and valid till 06/06/2013. The previous calibration was conducted on 08/06/2011 by an officially accredited entity. Besides, as required by the approved methodology AM0001/Version 03, the HCFC22 mass flow meter was recalibrated on 23/12/2012, 23/01/2013 respectively. The process of supply HCFC22 from production line to packaging shop is an intermittent feeding process. The HCFC22 flow meter readings at each of delivery from production line to packaging shop is taken as raw production record and is used to generate the monthly reported data of Q_HCFC_y . The reported value of Q_HCFC_y in this monitoring period is the sum of the monthly quantity of HCFC22 produced from 01/01/2013 to 31/01/2013 in the registered HCFC22 production line 2-703.
Measuring/ Reading/ Recording frequency:	Measured continuously Recorded daily
Calculation method (if applicable):	N/A
QA/QC procedures:	Obtained from production records of the facility where the HFC23 waste originates. The flow meter of HCFC22 shall be recalibrated monthly.
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

Data / Parameter:	D.2.4 $HFC23\_sold_y$
Unit:	t-HFC23
Description:	HFC23 sold by the facility
Measured/ Calculated / Default:	Measured
Source of data:	Monthly Monitoring Statistic Sheet
Value(s) of monitored parameter:	0 t-HFC23 Details please refer to appendix ER calculation spreadsheet section 4
Monitoring equipment:	The HFC23 generated from the registered HCFC22 production line 2-703 is directly sent to incineration plant without extra storage facility or side way to date of this report. No HFC23 has been sold in this monitoring period.
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	-
QA/QC procedures:	Obtained from production records of the facility where the HFC23 waste originates.
Purpose of data:	Calculation of baseline emissions

Additional comment:	N/A

Data / Parameter:	D.2.5 ND_HFC23$_y$
Unit:	kg-HFC
Description:	Quantity of un-decomposed HFC23 of gaseous effluent
Measured/ Calculated / Default:	Measured
Source of data:	Monthly Monitoring Statistic Sheet/Weekly analysis reports and GC chromatograms of HFC23 content in the effluent gas
Value(s) of monitored parameter:	0.1503 kg-HFC Details please refer to appendix ER calculation spreadsheet section 5
Monitoring equipment:	**Type:** Agilent6890N(GC-mass) **Accuracy class:** 200ppb (detection limit) **Serial number:** US10621017 **Calibration frequency:** Every two years (according to Chinese national standard JJG 700-1999,Verification Regulation of Gas Chromatograph) **Date of last calibration and Validity:** The GC was calibrated on 16/07/2012 by an officially accredited entity, Valid to 15/07/2014. The previous calibration of the GC was conducted on 17/07/2010 by an officially accredited entity. Besides, the GC was recalibrated on 23/12/2012, 23/01/2013 respectively as required by the approved methodology AM0001/Version 03.
Measuring/ Reading/ Recording frequency:	In normal operation, measured and recorded weekly. Besides, measured and recorded when a single or a group of incinerator stops.

