



2ND ASSESSMENT REPORT OF THE

VCS **Proposed Methodology:**

“GREENHOUSE GAS EMISSION REDUCTIONS BY
RECOVERING AND DESTROYING OZONE DEPLETING
SUBSTANCES (ODS) FROM PRODUCTS”

REPORT NO. PL/VCS-4366293/01/2011

REVISION 02



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

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Summary:

To meet the requirement of VCS Double Approval process, second assessment for the “VCS Proposed Methodology for GREENHOUSE GAS EMISSION REDUCTIONS BY RECOVERING AND DESTROYING OZONE DEPLETING SUBSTANCES (ODS) FROM PRODUCTS” was carried out by Bureau Veritas Certification. Assessment was based on the Voluntary Carbon Standard Program (VCS Program) which includes the Voluntary Carbon Standard (VCS 2007.1) and the VCS Program Guidelines.

The validation is an independent third party assessment of the new methodology. In particular the validation has to confirm that the baseline, the monitoring plan, and the entire methodology are in compliance with relevant VCS rules and procedures. The validation of the new methodology done through a double approval process, according to VCS standard, is required as necessary to provide assurance to stakeholders of the quality of the new methodology.

The first output of the evaluation process is a checklist of Corrective Actions Requests (CARs) and Clarifications (CLs), presented in Annex A. In terms of this output, the methodology proponent revised the new methodology document.

The results of the VCSA global stakeholder consultation are taken into account in the evaluation of project methodology.

The assessment process proved that the proposed methodology meets the requirements of VCS Program which includes the Voluntary Carbon Standard (VCS, 2007.1) and the Program Guidelines. In particular it complies with the eligibility requirements, provides transparent baseline scenario identification and description, and is internally coherent including baseline and monitoring methodologies.

In summary, it is Bureau Veritas Certification’s opinion that the new methodology element documentation, as finally amended (Version 3) is consistent with its objectives and correctly meets the relevant Voluntary Carbon Standard (VCS 2007.1) requirements, including “Update to the VCS 2007.1: Extension of Scope to Include Ozone-Depleting Substances”, issue Jan. 26th, 2010 as well as VCS ODS Requirements, v3.0, issue March 8th, 2011.

Report No.: PL-4366293/01/2011	Subject Group: VCS
Project title: 2 nd assessmsnt of the: VCS Proposed Methodology for Greenhouse Gas Emission Reductions By Recovering and Destroying Ozone Depleting Substances (ODS) from Products	
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ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

Abbreviations

AM	Approved Methodology
AR	Assessment Report
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO2	Carbon Dioxide
ER	Emission Reduction
GHG	Greenhouse Gases
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
ODS	Ozone Depleting Substances
PD	Project Description
PE	Project Emissions
VCS	Voluntary Carbon Standard



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

TABLE OF CONTENTS

1	INTRODUCTION.....	4
2	OBJECTIVE	4
3	ASSESSMENT SCOPE	5
4	EVALUATION PROCESS	6
5	CONFLICT OF INTEREST REVIEW	6
6	ASSESSMENT TEAM	6
7	CORRECTIVE, CLARIFICATIONS, FORWARD ACTIONS REQUESTS AND SUPPLEMENTAL INFORMATION	6
8	ASSESSMENT RESULTS: EVALUATION OF THE PROPOSED NEW METHODOLOGY BY THE DESK REVIEWER.....	6
9	OUTLINE CHANGES NEEDED TO IMPROVE THE METHODOLOGY DURING THE PRELIMINARY ASSESSMENT AND SUBSEQUENT REVIEWS	7
10	GENERAL INFORMATION ON THE SUBMITTED PROPOSED NEW METHODOLOGY.....	8
11	DETAILS OF THE EVALUATION OF THE PROPOSED NEW METHODOLOGY.....	9
12	FINAL RECOMMENDATION FOR THE PROPOSED NEW VCS BASELINE AND MONITORING METHODOLOGY	14
13	CURRICULA VITAE OF THE ASSESSMENT TEAM MEMBERS	14
	ANNEX A	15



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

1 INTRODUCTION

Bureau Veritas Certification (BVC) has performed the second assessment under the VCS Double Approval Process for the "VCS proposed methodology for Voluntary Carbon Standard Proposed Methodology for Greenhouse Gas Emission Reductions By Recovering and Destroying Ozone Depleting Substances (ODS) from Products" prepared by Energy Changes Projekt Entwicklung GmbH on behalf of USG Umweltservice GmbH.

This report summarizes the findings of assessment of the new methodology, performed on the basis of the criteria proposed to provide consistent Voluntary Carbon Standard (2007.1) application, monitoring and reporting.

Bureau Veritas Certification operated in the capacity of second validator.

2 OBJECTIVE

2.1 Purpose

The purpose of independent entity assessment report is to review the new methodology documentation and to assess whether the following issues are found appropriate and adequate:

- Methodology's applicability criteria;
- Project baseline;
- Additionality;
- Definition of the project's physical boundary;
- Sources and types of gases included;
- Estimation of baseline emissions;
- Estimation of project emissions, and emission reductions;
- Approach for calculating leakage;
- Monitoring approach, including monitored and not monitored data and parameters used in emissions calculations.

