



South Asia

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# Validation Opinion

OF POST REGISTRATION CHANGE AT AN EXISTING  
CDM-PROJECT:


Catalytic N<sub>2</sub>O destruction project at the new nitric  
acid plant PANNA 4 of Enaex S.A.

(UNFCCC REGISTRATION REF. No. 5393)

REPORT No. 00875HA

22/09/2014

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|  |  |   |  |
|--|--|---|--|
| <b>Date of first issue of this report</b>  |  | <b>Revision No. of this report</b>  |  |
| 01-07-2014   |  | 3   |  |
| <b>Project Participant (contractor):</b><br>ENAEX S.A.   |  | <b>Project Site:</b><br>City: Mejillones<br>Address: Avenida Costanera Norte N°300<br><b>Host Country:</b><br>Republic of Chile |  |
| <b>Applied Methodology / Version:</b> ACM0019 / Version 02.0   |  | <b>Scope(s):</b> 05<br><b>Technical Area(s):</b> 5.1  |  |
| <b>Approved PDD Version:</b><br>PDD completion date: 28/09/2011<br>Version No.: 1.2  |  | <b>Revised PDD version:</b><br>PDD completion date: 17/09/2014<br>Version No.: 1.4  |  |
| <b>VALIDATION OPINION</b>  |  |   |  |
| <p>TÜV SÜD has performed a validation of the request for a post registration change of the aforementioned existing CDM project activity. Standard auditing techniques have been used for the validation process.</p> <p>The validation has been performed following the requirements of the version 7.0 of the CDM VVS.</p> <p>The review of the revised PDD has provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. In our opinion, the revised PDD meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the replacement of the registered PDD by the submitted revision.</p> <p style="text-align: center;">Pune, 22/09/2014</p> <div style="text-align: center;">  </div> <hr style="width: 30%; margin: 10px auto;"/> <p style="text-align: center;">Eswar Murty<br/>Member of<br/>Certification Body "Environment and Energy"<br/>TÜV SÜD South Asia</p> |  |   |  |

## Abbreviations

|                        |  |
|------------------------|--|
| <b>ACM</b>             | Approved Consolidated Methodology                                |
| <b>CAR</b>             | Corrective Action Request  |
| <b>CB</b>              | Certification Body   |
| <b>CDM</b>             | Clean Development Mechanism                                      |
| <b>CDM EB</b>          | CDM Executive Board  |
| <b>CER</b>             | Certified Emission Reduction                                     |
| <b>CL/CR</b>           | Clarification Request  |
| <b>CO<sub>2</sub>e</b> | Carbon dioxide equivalent  |
| <b>DOE</b>             | Designated Operational Entity                                    |
| <b>EB</b>              | Executive Board  |
| <b>EF</b>              | Emission Factor  |
| <b>FAR</b>             | Forward Action Request   |
| <b>GHG</b>             | Green House Gas(es)  |
| <b>IPCC</b>            | Intergovernmental Panel on Climate Change                        |
| <b>IRL</b>             | Information Reference List                                       |
| <b>PDD</b>             | Project Design Document  |
| <b>PP</b>              | Project Participant  |
| <b>PRC</b>             | Post Registration Change   |
| <b>PS</b>              | Project Standard   |
| <b>TÜV SÜD</b>         | TÜV SÜD South Asia Pvt Ltd                                       |
| <b>UNFCCC</b>          | United Nations Framework Convention on Climate Change            |
| <b>VVS</b>             | Clean Development Mechanism Validation And Verification Standard |

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## 1 INTRODUCTION

### 1.1 Objective

The validation objective is an independent assessment by a Third Party (Designated Operational Entity = DOE) of a proposed post registration change (PRC) against all defined criteria set for the registration under the Clean Development Mechanism (CDM). Validation is required in the context of proposed revisions of a registered CDM activity and will finally result in a conclusion by the executing DOE whether a revised PDD is valid and should be submitted for replacing the previous version. The ultimate decision on the registration of a proposed revision rests at the CDM Executive Board.

The project activity discussed by this validation report is registered as CDM activity N° 5393 with the project title: "Catalytic N<sub>2</sub>O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A."