Calculation method (if applicable):	In this HFC23 decomposition facility, there are 8 identical incinerators in parallel. Two of them as a group, if one or some of the incinerators stop, the other incinerators can continue their operation. For conservative principle, the analysis of the effluent gas is weekly performed for normal operation period and at each time when any of the 8 identical incinerator stops to check the quantity of HFC23 not destroyed. Due to the high destructed ratio of the super heated decomposition facility, HFC23 in tail gas will be too small to detect under normal operation. During normal operation, tail gas analysis will be done on a weekly basis on Thursday to check that the not decomposed HFC23 concentration will be below detectable limit. In such case, 200ppb (detection limit) will be recorded as m_{dl} At down time of any of the reaction units (the decomposition temperature lower than 800℃ is regarded as stop), the un-decomposed HFC23 in tail gas will be analyzed as m_i. If m_i is higher than the analysis value under normal operation, another sampling will be taken for further analysis after the operation comes into normal conditions. The higher of the two values m_{max} will be used to calculate the un-decomposed HFC23 in a day as ND_HFC23 downtime$_i$. If there are two or more stops of reaction in a day, the maximum value of analysis on the same day will be used for calculation. m_i will be recorded as 200ppb (detection limit) in case m_i is too small to detect. ND_HFC23 downtime$_i$ will be calculated according to formula (1): ND -HFC23 downtime$_i$ =m_{max}* BR* BQ*24*DG……（1） Where, BR is Rated flow of blower: 144 Nm^3/h BQ is Quantity of blower: 8 sets DG is Density of tail gas: 1.294 kg/m^3 at 101.325kPa, 0℃ (based on the composition of tail gas in PDD)[3] [3]The composition and content of tail gas in PDD: H_2O, 0.6VOL%; N_2, 78.8 VOL%; O_2, 18.5 VOL%; CO_2, 2.1 VOL%. DG is calculated as follows: The average molar mass of tail gas=0.6%*(molar mass of H_2O)+ 78.8%*(molar mass of N_2)+18.5%*(molar mass of O_2)+ 2.1%*(molar mass of CO_2) =0.6%*18+78.8%*28+18.5%*32+2.1%*44=29.016 Where: Molar mass of H_2O: 18 Molar mass of N_2: 28 Molar mass of O_2: 32 Molar mass of CO_2: 44 DG = (P*M)/(R*T) (Equation of state of ideal gas) = (101.325*10^3*29.016)/ (8.315*10^3*273.15) =1.294 kg/m^3 ***Where:*** ***P: The absolute pressure of gas = 101.325*10^3 Pa*** M: The molar mass of gas = the average molar mass of tail gas = 29.016 R: The gas constant=8.315*10^{3}J /(Kmol·K) T: The absolute temperature of gas=273.15 K m_{max} in a day will be under detection limit in many cases. This means, the following formula (2) can be applied for the un-decomposed HFC23 in tail gas in a month as ND_HFC23$_m$ is calculated as per formula (2)：	

Calculation method (if applicable):	ND-HFC23= $\sum m_{max\text{-}detected\ i} * BR * BQ * 24 * DG + m_{dl} * BR * BQ * 24 * DG * (DM-DD)$…… (2) Where, m_{dl} is estimated value of under detection limit: 200ppb, 0.00002% $m_{max\text{-}detected\ i}$ is maximum value in a day DM is Days of month DD is Days that all incinerators were shut down. i is the times of reaction stops in different days in a month. The requirement of the methodology AM0001 to analyze the content of HFC23 in off-gas was strictly observed. According to the registered PDD, the details of the analysis of off –gas is as follow: During operation, the content of HFC23 in off-gas is analyzed on every Thursday, in this monitoring period, 9 normal analyses have been conducted. All the analysis results conducted in normal time are not detected. For conservative reason, when a single or a group of incinerator stop, project owner immediately samples the off-gas and analyzes the content of HFC23 in off-gas to identify the amount of HFC23 in off-gas, a total of 7 such analyses have been conducted in this monitoring period. All the analysis results are not detected.
QA/QC procedures:	Measured from the gas effluent of the decomposition process and calculated. The gas chromatography shall be recalibrated monthly.
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

Data / Parameter:	D.2.6 $Q\_F_{1,y}$
Unit:	kWh
Description:	Electricity consumption by the decomposition process
Measured/ Calculated / Default:	Measured
Source of data:	Monthly Monitoring Statistic Sheet/Daily Monitoring Statistic Sheet
Value(s) of monitored parameter:	87,600 kWh Details please refer to appendix ER calculation spreadsheet section 6

Monitoring equipment:	**Type:** Electricity meter **Accuracy class:** 2.0% **Serial number:** DTS541:0611643139 (Electricity meter 1) DTS341:080218 (Electricity meter 2) **Calibration frequency:** Monthly **Date of last calibration and validity:** These two electricity meters were calibrated on 20/12/2012, 20/01/2013 respectively as required by the approved methodology AM0001/Version 03. All these calibrations were conducted by an officially accredited entity. The validity period of each calibration is five years according to China's standard: JJG 596-1999 Verification Regulation of Electrical Energy Meters with Electronics. The monthly electricity consumption by the destruction process is equal to the sum of readings of 2 electricity meters at the end of this month less the sum of readings of 2 electricity meters at the end of last month multiplied by scale factor. The reported value of $Q\_F_{1, y}$ in this monitoring period is the sum of the monthly electricity consumption from 01/01/2013 to 31/01/2013.
Measuring/ Reading/ Recording frequency:	Measured continuously Recorded daily
Calculation method (if applicable):	N/A
QA/QC procedures:	Metered using electricity meter. The electricity meter shall be calibrated monthly.
Purpose of data:	Calculation of leakage
Additional comment:	N/A