2.2 Relevant VCS requirements

The new methodology has to comply with the following VCS 2007.1 requirements:

- All methodologies applying for approval under the VCS Program shall be approved via the double approval process (VCS, 2007.1, Section 6.1);
- VCS Program methodologies shall comply with all requirements in the VCS 2007.1, clause 6.1 to 6.4.4 (VCS, 2007.1, Section 6.1);

VCS Program methodologies shall include (VCS, 2007.1 Section 6.1):

- Applicability criteria that defines the area of project eligibility;
- A process that determines whether the project is additional or not (based on criteria laid down in clause 6.4);
- Determination criteria for the most likely baseline scenario; and
- All necessary monitoring aspects related to monitoring and reporting of accurate and reliable GHG emission reductions or removals;

Methodologies shall be informed by a comparative assessment of the project and its alternatives in order to identify the baseline scenario (VCS, 2007.1, Section 6.1).



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

The project proponent shall select the most conservative baseline scenario for the methodology. This shall reflect what most likely would have occurred in the absence of the project (VCS, 2007.1, Section 6.3).

In developing the baseline scenario, the project proponent shall select the assumptions, values and procedures that help ensure that GHG emission reductions or removal enhancements are not overestimated (VCS, 2007.1, Section 6.3).

Based on selected or established criteria and procedures, the project proponent shall quantify GHG emissions and/or removals separately for:

- Each relevant GHG, for each GHG source, sink and/or reservoir relevant for the project; and each GHG source, sink and/or reservoir relevant for the baseline scenario;
- When highly uncertain data and information are relied upon, the project proponent shall select assumptions and values that ensure that the quantification does not lead to an overestimation of GHG emission reductions or removal enhancements (VCS, 2007.1, Section 6.5.2).

3 ASSESSMENT SCOPE

The assessment scope is defined as an independent and objective review of the new baseline and monitoring methodology document. The information in this document is reviewed against the i) Voluntary Carbon Standard 2007.1 (VCS 2007.1). ii) VCS Program Normative Document: Double Approval Process, v1.1, iii) VCS Update to the VCS 2007.1: Extension of Scope to Include Ozone-Depleting Substances (January 26th 2010) and ODS Requirements, v3.0 (March 8th 2011), and also against the AR methodologies and technical documents referenced by the methodology.

The scope of this assessment, as required by the VCS Program Normative Document: Double Approval Process, v1.1 includes at a minimum, the following:

- i) Eligibility criteria: Assessment of whether the methodology's eligibility criteria are appropriate and adequate.
- ii) Baseline approach: Assessment of whether the approach for determining the project baseline is appropriate and adequate.
- iii) Additionality: Assessment of whether the approach/tools for determining whether the project is additional are appropriate and adequate.
- iv) Project boundary: Assessment of whether an appropriate and adequate approach is provided for the definition of the project's physical boundary and sources and types of gases included.
- v) Emissions: Assessment of whether an appropriate and adequate approach is provided for calculating baseline emissions, project emissions and emission reductions.
- vi) Leakage: Assessment of whether the approach for calculating leakage is appropriate and adequate.
- vii) Monitoring: Assessment of whether the monitoring approach is appropriate and adequate.
- viii) Data and parameters: Assessment of whether monitored and not monitored data and parameters used in emissions calculations are appropriate and adequate.
- ix) Adherence to the project-level principles of the VCS Program: Assessment of whether the methodology adheres to the project-level principles of the VCS Program (see Section 5.1.1).



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

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

4 EVALUATION PROCESS

The evaluation process consisted of the following three phases:

- Desk review of the new methodology document;
- Follow-up interviews with project stakeholders;
- Resolution of outstanding issues and the issuance of the final assessment report and opinion.

The overall validation, from Contract Review to Assessment Report and Opinion, was conducted using Bureau Veritas Certification internal procedures.

5 CONFLICT OF INTEREST REVIEW

Prior to beginning of the independent assessment work on the methodology, Bureau Veritas Certification has conducted an evaluation to identify any potential conflicts of interest associated with the task. No potential conflicts were found for this project.

6 ASSESSMENT TEAM

Bureau Veritas Certification assessment team consisted of the following individuals who was selected based on his GHG validation experience, as well as familiarity with the sectoral scope 11 - Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride

Flavio Gomes – Internal Technical Reviewer

Witold Dżugan – GHG Verifier

Aleksey Ilyn – ODS / halocarbons expert

7 CORRECTIVE, CLARIFICATIONS, FORWARD ACTIONS REQUESTS AND SUPPLEMENTAL INFORMATION

The team requested clarification and supplemental information for the validation process. The corrective action, clarifications, forward actions requests, supplemental information and the responses provided are summarized in the following sections in Annex A for transparency reasons.

8 ASSESSMENT RESULTS: EVALUATION OF THE PROPOSED NEW METHODOLOGY BY THE DESK REVIEWER

Evaluation of the proposed methodology as per the Voluntary Carbon Standard 2007.1 (VCS 2007.1), VCS Update to the VCS 2007.1: Extension of Scope to Include Ozone-Depleting Substances (January 26th 2010) and ODS Requirements, v3.0 (March 8th 2011) to meet the guidelines, requirement and necessary tools for addressing the methodological issues has been completed. It has been confirmed that the requirements against the Standard are appropriately and adequately met, addressing the scope of the methodology.