#### **Summary of the proposed post registration changes:**

Due to the change of methodology ACM0019 version 01.0 to version 02.0 the adaptations in the PDD can be summarized as follows:

- Change of methodology version throughout the whole document
- Section B.6.1 equations have been updated
- Section B.6.2 and B.7.1 parameter tables have been updated
- Section B.6.3 and B.6.4 ex-ante calculation of the emission reductions have been updated for the years 2013 until 2021 based on current input data verified during last 4 Monitoring Periods (Ex-ante estimation of emission reductions was done for the period from 19/03/2013 onwards only, since from then onwards methodology ACM0019 version 02.0 was applied. Values of ER before that date are real emission reductions, which are already generated, verified and issued during Monitoring Periods # 1 – 4 of CDM project.)

To include latest available information and current valid forms following changes were done.

- Information about project participants and starting date of crediting period has been updated
- Editorial and other changes were done due to the PDD being upgraded to PDD form version 04.1

PPs wish to apply ACM0019 version 02.0 starting with the 5th monitoring period (start date 19/03/2013).

### 1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. The core requirements for this PRC are given by

CDM-EB70-A36-PROC - Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools - Version 01.1:

89. For the purpose of publication of a monitoring report and submission of a request for issuance, a project activity or PoA shall apply the version of the methodology or methodological tool that the project activity or PoA has been registered with. **If the project participants or coordinating/managing entity wish to use a later version of the methodology or methodological tool** for the purpose of monitoring of emission reductions or removals after the registration of the project activity or PoA, or a DOE, when performing a verification, determines that permanent changes to the monitoring plan as described in the registered PDD or PoA-DD, generic CPA-DD, or the monitoring methodology have occurred or expected to occur, **the DOE shall submit a request for approval by the Board prior to the submission of the request for issuance in accordance with the relevant provisions of the “Clean development mechanism project cycle procedure”.**

and CDM-EB65-A04-STAN - Clean development mechanism validation and verification standard - Version 07.0

308. The DOE shall determine whether the changes to the monitoring plan contained in the registered PDD proposed by the project participants are in compliance with the applied methodology and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan.

309. In cases where the proposed changes refer to a later version of the applied methodology in the registered PDD, the DOE shall determine whether the application of any later version of the applied methodology and tools does not impact the conservativeness of the monitoring and verification process, including the related emission reduction calculations.

311. The DOE shall determine whether the permanent changes are likely to lead to a reduction in the accuracy of the calculation of emission reductions. In cases where the DOE considers that the permanent changes will lead to a reduction in the accuracy of the calculation of emission reductions, the DOE shall request the project participants to apply conservative assumptions or discount factors to the calculations to the extent required to ensure that emission reductions will not be over-estimated as a result of the permanent change.

The validation process is not meant to provide any form of consulting for the project participant (PP). However, stated requests for clarifications, corrective actions, and/or forward actions may provide input for improvement of the project design.

## 2 VALIDATION METHODOLOGY

The information provided by the project participants is assessed by applying the means of validation specified in the VVS and where appropriate standard auditing techniques.

Before the assessment begins, a competent team is selected to perform the process. The team is selected to cover the technical area(s), sectoral scope(s), and relevant host country experience for evaluating the CDM project activity. The members of the team carry out a desk review, follow-up actions, resolution of identified issues, and the preparation of the validation report. The prepared validation report and other supporting documents then undergo an internal quality control by the CB "Environment and Energy" before being submitted to the CDM-EB.

In case the validation team identifies issues that require further elaboration, research or expansion in order to determine whether the project activity meets the CDM requirements, and can achieve credible emission reductions findings are raised as specified in the VVS.

To requests the PRC of the project activity, all CARs and CRs must be resolved.

All CARs, CLs and FARs are found in Annex 1 to this validation report including the responses provided by the project participants, the means of validation of the responses and references to any resulting changes in the PDD or supporting annexes.

### 2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment, TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body "Environment and Energy".

The composition of an assessment team has to be approved by the Certification Body (CB) to assure that the required skills are covered by the team. The CB TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL);
- Validator (V);
- Validator Trainee (T);
- Technical Experts (TE);
- Country expert (CE);
- Technical reviewer (TR).

It is required that the sectoral scope(s) and the technical area(s) (TA) linked to the methodology and project has to be covered by the assessment team.

A technical review is conducted to perform a check on quality and completeness.