Data / Parameter:	D.2.7 $Q\_F_{2, y}$
Unit:	t- steam
Description:	Steam consumption by the decomposition process
Measured/ Calculated / Default:	Measured
Source of data:	Monthly Monitoring Statistic Sheet/Daily Monitoring Statistic Sheet/DCS Screen Dump
Value(s) of monitored parameter:	27.843 t- steam Details please refer to appendix ER calculation spreadsheet section 7

Monitoring equipment:	**Type:** Steam meter **Accuracy class:** 0.2% **Serial number:** SZZA 008745 621 (Pressure transmitter A) SZZA 008746 621 (Pressure transmitter B) **Calibration frequency:** Monthly **Date of last calibration and validity:** These two steam meters were calibrated on 23/12/2012, 23/01/2013 as required by the approved methodology AM0001/Version 03. All these calibrations were conducted by the qualified personnel. The validity period of each calibration is one year according to China's standard: JJG 882-2004 Verification Regulation of the Pressure Transmitter. The steam consumption is measured by steam flow meter and recorded automatically by DCS. DCS collects and records the readings of functioning steam meters and automatically takes the reading for accumulation. The monthly steam consumption is the accumulated value of steam consumption at the end of the month less the accumulated value of steam consumption at the end of the last month. The reported value of $Q\_F_{2,y}$ in this monitoring period is the sum of the monthly steam consumption from 01/01/2013 to 31/01/2013.
Measuring/ Reading/ Recording frequency:	Measured and recorded continuously
Calculation method (if applicable):	N/A
QA/QC procedures:	Metered using steam meter. The steam meter shall be calibrated monthly.
Purpose of data:	Calculation of leakage
Additional comment:	N/A

Data / Parameter:	D.2.8 Q_T_{y}
Unit:	t- sludge
Description:	Solid waste
Measured/ Calculated / Default:	Measured
Source of data:	Monthly Monitoring Statistic Sheet/Daily Monitoring Statistic/Weighbridge sheet
Value(s) of monitored parameter:	244.47 t- sludge Details please refer to appendix ER calculation spreadsheet section 8

Monitoring equipment:	**Type:** Electric truck scale **Accuracy class:** III **Serial number:** XK 3133: Y0509456DK(WIC-001A) **Calibration frequency:** Monthly **Date of last calibration and validity:** The electric truck scale was calibrated on 23/12/2012, 23/01/2013 respectively as required by the approved methodology AM0001/Version 03. All these calibrations were conducted by an officially accredited entity. The longest calibration validity period of each calibration is one year according to Chinese national standard JJG 539-1997, Verification Regulation of Digital Indicating Weighing Instrument. The transported solid waste is measured by electric truck scale and recorded in the weighbridge sheets. The reported value of Q_T_v in this monitoring period is the sum of the monthly transported amount of solid waste from 01/01/2013 to 31/01/2013.
Measuring/ Reading/ Recording frequency:	Daily
Calculation method (if applicable):	N/A
QA/QC procedures:	Metered using electric truck scale. The electric truck scale shall be calibrated monthly.
Purpose of data:	Calculation of leakage
Additional comment:	N/A

Data / Parameter:	D.2.9 $E\_F_{1,y}$
Unit:	t CO_2/ kWh
Description:	Emission factor of electricity supply
Measured/ Calculated / Default:	Measured and calculated
Source of data:	Coal consumption per kWh for power generation supply from Juhua Thermal Power Plant (JTPP) and IPCC default values
Value(s) of monitored parameter:	0.00095334 t CO_2/ kWh Details please refer to appendix ER calculation spreadsheet section 9
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	monthly

Calculation method (if applicable):	The electricity consumption of this project activity is supplied by Juhua Thermal Power Plant which is an own coal-fired power plant of Juhua. The monthly emission factor of electricity supply is calculated as follows: Coal consumption per kWh for power generation supply : data from JTPP report (kgce/kWh) Net calorific value of coal : 29.3 MJ/kgce (IPCC default value) Emission factor: 0.0983 $kgCO_2$/MJ (IPCC default value) Thus, $E\_F_{1,y}$ = Coal consumption per kWh for power generation supply (kgce/kWh) * Net calorific value of coal (29.3 MJ/kgce)* Emission factor (0.0983 $kgCO_2$/MJ) The reported value of $E\_F_{1,y}$ in this monitoring period is the weighted average value of the monthly CO_2 emission factors of electricity supply from 01/01/2013 to 31/01/2013.
QA/QC procedures:	The monthly report date of Coal consumption per kWh for power generation supply from JTPP report has been concluded in the routine QMS procedure of the JTPP.
Purpose of data:	Calculation of leakage
Additional comment:	N/A