The validation process focussed on assessing the appropriateness and adequacy of the new methodology's applicability criteria, baseline approach, additionality, project boundary, emissions, leakage, monitoring, data and parameters, and compliance in the application of the



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

new methodology with the Voluntary Carbon Standard (VCS, 2007.1). The assessment results are summarized below, which are further substantiated with details in the following sections and in the Annex A.

The proposed methodology is well equipped to address project activities which would aim at emission reduction of the covered ODS.

Coverage of the Voluntary Carbon standard 2007.1 new methodology sections as outlined in the applicable guidelines:

- The language is sufficiently transparent, precise and unambiguous to undertake a full assessment.
- The proposed methodology reflects methodology-specific information and not project specific information.
- The baseline methodology is internally consistent i.e., the applicability conditions, project boundary, baseline emissions estimation procedure, project emission estimation procedure, leakage, and monitoring.
- The baseline scenario identification has a clear and concise presentation of methodological steps to identify baseline scenario and baseline emissions.
- The additionality section has clear and concise presentation of methodological steps to assess additionality.
- The emission reductions calculation section has relevant formula provided and all variables used are adequately explained.
- All the issues raised in the methodology desk review are addressed and are sufficiently and properly explained.
- The baseline methodology is internally consistent with the monitoring methodology, which is clearly documented in accordance with applicable guidelines.

9 OUTLINE CHANGES NEEDED TO IMPROVE THE METHODOLOGY DURING THE PRELIMINARY ASSESSMENT AND SUBSEQUENT REVIEWS

9.1 Major changes

No major changes or structural changes were needed to improve the methodology at this stage of assessment.

9.2 Minor changes

Several minor changes were introduced to the methodology as a result of the assessment process, including:

- Clarification of the project emissions from fossil fuel consumption attributable to the ODS recovery facility to include third party used fossil fuel to generate energy for the ODS recovery facility,
- Clarification of the requirements for the weighing instruments and respective metrological requirements.

The above changes were discussed with the proponent and included in the Version 3 of the methodology.

ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

9.3 Changes suggested by Public Comments

According to the VCS methodology double approval process, a proposed VCS methodology has to be available for public comments for 30 days.

Public comments were made and were taken due account by the project proponent by subsequent versions of the methodology

10 GENERAL INFORMATION ON THE SUBMITTED PROPOSED NEW METHODOLOGY

The comments below refer to the Version 3 of the “VCS Proposed Methodology for GREENHOUSE GAS EMISSION REDUCTIONS BY RECOVERING AND DESTROYING OZONE DEPLETING SUBSTANCES (ODS) FROM PRODUCTS” as submitted by the proponent after the changes implemented in result of the assessment process.

10.1 One sentence describing the purpose of the methodology

The methodology facilitates the quantification of the emission reductions related to recovery and destruction of ODS refrigerants and/or ODS blowing agents contained in end of life refrigerator appliances.

10.2 Summary description of the methodology

The methodology is applicable to project activities recovering and destroying ODS from products where the baseline scenario is the partial or total atmospheric release of ODS. Project activities can be implemented in Article 5 as well as in Non-Article 5 countries, as defined by the Montreal Protocol.

The methodology specifies that only ODS listed in its Annex I and for which Article 4 of the 26 January 2010 Update to the VCS 2007.1: Extension of Scope to Include Ozone-Depleting Substances, are eligible.

The methodology can separately be applied either for ODS refrigerants and/or ODS blowing agents. In the case of ODS blowing agents the methodology is only applicable to project activities recovering and destroying ODS blowing agents contained in insulation foam of end of life refrigerator appliances. The ODS blowing agent must be extracted from the foam to a concentrated form prior to destruction. This must be done under negative pressure to ensure that fugitive release of ODS cannot occur.

The methodology does not apply to the destruction of stockpiled ODS (accumulated and maintained as a supply for future use).

All ODS must be collected, stored, and transported in cylinders or other hermetically sealed containers.

10.3 Relationship with approved or pending methodologies

VCS Proposed Methodology for GREENHOUSE GAS EMISSION REDUCTIONS BY RECOVERING AND DESTROYING OZONE DEPLETING SUBSTANCES (ODS) FROM PRODUCTS directly refers to the following documents:



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

- Climate Action Reserve (CAR): U.S. Ozone Depleting Substances Project Protocol
- Climate Action Reserve (CAR): Article 5 Ozone Depleting Substances Project Protocol Destruction of Article 5 Ozone Depleting Substances Banks
- CDM Tool for the demonstration and assessment of additionality
- CDM Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion
- CDM Tool to calculate baseline, project and/or leakage emissions from electricity consumption
- CDM “Tool to calculate the emission factor for an electricity system”;
- RAL Deutsches Institut für Gütesicherung: Quality Assurance and Test Specifications for the Demanufacture of Refrigeration Equipment

11 DETAILS OF THE EVALUATION OF THE PROPOSED NEW METHODOLOGY

The following validation process description refers to the assessment carried out by the second validator based on the version 2, dated Jan. 11, 2011 – issued as a result of the 1st assessment and version 3, dated June 9, 2011 of the methodology.

11.1 Applicability conditions

The methodology is applicable to project activities recovering and destroying ODS from products where the baseline scenario is the partial or total atmospheric release of ODS. Project activities can be implemented in Article 5 as well as in Non-Article 5 countries – as defined by the Montreal Protocol.