#### Assessment Team:

| Name          | Qualification | Scope                               | Technical Area                            | Financial aspect                    | Host country experience             | Conducted On-site visit |
|---------------|---------------|-------------------------------------|---|-------------------------------------|-------------------------------------|-------------------------|
| Martin Hammer | ATL           | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> (All) | <input checked="" type="checkbox"/> | -                                   | n/a                     |
| Javier Castro | V             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> (All) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | n/a                     |

#### Technical Reviewer:

| Name           | Qualification | Coverage of scope                   | Coverage of technical area          | Coverage of financial aspect        |
|----------------|---------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Konrad Tausche | TR            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Appointment certificates are attached to this report in Annex 3.

## **2.2 Review of Documents**

The revised PDD version 1.4 and additional background documents, related to the project design and baseline have been reviewed to verify the correctness, credibility, and interpretation of the presented information and their compliance to the applicable requirements for requesting the post registration change. Furthermore, a cross-check between information provided and information from other sources has been done as an initial step of the validation process. A complete list of all documents and evidence material reviewed is attached as Annex 2 to this report.

## **2.3 Cross-check**

During the validation process the team has made reference to available information related to similar projects or technologies as this CDM project activity. Project documentation has also been reviewed against the approved methodology applied to confirm the appropriateness of formulae and correctness of calculations.

## **2.4 Resolution of Clarification and Corrective Action Requests**

The objective of this phase of the validation is to resolve the requests for corrective actions, clarifications, and any other outstanding issues which need to be clarified for TÜV SÜD's conclusion on the project design. The CARs and CLs raised by TÜV SÜD are resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are documented in more detail in Annex 1 to this report.

## **2.5 Internal Quality Control**

Internal quality control within the team is assured by means of a technical review process after closure of findings. The internal quality control in the validation process is given by the final decision (Validation Opinion) made by the CB "Environment and Energy".



### 3 REPORTING REQUIREMENTS

The assessment work and the main results are described below in accordance with the Clean Development Mechanism Validation and Verification Standard (VVS). The reference documents indicated in this section and Annex 1 are stated in Annex 2 of this report.

#### 3.1 Project design document

The PDD is compliant with relevant form and guidance as provided by UNFCCC. The PDD form used is valid.

#### 3.2 Description of project activity

The proposed post registration change does not impact the technical design of the project activity. Thus the information presented in the revised PDD has not been changed compared to the registered PDD.

The project participants listed in the revised PDD have been updated. The names of the project participants included in the revised PDD are consistent with the names stated at UNFCCC website (<http://cdm.unfccc.int/Projects/DB/RWTUV1320421146.84/view>).

#### 3.3 Validity of the selected baseline and monitoring methodology

The project has been registered based on version 01 of the approved CDM methodology ACM0019. The revised CDM-PDD (version 1.4, dated 17-09-2014) applies version 02.0 of the consolidated methodology ACM0019. ACM0019 version 02.0 is the most recent version and the project participants wish to use this later version of the methodology as specified in "Development, revision and clarification of baseline and monitoring methodologies and methodological tools - Version 01.1 (CDM-EB70-A36-PROC).

##### 3.3.1 Applicability of the selected baseline and monitoring methodology to the project activity

The registered project activity applies ACM0019 version 01.0. The revised PDD applies ACM0019 version 02.0. The applicability criteria have not been changed from ACM0019 version 01.0 to version 02.0.

Except to some editorial updates, the description of the compliance with the applicability criteria has not been changed in the revised PDD, therefore this section of the PDD remains valid.

TÜV SÜD confirms that the chosen baseline and monitoring methodology is applicable to the project activity.

##### 3.3.2 Validity of Baseline and Additionality

The procedure to identify the baseline scenario and to demonstrate the additionality of the project has not been changed in ACM0019 version 02.0 compared to ACM0019 version 01.0.

Also the description in the PDD has not been revised; therefore this section of the revised PDD remains valid.

### 3.3.3 Algorithm and/or formulae used to determine emission reductions

TÜV SÜD has assessed the calculations of project emissions, baseline emissions, leakage, and emission reductions. Corresponding calculations have been carried out based on calculation spreadsheets (IRL 6). The parameters and equations presented in the revised PDD, as well as other applicable documents, have been compared with the information and requirements presented in the methodology ACM0019 version 02.0 and respective tools. An equation comparison has been made to ensure consistency between all the formulae presented in the calculation files and in the PDD, methodology and tools.

The estimation of the baseline emissions are considered correct as the calculations has been reproduced by the audit team with the attainment of the same results.