Data / Parameter:	D.2.10 $E\_F_{2,y}$
Unit:	tCO_2/ t–steam
Description:	Emission factor of steam supply
Measured/ Calculated / Default:	Measured and calculated
Source of data:	Coal consumption for steam supply from Juhua Thermal Power Plant (JTPP) and IPCC default values (surveys)
Value(s) of monitored parameter:	0.3194 tCO_2/ t–steam Details please refer to appendix ER calculation spreadsheet section 10
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	monthly
Calculation method (if applicable):	The steam consumption of this project activity is supplied by Juhua Thermal Power Plant which is an own coal-fired power plant of Juhua. The monthly emission factor of steam supply is calculated as follows: Coal consumption for steam supply : data from JTPP report (kgce/ kg-steam) Net calorific value of coal : 29.3 MJ/kgce (IPCC default value) Emission factor: 0.0983 $kgCO_2$/MJ (IPCC default value) Thus, $E\_F_{2,y}$ = Coal consumption for steam supply (kgce/ kg-steam) * Net calorific value of coal (29.3 MJ/kgce)* Emission factor (0.0983 $kgCO_2$/MJ) The reported value of $E\_F_{2,y}$ in this monitoring period is the weighted average value of the monthly emission factors of steam supply from 01/01/2013 to 31/01/2013.
QA/QC procedures:	The monthly report date of Coal consumption for steam supply from JTPP report has been concluded in the routine QMS procedure of the JTPP.

Purpose of data:	Calculation of leakage
Additional comment:	N/A

Data / Parameter:	D.2.11 E _sludge $_y$
Unit:	tCO_2/ t–sludge
Description:	Emission factor of the consumption of diesel oil during transportation of sludge to landfill.
Measured/ Calculated / Default:	Calculated
Source of data:	Survey
Value(s) of monitored parameter:	0.000668339 tCO_2/ t–sludge
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	In the seventh project year, the location of the disposal site and the means of waste transportation are not changed for this project, the CO_2 emission factor for waste transport is calculated as following: F _Transport Fuel: Required fuel for the transportation of 1 ton of waste to the disposal site (t-diesel/t- sludge) Haulage Truck: 10t (load) Distance: 10 km (The actual distance from the company to the landfill is about 4 km, for conservative principle, use the value in PDD i.e.10 km to calculate.) Average fuel consumption: 4km / l Density of diesel oil: 0.833 kg / l F _Transport Fuel = 1/10*10/4*0.833(kg / t-sludge) = 0.20825 (kg / t-sludge) = 0.00020825(t-diesel / t-sludge) E _Transport Fuel: CO_2 emission factor of fuel consumed in haulage trunk (t-CO_2 / t-gasoline) Net Calorific Value of diesel oil: 43.33 (TJ / 1000 tonnes) (IPCC default value) Emission factor: 20. 2(t -C/ TJ) (IPCC default value) E _Transport Fuel = 43.33 * 20.2 * (44/12) / 1000 = 3.21(t-CO_2 / t-diesel) E _sludge $_y$=F _Transport Fuel*E _Transport Fuel =0.00020825×3.21(t-CO_2 / t-sludge) =0.000668339(t-CO_2 / t-sludge)
QA/QC procedures:	Internal double check
Purpose of data:	Calculation of leakage
Additional comment:	N/A

D.3. Implementation of sampling plan

Not applicable.

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

As per the approved methodology, the baseline emission reduction achieved by this project for this monitoring period is calculated as follows:

Baseline emissions= (Q_HFC23_y-B_HFC23_y)*GWP_HFC23

Monitoring Period	Period（Day/Month/Year)	Baseline emissions t CO_2e A=(B-C)*D	Q_HFC23_y MT B	B_HFC23_y MT C	GWP_HFC23 D
32nd	01/01/2013 to 31/01/2013	487,596.36	32.94570	0	14,800

In this monitoring period, the measured amount of HFC23 decomposed is 34.11532MT, however, the capped eligible amount of 32.94570 MT is used to calculate the emission reduction as per EB39 annex 8.

Explanations of symbols use:

Q_HFC23_y is the quantity of HFC23 destruction to be credited in this monitoring report, which is equivalent to $Q_{HFC23,\,cr,\,i,\,y}$ in the following calculation formula defined in EB39 Annex 8.