The methodology specifies that only ODS listed in its Annex I and for which Article 4 of the 26 January 2010 Update to the VCS 2007.1: Extension of Scope to Include Ozone-Depleting Substances, are eligible. This is also in line with the eligibility criteria set out in the VCS ODS Requirements, v3.0, issue March 8th, 2011.

The methodology further specifies that it can separately be applied either for ODS refrigerants and/or ODS blowing agents. In the case of ODS blowing agents the methodology is only applicable to project activities recovering and destroying ODS blowing agents contained in insulation foam of end of life refrigerator appliances. The ODS blowing agent must be extracted from the foam to a concentrated form prior to destruction.

The methodology does not apply to the destruction of stockpiled ODS (accumulated and maintained as a supply for future use).

11.1.1 Consideration of the validator regarding methodology applicability conditions

The applicability conditions stated by the methodology are consistent with the proposal and the technical approaches presented by the methodology and are in line with the relevant VCS requirements.

11.2 Definition of the project boundary

The methodology specifies that project boundary includes:

- the recovery facility,



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

- transportation from the recovery facility to the destruction facility and
- the destruction facility.

11.2.1 Consideration of the validator regarding the project boundary

The project boundary defined in terms of gases, emission sources and physical delineation is appropriate and rational.

11.3 Determining the baseline scenario and demonstrating additionality

The methodology specifies that Step 1 of the latest version of the “CDM Tool for the demonstration and assessment of additionality” should be followed to identify all realistic and credible baseline alternatives. The methodology appropriately indicates impacts of the relevant policies and regulations related to the management of ODS banks that need to be taken into account. Such policies or regulations may include mandatory ODS capture or destruction requirements because of regional or local environmental regulations. In addition, the assessment of alternative scenarios should take into account regional economic and technological circumstances.

11.3.1 Consideration of the validator regarding the baseline scenario determination and additionality demonstration

The application of the methodology provides clear, transparent and rational way to determine the baseline scenario. The basis for assessing additionality is appropriate and adequate.

11.4 Methodological basis for calculating baseline emissions and emission reductions

Baseline emission estimation is appropriately covered in the methodology.

The baseline emissions for ODS refrigerants are calculated based on the amount of ODS destroyed by the project activity which would have been vented into the atmosphere, destroyed and/or reused in the baseline. Baseline emissions for ODS blowing agents will be calculated based on the amount of ODS blowing agents contained in insulation foams of refrigeration appliances from which ODS is recovered and the amount of ODS blowing agent sent to the destruction facility.

11.4.1 Considerations of the validator regarding the methodological basis for calculating baseline emissions and emission reductions.

The basis for estimating of baseline emissions is appropriate and adequate.

11.5 Leakage

Leakage emissions occur where in the baseline ODS refrigerant would have been re-used and in the project scenario must be substituted by other chemicals. Reuse may result in a gradual

ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

release of ODS over the crediting period. When refrigerant ODS are destroyed, continued demand for refrigeration will lead to the production and consumption of other refrigerant chemicals whose production is still legally allowed.

11.5.1 Considerations of the validator regarding the leakage treatment

The treatment of leakage is appropriate and adequate.

11.6 Data and parameters NOT monitored

The proposed methodology clearly describes for each parameter: data unit, the equations of the methodology where the parameter must be applied, description of each parameter, the source of data and the measurement procedure (when applicable).

11.6.1 Considerations of the validator regarding the treatment of data and parameters not monitored

Data and parameters not monitored are addressed appropriately and adequately.

11.7 Key data and parameters monitored

The proposed methodology clearly describes data that are determined throughout the crediting period.

The data sources and measurement procedures are proposed in the tables with data for parameters monitored. They are adequate, consistent, accurate and reliable.

The monitoring frequency for the data and parameters are chosen appropriately and do not require additional changes.

11.7.1 Considerations of the validator regarding the treatment of data and parameters for monitored data

Data and parameters monitored are addressed appropriately and adequately.

11.8 Assessment of uncertainties

This methodology refers to IPCC guidelines wherever possible. Moreover CDM tools and guidance are used for deriving conservative estimates. Despite this, choice of parameters essentially is critical in reducing uncertainties. If uncertainty is significant, project proponents should choose data such that it indisputably tends to under-estimate, rather than over-estimate emission reductions.

11.8.1 Considerations of the validator regarding the assessment of uncertainties

The sources and the treatment of uncertainties listed by the methodology are appropriate and adequate.

11.9 Transparency, conservativeness and consistency

The baseline methodology is presented in adequate and transparent manner. Conservative assumptions are proposed wherever it is not possible to use unreliable data sources.



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

11.9.1 Considerations of the validator regarding the transparency, conservativeness and consistency of the methodology

- Transparency
The proposed baseline methodology is presented in a generally adequate and transparent manner
- Conservativeness:
Conservative assumptions are proposed wherever it is not possible to use unreliable data sources. It should also be noted that whether the methodology is conservative or not will depend on the integrity of the data used and monitoring of reliable performance data.
- Consistency:
The new baseline and monitoring methodology is internally consistent.
In general terms the proposed methodology is technical transparent, the technical approaches are conservative and the methodology as a whole is consistent.
The validator considers that the new baseline and monitoring methodology is internally consistent.