The assumptions and data used to determine the emission reductions are listed in the PDD and all the sources have been reviewed. Amongst others, the following IRL 1c, IRL 3k, IRL 3l were used for crosschecking the information contained in the PDD.

The following input data differ slightly compared to emission reduction estimation in the originally validated PDD due to updated information:

| Input Data        | Means of validation  |
|-------------------|--|
| $C_{H_2O,t,db,n}$ | <p>In the originally validated PDD the <math>C_{H_2O,t,db,n}</math> - Moisture content of the gaseous stream at normal conditions, in time interval t – was calculated based on design parameters.</p> <p>Since beginning of the crediting period the actual water content in the tail gas is measured annually by third party institute according to USEPA CF 42 method 4, during QAL2 or AST. The latest value of moisture content, which was measured during QAL2 in 2013, was used to check the applicability of Option A of the applied tool. All QAL2 and AST reports (IRL 5j) could be checked by the assessment team and it was found that all measurement values were far below the threshold value for Option A of the applied “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” (Version 02.0.0). Thus, Option A of the above mentioned tool is applicable for the estimation of emission reductions.</p> |
| Operating Days    | <p>The operating days applied for estimation of emission reductions in the revised PDD differs slightly compared the originally validated PDD. The actual value is based on the actual production forecast (IRL 3l). This forecast could be checked by the assessment team and the values were found to be plausible. The actual value is slightly lower which results in a slightly lower amount of estimated emission reductions.</p> <p>The applied value is found to be applicable for the estimation of the emission reductions.</p>  |

|                                |   |
|--------------------------------|---|
| $F_{N_2O, \text{tail gas}, h}$ | <p><math>F_{N_2O, \text{tail gas}, h}</math> the mass flow of <math>N_2O</math> in the gaseous stream of the tail gas in the hour <math>h</math> is calculated using input parameters <math>P_t</math> - pressure at measuring point and <math>T_t</math> - temperature at measuring point.</p> <p>In the originally validated PDD the design values have been applied while in this revised version of the PDD, the PPs used measurement values. Consequently the calculated values for <math>F_{N_2O, \text{tail gas}, h}</math> differs slightly and it is slightly more conservative. PPs have used measurement average values from Monitoring Period 1 only because from Monitoring Period 2 onwards the values were influenced by a leakage at the secondary catalyst (IRL 1c).</p> <p>The values for <math>P_t</math> and <math>T_t</math> for monitoring period 1 (IRL 1c) could be checked by the assessment team. The applied values are found to be applicable for the estimation of CERs.</p> |
|--------------------------------|---|

In conclusion, TÜV SÜD confirms the following statements in line with para 98 of VVS.

- (a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- (c) All values used in the PDD are considered reasonable in the context of the proposed project activity;
- (d) The baseline methodology and corresponding tool(s) have been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD;
- (f) Any estimates for monitored data or parameter are reasonable for estimating the emission reductions in the PDD
- (g) Different options for equations and parameters are selected appropriately
- (h) The data and parameters fixed ex-ante are conservative and appropriate.

### 3.4 Validity of Monitoring plan

The project applies the approved monitoring methodology within ACM0019 version 02.0. The original monitoring plan following the requirements of the CDM methodology ACM0019 version 01.0 was updated based on requirements of version 02.0 of the applied methodology.

The monitoring plan presented in the PDD complies with the requirements of the applicable methodology. The assessment team has verified all parameters in the monitoring plan against the requirements of the methodology and no deviations have been found.

### 3.5 Conclusion

In conclusion, TÜV SÜD confirms the following statements.

- (a) PPs propose this post registration change because they wish to use the latest version 02.0 instead of version 01.0 of the combined methodology ACM0019 according to para 89 of “Development, revision and clarification of baseline and monitoring methodologies and methodological tools - Version 01.1”. Except some editorial and updating issues, the proposed changes in the PDD refer only to this switch to version 02.0 of ACM0019.
- (b) The changes to the monitoring plan are in compliance with the applied methodology ACM0019 version 02.0. and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan.
- (c) ACM0019 version 02.0 is applied completely. The emission reductions will not be over-estimated due to the appliance of this methodology. Thus, TÜV SÜD confirms that the proposed changes do not impact the conservativeness of the monitoring and verification process, including the related emission reduction calculations.
- (d) TÜV SÜD confirms that the proposed changes do not lead to a reduction in the accuracy of the calculation of emission reductions.