*Q_HFC23_y is the quantity of HFC23 destroyed in this monitoring report, which is equivalent to $Q_{HFC23,\,d,\,n,\,y}$ of this monitoring period in the following calculation formula defined in EB39 Annex 8.

Q_HCFC_y is the quantity of HCFC22 produced in this monitoring report, which is equivalent to $Q_{HCFC22,\,n,\,y}$ of this monitoring period in the following calculation formula defined in EB39 Annex 8.

E.1.1 Calculation of Q_HFC23_y

The quantity of HFC23 destruction to be credited (Q_HFC23_y) is calculated in accordance with the requirement of EB39 Annex8 as below.

This project activity has been registered using Version 03 of the approved methodology AM0001, the following formula is used to estimate the crediting for monitoring period.

$$Q_{HFC,cr,i,y} = MIN\left\{\begin{array}{l} MIN\left(QHCFC_{22,HIST};\sum_{n=1}^{i} Q_{HCFC,22,n,y}\right)\times MIN\left(w;\frac{\sum_{n=1}^{i} Q_{HFC,23,g,n,y}}{\sum_{n=1}^{i} Q_{HCFC,22,n,y}}\right)+Q_{HFC,23,co,y} \\ \sum_{n=1}^{i} Q_{HFC,23,d,n,y} \end{array}\right\} - \sum_{m=1}^{i-1} Q_{HFC,23,cr,m,y}$$

Where:

$Q_{HFC23,\,cr,\,i,\,y}$: Quantity of HFC23 destruction to be credited in the monitoring period i of year y

$Q_{HCFC22HIST}$: The maximum annual HCFC-22 production that is eligible for crediting as determined and fixed in the registered CDM-PDD

$Q_{HCFC22,\,n,\,y}$: Quantity of HCFC22 produced in the monitoring period n of year y, i.e. Q_HCFC_y

w : The waste generation rate (HFC23)/(HCFC22) for the originating production line as determined and fixed in the registered CDM-PDD

$Q_{HFC23,\,co,\,y}$: Quantity of HFC23 stored by the end of year y-1 and eligible for destruction in year y

$Q_{HFC23,\,g,\,n,\,y}$: Quantity of HFC23 generated in the monitoring period n of year y

$Q_{HFC23,\,d,\,n,\,y}$: Quantity of HFC23 destroyed in the monitoring period n of year y

$Q_{HFC23,\,cr,\,m,\,y}$: Quantity of HFC23 destruction credited in the monitoring period m of year y

i : Monitoring period for which issuance of CER is requested

n : Monitoring periods from the start of the year up to the monitoring period i

m : Monitoring periods of year y that preceded the monitoring period i

$$Q_{HFC,cr,i,y_0} = MIN\left\{\begin{array}{c} MIN\left(QHCFC22_{HIST};\sum_{n=1}^{i} Q_{HCFC22,n,y}\right)\times MIN\left(w;\frac{\sum_{n=1}^{i} Q_{HFC23,g,n,y}}{\sum_{n=1}^{i} Q_{HCFC22,n,y}}\right)+Q_{HFC23,co,y} \\ \sum_{n=166}^{i} Q_{HFC23,d,n,y} \end{array}\right\} - \sum_{m=1}^{i-1} Q_{HFC23,cr,m,y}$$

$$Q_{HFC,cr,i,y} = MIN\left\{\begin{array}{c} MIN\left(16,517;8,780.32\right)\times MIN\left(3\%;3.15\%\right)+0 \\ 277.01869 \end{array}\right\} - 230.46390$$

$$Q_{HFC,cr,i,y} = MIN\left\{\begin{array}{c} 8,780.32\times 3\%+0 \\ 277.01869 \end{array}\right\} - 230.46390$$

$$Q_{HFC,cr,i,y} = MIN\left\{\begin{array}{c} 263.4096 \\ 277.01869 \end{array}\right\} - 230.46390$$

$$Q_{HFC,cr,i,y} = 32.9457$$

In this project, the starting date of the crediting period is 01/08/2006 and this monitoring period is the 5th monitoring period of the 7th project year. In this monitoring period, the amount of HFC23 decomposed is 34.11532 MT, however, as per the requirement of EB39 Annex8, the capped amount 32.945700MT is used to calculate the emission reduction. It can be seen that in this monitoring period, the "w" for considering CERs is 3% and hasn't exceed the capped value given in the registered PDD, although the accumulated waste generation rate is 3.15%.