11.10 Monitoring

The proposed new methodology proposes methods for monitoring of the following elements:

- A description of each monitoring task to be undertaken, and the technical requirements
- Parameters to be measured
- Data to be collected and data collection techniques
- Frequency of monitoring
- Quality Assurance and Quality Control (QA/QC) procedures
- Data archiving procedures
- Roles, responsibilities and capacity of monitoring team and management

Two issues have been discussed with the methodology proponent in relation to monitoring.

CL 4

Please clarify what is relative accuracy of weighing admissible.

Please specify capacity of cylinders and other containers and tanks for collection and storage of recovered ODS (refrigerants and blowing agents).

Response

RAL GZ 728 (Quality Assurance and Test Specifications for the Demanufacture of Refrigeration Equipment) in its new version (to be published see attached, page 18 of 40 in German) is using accuracy of +/- 0.1 kg.

No specific requirements for capacity of containers and tanks for collection and storage of recovered ODS is envisaged.

Rephrasing is proposed:

“Weighing instruments used must comply with the relevant national requirements and/or international standards - such as Directive 2009/23/EC or OIML R 76-1 – and be subject to regular calibration, as set out in the relevant national requirements and/or international



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

standards to accuracy appropriate to its accuracy class. These instruments shall have a measuring range corresponding to the capacity of containers and tanks weighed.”

Included in the Version 3 of the methodology.

CL 3

Please clarify how potential heat consumption is considered under calculation of energy consumption at the ODS recovery facility.

Response

In Determination of $PE_{FC,j,y}$ Version 03 of the methodology clarifies that all fuel consumption has to be taken into account which is attributable to the recovery facility including third party used fossil fuel to generate energy for the project plant.

11.10.1 Considerations of the validator regarding the monitoring methodology

The monitoring is addressed appropriately and adequately.

11.11 Adherence to the project-level principles of the VCS Program

The proposed methodology adheres to the project level principles of the VCS Program.

11.11.1 Validator considerations regarding the Adherence to the project-level principles of the VCS Program

In general terms the proposed methodology meets the VCS requirements stated in the VCS 2007.1 (clause 6.1 to 6.4.4), as well as the “Update to the VCS 2007.1: Extension of Scope to Include Ozone-Depleting Substances”, issue Jan. 26th, 2010 as well as VCS ODS Requirements, v3.0, issue March 8th, 2011.

11.12 Public comments consideration

Public comments were taken due account by the project proponent in the subsequent versions of the methodology. The project proponent has adequately responded to all the queries incorporating corrections, modifications and suggestions. Responses to the comments are assessed to be adequate and appropriate.

During the first validation process, the auditor has reviewed the actions taken by the developer and is assessed as adequate. As a part of the double approval process the second validator has also reviewed the project proponent’s response to the public comments and also in line with the changes made as a part of the second assessment and is assessed to be adequate and appropriate.



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

**12 FINAL RECOMMENDATION FOR THE PROPOSED NEW VCS
BASELINE AND MONITORING METHODOLOGY**

The assessed and evaluated methodology with the title “VCS Proposed Methodology for GREENHOUSE GAS EMISSION REDUCTIONS BY RECOVERING AND DESTROYING OZONE DEPLETING SUBSTANCES (ODS) FROM PRODUCTS” Version 3 of June 9, 2011 meets the requirements of the Voluntary Carbon Standard (VCS, 2007.1).

The assessment process proved that the proposed methodology meets the requirements of VCS Program which includes the Voluntary Carbon Standard (VCS, 2007.1) and the Program Guidelines. In particular it complies with the eligibility requirements, provides transparent baseline scenario identification and description, and is internally coherent including baseline and monitoring methodologies.

The evaluated methodology is consistent with its objectives and meets the requirements of VCS Program which includes the Voluntary Carbon Standard (VCS, 2007.1) and the Program Guidelines.

**13 CURRICULA VITAE OF THE ASSESSMENT TEAM
MEMBERS**

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

Mr. Witold Dżugan is a lead auditor for environment and quality management systems and a GHG verifier with 15 years of experience. He holds a Master's degree in environmental engineering and have professional background in HVAC systems and waste / wastewater management.

Dr Aleksey Ilyin holds PhD in technical sciences (1989). He has defended a thesis in Moscow Academy of fine chemical technology on theme “Pirolisis of organofluoric crude in reactor with molten heat-transfer agent and reactors of tubular type”. ODS specialist, member of editorial board of Journal “Fluorine Notes”, Government of Russia prize laureate (2001) for development of non ozone depleting refrigerants technologies and their introduction in industry. Currently he is deputy head of technological department on technical development at OJSC “HaloPolymer”.