## **Annex 1**

### **List of Findings**

## List of Findings - Compilation and Resolutions

Project Title: Catalytic N2O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A.

Page 1 of 3



| Definitions contained in the Glossary of CDM terms and applied in the Standard |   |
|--|---|
| <b>Shall / Should / May</b>  | In addition to the definitions contained in the Glossary of CDM terms, the following terms apply in the VVS<br><u>Shall</u> is used to indicate requirements to be followed;<br><u>Should</u> is used to indicate that among several possibilities, one course of action is recommended as particularly suitable;<br><u>May</u> is used to indicate what is permitted.  |
| <b>Credible</b>  | Information is credible if it is authentic and is able to inspire belief or trust, and the willingness of persons to accept the quality of evidence.)   |
| <b>Reliable</b>  | Information is reliable if the quality of evidence is accurate and credible and able to yield the same results on a repeated basis.   |
| <b>CAR</b>   | The audit team shall raise a corrective action request (CAR) if one of the following situations occurs:<br>(a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable, verifiable and additional emission reductions;<br>(b) The applicable CDM requirements have not been met;<br>(c) There is a risk that emission reductions cannot be monitored or calculated. |
| <b>CR</b>  | The audit team shall raise a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.  |
| <b>FAR</b>   | The audit team shall raise a forward action request (FAR) during validation to identify issues related to project implementation that require review during the first verification of the project activity. The DOE shall not raise a FAR that relates to the CDM requirements for registration   |

## List of Findings - Compilation and Resolutions

Project Title: Catalytic N2O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A.

Page 2 of 3



### Compilation and Resolutions of CARs, CRs and FARs

| Corrective Action Requests by the assessment team |  |   |
|---|--|---|
|   | Comments and Results   | Conclusion and IRL  |
| Issue   | The mentioned PPs in the PDD (cover page) is inconsistent with the PPs registered under UNFCCC ( <a href="http://cdm.unfccc.int/Projects/DB/RWTUV1320421146.84/view">http://cdm.unfccc.int/Projects/DB/RWTUV1320421146.84/view</a> ) | <input checked="" type="checkbox"/><br>This Finding is closed<br>IRL 1e |
| Requirement                                       | VVS 18d: In carrying out its validation and verification work, the DOE shall:<br>Assess the accuracy, conservativeness, relevance, completeness, consistency, and transparency of the information provided by project participants.  |   |
| Corrective Action Request                         | <b><u>Corrective Action Request No.1</u></b><br>PPs shall provide consistent information in regard to the project participants of this project.  |   |
| Response  | The list of PPs on the cover page was adapted and includes now all PPs as shown on UNFCCC page.  |   |
| Assessment<br>Means of validation                 | The validator has reviewed the revised PDD with special focus on the PPs mentioned at the cover page. The information was found to be consistent within the PDD and the UNFCCC webpage.  |   |
| Changes in the PDD or supporting annexes          | The PDD has been altered to provide complete information about the PPs on its cover page.  |   |

## List of Findings - Compilation and Resolutions

Project Title: Catalytic N<sub>2</sub>O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A.

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| Clarification Requests by the assessment team                  |                      |                    |
|--|----------------------|--------------------|
|  | Comments and Results | Conclusion and IRL |
| Issue  | None                 | n/a                |
| Requirement  | n/a                  |                    |
| Clarification Request  | None                 |                    |
| Response   | n/a                  |                    |
| Assessment<br>Means of verification                            | n/a                  |                    |
| Changes in the monitoring<br>report or supporting an-<br>nexes | n/a                  |                    |

| Forward Action Requests by the assessment team                             |                      |     |
|--|----------------------|-----|
|  | Comments and Results |     |
| Issue  | None                 | n/a |
| Requirement  | n/a                  |     |
| Forward Action Request   | None                 |     |
| Response   | n/a                  |     |
| Means of verification  | n/a                  |     |
| Any resulting changes in<br>the monitoring report or<br>supporting annexes | n/a                  |     |