In this monitoring period, all HFC23 generated was directly sent to the decomposition process and no HFC23 was released or sold, so the quantity of HFC23 stored by the end of this monitoring period and eligible for destruction in next monitoring period is zero.

Details as below:

Period	Period of 7th project year	QHCFC22 HIST MT (A)	$\sum_{n=1}^{i} Q_{HCFC22,n.y}$ MT (B)	W (C)	$\sum_{n=1}^{i} Q_{HFC23,g,n.y}$ MT (D)	$\frac{\sum_{n=1}^{i} Q_{HFC23,g,n,y}}{\sum_{n=1}^{i} Q_{HCFC22,n,y}}$ (E)=(D)/(B)	QHFC,co,y MT (F)	$\sum_{m=1}^{i-1} Q_{HFC23,cr,m.y}$ MT (G)	$\sum_{n=1}^{i} Q_{HFC23,d,n.y}$ MT (H)
01/08/2012 to 31/08/2012	1st	16,517	1,541.94	3%	48.36401	3.14%	0	0	48.36401
01/09/2012 to 30/09/2012	2nd	16,517	3,082.96	3%	97.32621	3.16%	0	46.25820	97.32621
01/10/2012 to 31/10/2012	3rd	16,517	4,656.95	3%	147.62766	3.17%	0	92.48880	147.62766
01/11/2012 to 31/12/2012	4th	16,517	7,682.13	3%	242.90337	3.16%	0	139.70850	242.90337
01/01/2013 to 31/01/2013	5th	16,517	8,780.32	3%	277.01869	3.15%	0	230.46390	277.01869

(A) $QHCFC22_{HIST}$

This value is fixed in the registered CDM-PDD as 16,517 MT.

The actual HCFC22 output from the product line where HFC23 is originating, where is limited to the "existing production capacity" of the production line defined (in tones of HCFC22) as the maximum (annual) production during any of the last three years including CFC production at swing plants adjusted appropriately to account for the different production rates of HCFC22 and CFCs. During the most recent three years, the HCFC22 outputs of this product line are: 12,866 MT in 2002, 15,499 MT in 2003, and 16,517 MT in 2004. So, the maximum (annual) output of HCFC22 will be 16,517 MT.

(B) $\sum_{n=1}^{i} Q_{HCFC22,n.y}$

Period of 7th project year	$Q_{HCFC22,n.v.}$ (Unit: MT)	$\sum_{n=1}^{i} Q_{HCFC22,n.y}$ (Unit: MT)
1st	1,541.94	1,541.94
2nd	1,541.02	3,082.96
3rd	1,573.99	4,656.95
4th	3,025.18	7,682.13
5th	1,098.19	8,780.32

(C) w

This value is fixed in the registered CDM-PDD as 3%.

The value of w is set at the lowest of the three most recent historical annual values and is not to exceed 3% (0.03 tonnes of HFC23 produced per tonne of HCFC22 manufactured). During the most recent three years, the waste generation rates are: 5.082% in 2002, 5.442% in 2003, and 4.060% in 2004. So, w equals to 3.0%.

For this project activity, the project owner didn't carry out any retrofit or replacement of key components of the reactor/column/condenser system on the originating plant (No. 2-703 production plant) since the year 2002 up to now. It's valid to establish the w rate using the historical data of waste generation rate from No. 2-703 production plant.

(D) $\sum_{n=1}^{i} Q_{HFC23,g,n.y}$

Period of 7th project year	$Q_{HFC23,g,n,y}$ (Unit: MT)	$\sum_{n=1}^{i} Q_{HFC23,g,n.y}$ (Unit: MT)
1st	48.36401	48.36401
2nd	48.96220	97.32621
3rd	50.30145	147.62766
4th	95.27571	242.90337
5th	34.11532	277.01869

In this monitoring period, all HFC23 generated was directly sent to the decomposition process and no HFC23 was released or sold, so the quantity of HFC23 generated ($Q_{HFC23,g,n,v}$) equals to the quantity of HFC23 destroyed ($Q_{HFC23,d,n,v}$, i.e.*Q_HFC23_v)

In this monitoring period, the quantity of HFC23 generated ($Q_{HFC23,g,n,v}$) is calculated as the product of quantity of waste HFC23 supplied to the decomposition process (q_HFC23_v) measured in metric tonnes and the purity of the waste HFC23 (P_HFC23_v) supplied to the decomposition process that is determined and expressed as the fraction of HFC23 in the waste.