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

Annex A
List of Corrective Action Requests (CARs) and Clarifications (CLs)
 GREENHOUSE GAS EMISSION REDUCTIONS BY RECOVERING AND DESTROYING
 OZONE DEPLETING SUBSTANCES (ODS) FROM PRODUCTS
 Version 02; Date: 11/01/2011

Corrective Action Requests	Reference	Summary of project owner response	Validation team conclusion
<p>CL 1</p> <p>Using examples, please explain technologies of blowing agent recovering from foams. What is negative (or absolute) pressure admissible?</p> <p>Please also specify types of used extraction agents, their GWP.</p>	<p>P.3. Applicability. Paragraph 4.</p>	<p>Please see attached to these responses a process diagram of an exemplary technology for recovery of blowing agents (SEG’s patented technology) (Annex A.I)</p> <p>In line with Climate Action Reserve: <i>U.S. Ozone Depleting Substances Project Protocol Destruction of U.S. Ozone Depleting Substances Banks Version 1.0</i></p> <p>the methodology does not prescribe any specific ranges of negative pressures which must be met by a certain technology.</p> <p>Exemplary:</p> <p>The “system pressure” in SEG’s patented technology is between 0.95 and 0.985 bar.</p> <p>Please see attached form Annex A.II.</p> <p>Exemplary ODS blowing agents and associated GWP</p> <p>http://www.epa.gov/ozone/snap/foams/index.html</p> <p>The ODS blowing agent family consists</p>	<p>CL 1 is closed.</p>



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

		<p>of</p> <p>CFC-11 (GWP 4,750)</p> <p>CFC-12 (GWP 10,900)</p> <p>CFC-114 (GWP 10,000)</p> <p>HCFC-22 (GWP 1810)</p> <p>HCFC-141b (GWP725) and</p> <p>HCFC-142b (GWP 2310)</p>	
<p>CL 2</p> <p>Please consider wording:</p> <p>“The additionality of project activities covering other ODS (including blowing agents) or are located in Non Article 5 countries shall be demonstrated and assessed using the latest version of the VCS Additionality Test test 1 “The Project Test” according to Voluntary Carbon Standard 2007.1”.</p>	<p>P. 5 Additionality</p>	<p>This will be changed in Version 03 of the Methodology accordingly (see below: red);</p> <p>Additionally Version 03 of the Methodology will change from reference to Version 2007.1 of VCS to <u>the latest Version of the Voluntary Carbon Standard</u></p> <p>“The additionality of project activities covering other ODS (including blowing agents) which are located in Non Article 5 countries shall be demonstrated and assessed using the latest version of the VCS Additionality Test 1 “The Project Test” according to the latest Version of the Voluntary Carbon Standard</p>	<p>CL 2 is closed.</p>
<p>CL 3</p> <p>Please clarify how potential heat consumption is considered under calculation of energy consumption at the ODS recovery facility.</p>	<p>P. 9 Project emissions; Determination of Energy Consumption (equation 15)</p>	<p>In <u>Determination of $PE_{FC,j,y}$</u> Version 03 of the methodology clarifies that all fuel consumption has to be taken into account which is attributable to the recovery facility including third party used fossil fuel to generate energy for the project plant.</p>	<p>CL 3 is closed.</p>



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

<p>CL 4</p> <p>Please clarify what is relative accuracy of weighing admissible.</p> <p>Please specify capacity of cylinders and other containers and tanks for collection and storage of recovered ODS (refrigerants and blowing agents).</p>	<p>P. 15. III Monitoring Methodology. Weighing.</p>	<p>RAL GZ 728 (<i>Quality Assurance and Test Specifications for the Demanufacture of Refrigeration Equipment</i>) in its new version (to be published see attached, page 18 of 40 in German) is using accuracy of +/- 0.1 kg</p> <p>No specific requirements for capacity of containers and tanks for collection and storage of recovered ODS is envisaged.</p>	<p>Rephrasing is proposed:</p> <p>“Weighing instruments used must comply with the relevant national requirements and/or international standards - such as Directive 2009/23/EC or OIML R 76-1 – and be subject to regular calibration, as set out in the relevant national requirements and/or international standards to accuracy appropriate to its accuracy class. These instruments shall have a measuring range corresponding to the capacity of containers and tanks weighed.”</p> <p>Included in the Version 3 of the methodology.</p> <p>CL 4 is closed.</p>
<p>CL 5</p> <p>Please consider wording in the sentence as quoted below and using equivalent instead of any related.</p> <p>“Samples must be taken with a clean, fully evacuated sample bottle that meets</p>	<p>P. 16. III Monitoring</p>	<p>“Samples must be taken with a clean, fully evacuated sample bottle that meets applicable U.S. DOT requirements or an equivalent national (host country) or ISO standard.”</p>	<p>CL 5 is closed.</p>



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

<p>applicable U.S. DOT requirements or any related national (host country) or ISO standard.”</p>			
<p>CL 6</p> <p>Please clarify what are minimum and maximum quantities of blowing agents foam may contain in end of life of appliances. Please explain in more details.</p>	<p>P. 18. Determination of recovery efficiency of blowing agents contained in foam of refrigeration appliances.</p>	<p>VCS <i>Update to the VCS 2007.1: Extension of Scope to Include Ozone-Depleting Substances (January 29th 2010)</i></p> <p>Eligibility Criterion Nr. 5: <i>Destruction technology and efficiency</i></p> <p>For dilute sources (i.e., foams), projects shall use a destruction technology with a minimum verified DRE of 95%. In addition, a minimum Recovery and Destruction Efficiency (RDE) of 85% shall be achieved. RDE describes the proportion of blowing agent (ODS) remaining in the foam immediately prior to decommissioning that is recovered in the overall end-of-life management step, including ultimate destruction</p> <p>It further elaborates:</p> <p>For full specification of RDE, see <i>UNEP May 2005 Report of the Technology and Economic Assessment Panel, Volume 3, Report of the Task Force on Foam End-of-Life Issues</i>, UNEP, 2005. Available at: http://ozone.unep.org/teap/Reports/TEAP-Reports/TEAP-May-2005-Vol-2-Forms-End-of-Life.pdf. Note that the TEAP report provides a theoretical model for calculating RDE and methodology elements will need to specify a practical approach for determining RDE, such as those provided in RAL GZ 728 (<i>Quality Assurance and Test Specifications for the Demanufacture of Refrigeration Equipment</i>, 2007)</p> <p>The quantities of ODS blowing agents to be recovered for each appliance type (domestic fridge, domestic fridge-freezers, domestic chest freezers and upright freezers) as specified under the section “Definitions” shall be sourced from</p>	<p>CL 6 is closed.</p>