## **Annex 2**


### **Information Reference List**

|                            |  |             |   |
|----------------------------|--|-------------|---|
| Information Reference List | Validation of Post Registration Change | Page 1 of 4 | <br>South Asia |
|----------------------------|--|-------------|---|


| Ref. No. | Author/Edit or/ Issuer            | Title/Type of Document. Publication place   | Issuance and/or submission date | Additional Information (Relevance in CDM context)                         |
|----------|-----------------------------------|---|---------------------------------|---|
| 1        | ENAEX S.A.<br>TÜV SÜD<br>TÜV NORD | <b><u>Monitoring Report, Project Design Documents, Previous Verification Reports</u></b> <ul style="list-style-type: none"> <li>a. PDD of the CDM Project “Catalytic N2O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A.” (CDM Registration N° 5393), version 1.2, dated on September 28th, 2011.</li> <li>b. Validation Report for CDM project “CATALYTIC N2O DESTRUCTION PROJECT AT THE NEW NITRIC ACID PLANT PANNA 4 OF ENAEX S.A.” (Report No: 8000398029 – 11/370) issued by TÜV Nord, dated on 29/11/2011</li> <li>c. Previous Verification Reports and references</li> <li>d. Revised PDD of the CDM Project “Catalytic N2O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A.” (CDM Registration N° 5393), version 1.3, dated on 19/05/2014</li> <li>e. Revised PDD of the CDM Project “Catalytic N2O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A.” (CDM Registration N° 5393), version 1.3, dated on 26/06/2014</li> <li>f. Revised PDD of the CDM Project “Catalytic N2O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A.” (CDM Registration N° 5393), version 1.4, dated on 17/09/2014</li> </ul> | Various<br>See the left column. | PDD,<br>Validation Report,<br>Monitoring Reports,<br>Verification Reports |
| 2        | UNFCCC<br>IPCC                    | <b><u>References and requirements at UNFCCC</u></b> <ul style="list-style-type: none"> <li>a. UNFCCC homepage <a href="http://www.unfccc.int">http://www.unfccc.int</a> including the CDM section <a href="http://cdm.unfccc.int/index.html">http://cdm.unfccc.int/index.html</a>.</li> <li>b. Approved consolidated baseline and monitoring methodology ACM0019 - N2O abatement from nitric acid production, version 01.0.0</li> <li>c. Approved consolidated baseline and monitoring methodology ACM0019 - N2O abatement from nitric acid production, version 02.0.0</li> <li>d. Tool to determine the mass flow of a greenhouse gas in a gaseous stream, version 02.0.0</li> </ul>   | Various<br>See the left column. | UNFCCC<br>Regulative  |

|                            |  |             |   |
|----------------------------|--|-------------|---|
| Information Reference List | Validation of Post Registration Change | Page 2 of 4 | <br>South Asia |
|----------------------------|--|-------------|---|

| Ref. No. | Author/Editor/ Issuer                                      | Title/Type of Document. Publication place  | Issuance and/or submission date | Additional Information (Relevance in CDM context) |
|----------|--|--|---------------------------------|---|
|          |  | Annex 11, EB61<br>e. CDM Glossary<br>f. CDM Validation and Verification Standard Version 07.0<br>g. Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools - Version 01.1  |                                 |   |
| 3        | COREMA,<br>CONAMA,<br>ENAEX S.A.<br>Técnicas Reunidas S.A. | <u><b>Project Implementation, Licenses</b></u><br>a. Test run Protocol for Panna4 Nitric Acid Plant signed by ENAEX and Tecnicas Reunidas Espindesa 05/11/2011<br>b. Process Data Sheet of R4501 Ammonia Oxidation Reactor of Panna4 Nitric Acid Plant issued by Tecnicas Reunidas, 01 Process Data and 02 Materials rev. 01 dated on 22/09/2006<br>c. Resolución Exenta N° 0121/2006 – permit for the whole complex dated on 29/05/2006 issued by CONAMA<br>d. Data Sheet of AOR Thermocouple TT-45030 A,B,C<br>e. Secondary Catalyst installation report issued by Heraus dated on 30/11/2011<br>f. Screenshots of the control panel from FoxView (AOR temperature range)<br>g. Commissioning Certificates for TAG's Meters: AT45094 A, AT45094 B, AT45094 C, FT45092, PT45091, PT45095, PT45097, TT45093, TT45096, dated on 13/12/2011<br>h. "Memorandum – Actual Capacity of Panna IV Nitric Acid Plant" issued by Técnicas Reunidas, S.A. and signed by the Fertilizer Division Manager dated on 01/03/2013<br>i. Operating Manual – Project Panna 4 "Manual de operacion ProyectoPanna 4" issued by Técnicas Reunidas (UTE TR-ESPINDESA) dated on May 2008 | Various<br>See the left column. |   |