$Q_{HFC23,g,n,y}$=*Q_HFC23_y= q_HFC23_y* P_HFC23_y

$Q_{HFC23,g,n,v}$=*Q_HFC23y=34.45888*99.00300 %

QHFC23,g,n,y=*Q_HFC23y=34.115321MT

q_HFC23_y : Refer to D.2.1

P_HFC23_y : Refer to D.2.2

(E) $\frac{\sum_{n=1}^{i} Q_{HFC23,g,n,y}}{\sum_{n=1}^{i} Q_{HCFC22,n,y}}$

Period of 7th project year	$\frac{\sum_{n=1}^{i} Q_{HFC23,g,n,y}}{\sum_{n=1}^{i} Q_{HCFC22,n,y}}$ (Unit: MT)	$\frac{\sum_{n=1}^{i} Q_{HFC23,g,n,y}}{\sum_{n=1}^{i} Q_{HCFC22,n,y}}$
1st	48.36401 / 1,541.94	3.14%
2nd	97.32621/3,082.96	3.16%
3rd	147.62766/4,656.95	3.17%
4th	242.90337/7,682.13	3.16%
5th	277.01869/8,780.32	3.15%

(F) $Q_{HFC23, CO,y}$

The quantity of HFC23 stored by the end of last project year and eligible for destruction in this project year is zero.

(G) $\sum_{m=1}^{i-1} Q_{HFC23,cr,m.y}$

Period of 7th project year	QHFC23,cr,m,y (Unit: MT)
1st	0
2nd	46.25820
3rd	46.23060
4th	47.21970
5th	90.75540
$\sum_{m=1}^{i-1} Q_{HFC23,cr,m.y}$	230.46390

(H) $\sum_{n=1}^{i} Q_{HFC23,d,n.y}$

Period of 7th project year	QHFC23,d,n,y (Unit: MT)	$\sum_{n=1}^{i} Q_{HFC23,d,n.y}$ (Unit: MT)
1st	48.36401	48.36401
2nd	48.96220	97.32621
3rd	50.30145	147.62766
4th	95.27571	242.90337
5th	34.11532	277.01869

In this monitoring period, the quantity of HFC23 destroyed ($Q_{HFC23,d,n,y}$) is calculated as the product of quantity of waste HFC23 supplied to the decomposition process (q_HFC23_y) measured in metric tonnes and the purity of the waste HFC23 (P_HFC23_y) supplied to the decomposition process that is determined and expressed as the fraction of HFC23 in the waste.

QHFC23,d,n,y= *Q_HFC23y= q_HFC23y * P_HFC23y

QHFC23,d,n,y= *Q_HFC23y=34.45888*99.00300 %

QHFC23,d,n,y= *Q_HFC23y= 34.11532MT

q_HFC23y : Refer to D.2.1

P_HFC23$_y$: Refer to D.2.2

E.1.2 Calculation of B_HFC23$_y$

The baseline quantity of HFC23 destroyed is the quantity of the HFC23 waste stream required to be destroyed by the applicable regulations.

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

Where:

r_y is the fraction of the waste stream required to be destroyed by the regulation that apply during year y.

China is in non-annex B Parties and still has no obligation to decompose HFC23, then r_y =0. The HFC23 waste is typically released to the atmosphere, so the baseline scenario is zero decomposition. If there is any new regulation on the HFC23 emission, r_y should be modified then.

Parameter	Data unit	Value	Reference
B_HFC23$_y$	MT	0	Calculated
*Q_HFC23$_y$	MT	34.11532	Calculated (ref sectionE.1.1)
r_y	%	0	No regulation for destruction in China

E.2. Calculation of project emissions or actual net GHG removals by sinks

In this project, since it uses electric heater to obtain the decomposition temperature instead of using LNG fuel etc, the GHG emissions (E_DP$_y$) due to the HFC23 decomposition process are:

$E\_DP_y = ND\_HFC23_y * GWP\_HFC23 + *Q\_HFC23_y * EF$

Where:

ND_HFC23$_y$: the quantity of HFC23 not destroyed during the year measured in metric tones;

EF: Emission factor due to the thermal decomposition process of converting the carbon in the HFC23 into CO_2, which is released to the atmosphere, equals to 0.62857.