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

		<p>official national values. In cases where no such official values are available it shall be determined by RAL <i>RAL Quality Assurance and Test Specifications for the Demanufacture of Refrigeration Equipment</i> The recovery facility must achieve a recovery efficiency of at least 90% otherwise no credits can be generated for the respective monitoring period</p> <p>Annex A.III shows an exemplary overview of default values on CFC-11 contained in each refrigeration appliance types provided by RAL for different countries.</p>	
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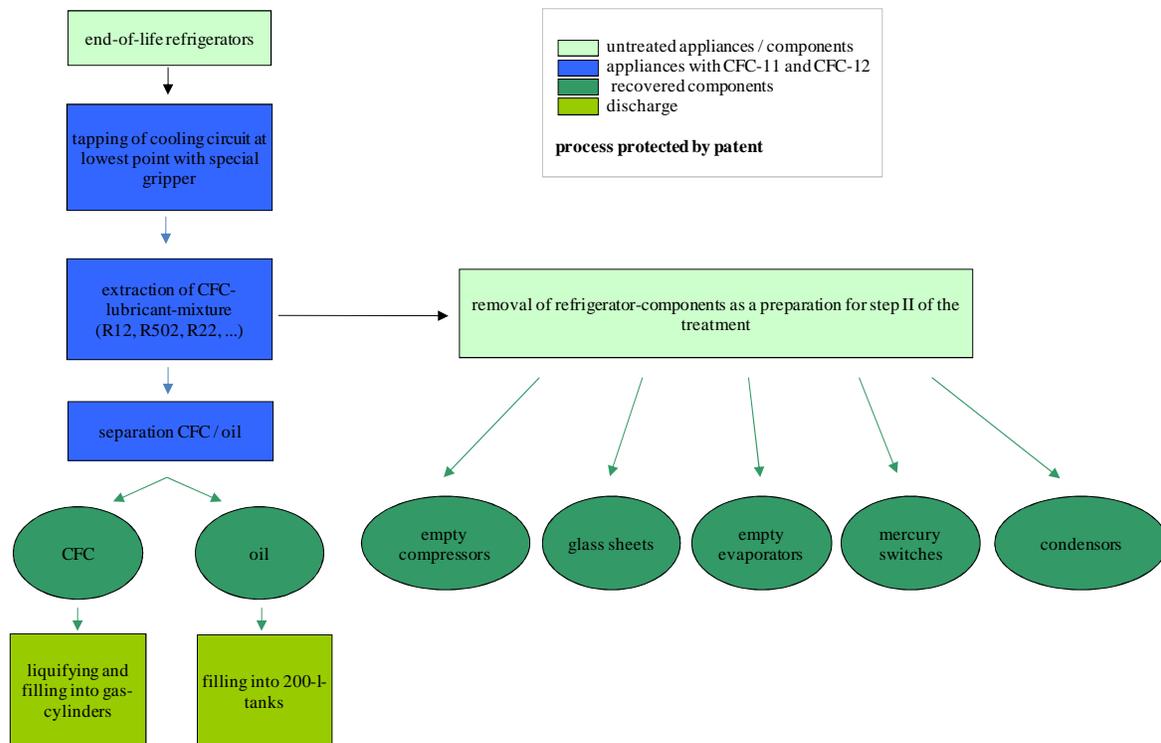
ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

Annex A.I: Exemplary Technology for Recovery of Blowing Agents (Step 2)

Step 1 – Pre-Processing:

The pre-processing stage, known as Step 1 of the process involves the evacuation of the CFC and oil mixture. After the cooling circuit is evacuated via special gripper, the empty compressor is cut off from the end-of-life-appliance using the patented hydraulic shears. The special evacuation tool in combination with a vacuum pump guarantees the almost complete recovery of the refrigerant CFC. The glass shelving, cables, mercury switches and capacitors will also be removed during this step.

Process chart Step 1:





ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

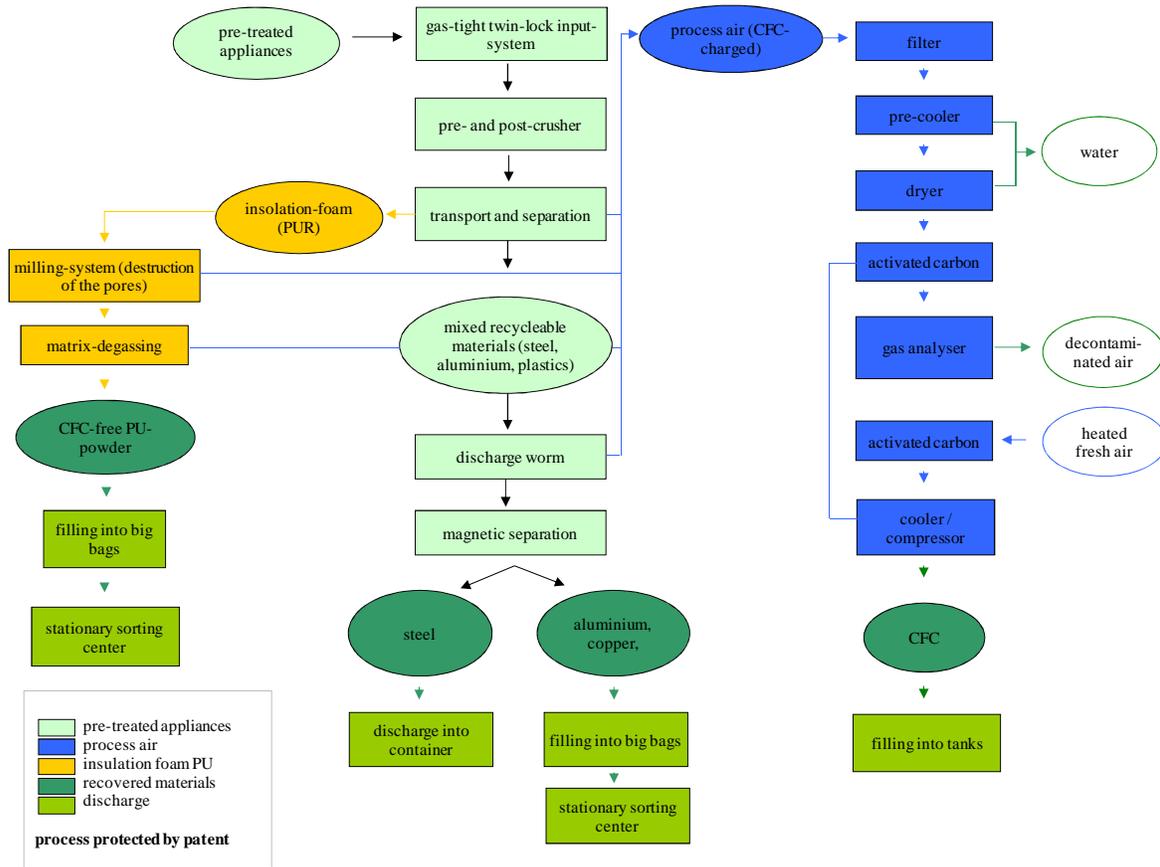
Step 2 – Final Processing:

The pre treated appliances under Step1 is conveyed to Step 2, per gas-tight twin-lock port which works automatically under vacuum conditions. In Step 2 of the processing, end-of-life refrigerator and freezer appliances are completely shredded and the reusable materials retrieved. The CFC-11 contained within the insulating foam is recovered. All CFC-11 released during the shredding and separation operations are collected by passing the gases over active carbon filters. The CFCs are later desorbed from the filters, liquefied and stored. The end-of-life appliances are introduced via a gas-tight twin-lock port. Rotary blades shred the entire appliance and the shredded material is automatically transported and sorted within the treatment facility. To remove the CFC from the polyurethane insulation, the separated PU flakes are first degassed, ground up and then subjected to control heating to thermally desorb CFC-11 from the polyurethane matrix. The CFC-free powder, which is subject to continual quality controls, is then filled into storage bags. The gaseous CFC released is trapped by being drawn through a reclaimable activated carbon filter system. The exhaust gas stream is continuously monitored in order to detect and prevent loss of CFC. The steel is extracted using a special separator. Non-ferrous metals and plastics are collected separately for subsequent reprocessing.

Process chart Step 2:



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011



Annex A.II: Example Range Negative Pressure in ODS Recovery Plant

Checkliste SEG Stationäre Anlage Kühlgeräterückproduktion

Standort _____

Aufbau

Bearbeiter: _____

Abnahme

Baugruppe

Touch Panel

Menü Gastechnik

	Soll	Ist		Bemerkung
Sauerstoff 1	8 bis 11		%	
Sauerstoff 2	8 bis 11		%	
Unterdruck Mühle 1	< 0,998		bar	
Unterdruck Mühle 2	< 0,998		bar	
Systemdruck	0,950-0,985		bar	
Unterdruck Optimierer, Schnecke 1, Schnecke 3	< 0,998		bar	



ASSESSMENT REPORT NO. PL/VCS-4366293/01/2011

Annex A.III: Exemplary RAL Default Values CFC-11 in Foams

Tabelle A.

Land	FCKW - Geräte ²			
	Typ 1	Typ 2	Typ 3	Typ 4 ²
Belgien				
Bulgarien				
Dänemark				
Deutschland	0,24	0,32	0,4	0,5
Estland				
Finnland	0,28	0,37	0,46	0,58
Frankreich	0,24	0,32	0,4	0,5
Griechenland	0,28	0,37	0,46	0,58
Großbritannien	0,24	0,32	0,4	0,5
Italien				
Lettland				
Litauen				
Luxembourg	0,24	0,32	0,4	0,5
Malta				
Niederlande				
Norwegen	0,28	0,37	0,46	0,58
Österreich	0,24	0,32	0,4	0,5
Polen				
Portugal				
Republik Irland				
Rumänien				

(in kg/refrigerator)