|                            |  |             |   |
|----------------------------|--|-------------|---|
| Information Reference List | Validation of Post Registration Change | Page 3 of 4 | <br>South Asia |
|----------------------------|--|-------------|---|

| Ref. No. | Author/Editor/ Issuer                    | Title/Type of Document. Publication place  | Issuance and/or submission date | Additional Information (Relevance in CDM context) |
|----------|--|--|---------------------------------|---|
|          |  | j. Secondary Catalyst System Inspection and Installation Report, performed by Heraeus on 23/07/2012<br>k. Enaex 5393 PDD_N2O mass flow explanation.pdf<br>l. Enaex Prod plan 2014_confidential.pdf   |                                 |   |
| 4        | ENAEX S.A.                               | <u><b>Procedures and standards</b></u><br>a. European Standard EN14181 Stationary source emissions - Quality assurance of automated measuring systems dated on July 2004<br>b. "Responsibilities & Operational Project Structure.pdf" version 1.0 issued by ENAEX dated on February 2012<br>c. ISO 9001 Certificate for Planta Prillex America Mejillones Enaex S.A. valid until 29/10/2015<br>d. Procedure DM-MR-CD-027 "Instrumentalist Work procedure", version 1, 03/09/2007<br>e. Procedure DM-MR-CD-080 "Thermocouple Temperature revision", version 1, 03/08/2007<br>f. Procedure "Analyzer N2O Concentration Calibration" (Not included in ISO)<br>g. Procedure "Gauge pressure Transmitter Calibration" (Not included in ISO) | Various<br>See the left column. | QA/QC Procedures                                  |
| 5        | Endress +Hauser<br>WIKA<br>INOR<br>INECO | <u><b>Monitoring Equipment</b></u><br>a. Email from Elliot Sanchez Product Manager Flow & EMS Endress +Hauser Chile Ltda regarding recommendations of calibration frequency<br>b. Manufacturer's declaration, Document number 5006501 regarding Model TC10 issued by WIKA Alexander Wiegand SE & Co. KG<br>c. Statement from INOR – signed by a Service and Calibration Engineer - regarding stability of Meso-H / Meso HX applications<br>d. Email from Anibal Gonzales from INECO S.A. regarding recommendations of calibration  | Various<br>See the left column. | Calibration Requirements Manufacturer             |

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| Information Reference List | Validation of Post Registration Change | Page 4 of 4 | <br>South Asia |
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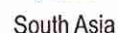
| Ref. No. | Author/Editor/ Issuer                   | Title/Type of Document. Publication place   | Issuance and/or submission date | Additional Information (Relevance in CDM context) |
|----------|---|---|---------------------------------|---|
|          |   | frequency of PT-45091, TT-45093 and PT-45095.<br>e. Delta V Print Screen – Version number 11<br>f. Statement from INECO dated on May 2012 regarding the hourly average calculation in the Delta-V system<br>g. Statement from INECO dated on May 2012 regarding recommended calibration frequency of pressure model 2051C and temperature model 3144P transmitters<br>h. Rosemount 2051 Reference Manual 00809-0100-4101, Rev AA dated on July 2008<br>i. Rosemount 2051 Reference Manual 00809-0200-4101, Rev AA dated on July 2008<br>j. QAL2 report issued by AIRTEC Date of test 14-16/12/2011<br>AST Report issued by AIRTEC date of test 24 – 25/09/2012<br>QAL2 report issued by AIRTEC Date of test 23-25/10/2013 |                                 |   |
| 6        | ENAEX S.A.                              | <u><b>Calculation Spreadsheet and Tools</b></u><br>a. ACM0019_Model PANNA 4_confidential.xlsx   | Various<br>See the left column  |   |
| 7        | ENAEX S.A.<br>Carbon Climate Protection | <u><b>Trainings</b></u><br>a. Signed List of Participants for Gas Analyzer Training (12/01/2012) held by Daniel Rojas Gas Analyser Specialist from INECO S.A.<br>b. Signed List of Participants for Delta V Training (12-13/01/2012) held by Pablo Saez Delta V Specialist from INECO S.A.<br>c. Information on internal WebEx Trainings held by Carbon Climate Protection  | Various<br>See the left column. | Personnel trainings                               |