$E\_DP_y = ND\_HFC23_y * GWP\_HFC23 + *Q\_HFC23_y * EF$

$E\_DP_v = 0.0001503 * 14{,}800 + 34.11532 * 0.62857$

$E\_DP_y = 23.67\ tCO_2e$

Parameter	Data unit	Value	Reference
E_DP$_y$	t CO_2e	23.67	Calculated
ND_HFC23$_y$	MT	0.0001503	D.2. 5
GWP_HFC23	—	14800	IPCC guidelines
***Q_HFC23$_y$**	MT	34.11532	Calculated (ref section E.1.1)
EF	—	0.62857	CO_2 eqvt generated by HFC23 destruction process

E.3. Calculation of leakage

Leakage is emissions of greenhouse gases due to the project activity that occur outside the project boundary. The sources of leakage due to the destruction process are:

· Greenhouse gas (CO_2 and N_2O) emissions associated with the production of purchased energy (steam and /or electricity)

· CO_2 emissions due to transport of sludge to the landfill

$$L_y = \sum i(Q\_F_{i,y} * E\_F_{i,y}) + Q\_T_{,y} * E\_sludge_{,y}$$

There are two kinds of energy consumption during the destruction process, i.e. electricity and steam.

$$L_y = Q\_F_{1,y} * E\_F_{1,y} + Q\_F_{2,y} * E\_F_{2,y} + Q\_T_{,y} * E\_sludge_{,y}$$

Where：

$Q\_F_{1,y}$: Electricity consumption by the destruction process, kWh

$E\_F_{1,y}$: CO_2 emission factor of electricity supply, CO_2/ kWh

$Q\_F_{2,y}$: Steam consumption by the destruction process, t- steam

$E\_F_{2,y}$: CO_2 emission factor of steam supply, tCO_2/ t–steam

$Q\_T_{,y}$: Solid waste, t_ sludge

$E\_sludge_{,y}$: CO_2 emission factor for waste transport, tCO_2/t-sludge

$$L_y = Q\_F_{1,y} * E\_F_{1,y} + Q\_F_{2,y} * E\_F_{2,y} + Q\_T_{,y} * E\_sludge_{,y}$$

$$L_y = 87{,}600 * 0.00095334 + 27.843 * 0.3194 + 244.47 * 0.000668339$$

$$Ly = 92.57 tCO_2e$$

Parameter	Data unit	Value	Reference
L_y	t CO_2e	92.57	Calculated above
$Q\_F_{1,y}$	KWh	87,600	D.2.6
$E\_F_{1,y}$	t CO_2/ kWh	0.00095334	D.2.9
$Q\_F_{2,y}$	t–steam	27.843	D.2.7
$E\_F_{2,y}$	tCO_2/ t–steam	0.3194	D.2.10
$Q\_T_{,y}$	t_ sludge	244.47	D.2.8
$E\_sludge_{,y}$	tCO_2/t-sludge	0.000668339	D.2.11

E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO_2e)	Project emissions or actual net GHG removals by sinks (t CO_2e)	Leakage (t CO_2e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO_2e)
Total	487,596.36	23.67	92.57	487,480

The total emission reduction achieved by this project activity during the 32nd monitoring period is therefore:
ERy = (Q_HFC23y－B_HFC23y) *GWP_HFC23－E_DPy－Ly
ERy = (32.94570－0)*14,800－23.67－92.57
ERy = 487,480 tCO2e

Total baseline emissions: **487,596.36** tCO_2e

Total project emissions: **23.67**tCO_2e

Total leakage: **92.57**tCO_2e

Total emission reductions: **487,480** tCO_2e (round down)

E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO_2e)	**491,726***	**487,480**

*Note: The estimation of emission reductions for the 32nd monitoring period is the product of the Estimation of emission reductions for one year (5,789,682 tCO_2e) as per PDD and the ratio which is 31 days in the 32nd monitoring period divided by 365 days in the 7th project year

Values applied in ex-ante calculation of the registered CDM-PDD=5,789,682*(31/365)

=491,726tCO_2e

E.6. Remarks on difference from estimated value in registered PDD

In this monitoring period, the actual values of emission reductions is lower than the estimated values in ex-ante calculation or registered PDD, which is due to the shut down event of HFC23 decomposition facility.

E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards
Emission reductions or GHG removals by sinks (t CO_2e)	Not applicable	**487,480**

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Document information

Version	*Date*	*Description*
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.

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