South Asia

## **Annex 3**

### **Appointment Certificates**



# CERTIFICATE OF APPOINTMENT

**Mr. Hammer, Martin** fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

| Qualification applicable to |                                     |                          |                          |                          |                          |
|-----------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Standard                    | CDM                                 | GS                       | VCS                      | ISO-14064-1: 2006        | Other                    |
|                             | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Qualification as |                                     |                                     |                                     |                                     |                                     |                                     |
|------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Status           | Validator                           | Verifier                            | ATL                                 | Technical Reviewer                  | Financial Expert                    | Technical Expert                    |
|                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| TA (s)           | 1.2, 4.9, 5.1, 5.2, 11.1, 12.1.     |                                     |                                     |                                     |                                     |                                     |


| Country Expertise |                                     |                          |                          |                          |                          |       |
|-------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|
| Region            | 1                                   | 2                        | 3                        | 4                        | 5                        | Other |
|                   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Further countries |                                     |                          |                          |                          |                          |       |

| Technical Area                              |
|---|
| 1.2_ Renewables                             |
| 5.1_ 4.9_ 12.1_ Chemical process industries |
| 5.2_ Caprolactam, nitric acid, adipic acid  |
| 11.1_ Emissions of fluorinated gases        |
|   |
|   |

This appointment is valid until 31.12.2014 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0017/004.

| Date       | Signature   |
|------------|---|
| 01/06/2014 |  |

IS-CMS-CB-POG-01/05, version 03

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South Asia

## CERTIFICATE OF APPOINTMENT

Mr. Castro, Javier fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

| Qualification applicable to |                                     |                          |                          |                          |                          |
|-----------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Standard                    | CDM                                 | GS                       | VCS                      | ISO-14064-1: 2006        | Other                    |
|                             | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Qualification as |  |                                     |                                     |                                     |                                     |                                     |
|------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Status           | Validator                              | Verifier                            | ATL                                 | Technical Reviewer                  | Financial Expert                    | Technical Expert                    |
|                  | <input checked="" type="checkbox"/>    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| TA (s)           | 1.2, 5.1, 4.9, 11.1, 12.1, 13.1, 13.2. |                                     |                                     |                                     |                                     |                                     |

| Country Expertise |                                     |                                     |                          |                          |                          |       |
|-------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------|
| Region            | 1                                   | 2                                   | 3                        | 4                        | 5                        | Other |
|                   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Further countries |                                     |                                     |                          |                          |                          |       |

| Technical Area                           |
|--|
| 1.2_Renewables                           |
| 5.1_4.9_12.1_Chemical process industries |
| 11.1_Emissions of fluorinated gases      |
| 13.1_Waste handling and disposal         |
| 13.2_Animal waste management             |

This appointment is valid until 31.12.2014 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0009/004.

| Date       | Signature |
|------------|-----------|
| 01/06/2014 |           |

IS-CMS-CB-POG-01/05, version 03

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South Asia

## CERTIFICATE OF APPOINTMENT

Mr. Tausche, Konrad fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

| Qualification applicable to |                                     |                          |                          |                          |                          |
|-----------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Standard                    | CDM                                 | GS                       | VCS                      | ISO-14064-1: 2006        | Other                    |
|                             | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Qualification as |  |                                     |                                     |                                     |                                     |                                     |
|------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Status           | Validator                              | Verifier                            | ATL                                 | Technical Reviewer                  | Financial Expert                    | Technical Expert                    |
|                  | <input checked="" type="checkbox"/>    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| TA (s)           | 1.1, 4.9, 4.10, 5.1, 11.1, 12.1, 13.1. |                                     |                                     |                                     |                                     |                                     |

| Country Expertise |                                     |                          |                          |                          |                          |       |
|-------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|
| Region            | 1                                   | 2                        | 3                        | 4                        | 5                        | Other |
|                   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Further countries |                                     |                          |                          |                          |                          |       |

| Technical Area                           |
|--|
| 1.1_4.10_Thermal energy generation.....  |
| 5.1_4.9_12.1_Chemical process industries |
| 11.1_Emission of fluorinated gases       |
| 13.1_Waste handling and disposal         |
|  |
|  |

This appointment is valid until 31.12.2014 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0042/004.

| Date       | Signature |
|------------|-----------|
| 01/06/2014 |           |