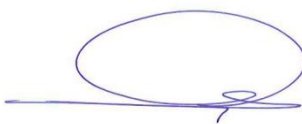



**Validation report form for renewal of crediting period for CDM project activities**
**(Version 01.0)**

Complete this form in accordance with the "Attachment: Instructions for filling out the validation report form for renewal of crediting period for CDM project activities" at the end of this form.

**VALIDATION REPORT FOR RENEWAL OF CREDITING PERIOD (RCP)**

<b>Title of the project activity</b>	Conversion of SF <sub>6</sub> to the alternative cover gas SO <sub>2</sub> at RIMA magnesium production
<b>Reference number of the project activity</b>	2486
<b>Number and duration of the next crediting period</b>	Second crediting period from 2/07/2016 to 1/07/2023
<b>Version number of the validation report for RCP</b>	02
<b>Completion date of the validation report for RCP</b>	18/10/2016
<b>Version number of PDD to which this report applies</b>	Version 02 (27/09/2016)
<b>Project participant(s)</b>	Rima Industrial S/A Nordic Environment Finance Corporation (NEFCO) Electrabel NV/SA
<b>Host Party</b>	Brazil
<b>Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)</b>	Sectoral scope 9: Metal production. AM0065 - Replacement of SF <sub>6</sub> with alternate cover gas in the magnesium industry version 02.1.
<b>Estimated annual average GHG emission reductions or net anthropogenic GHG removals in the next crediting period</b>	301,196 tCO <sub>2</sub> e
<b>Name of DOE</b>	AENOR
<b>Name, position and signature of the approver of the validation report for RCP</b>	Luis Robles Olmos  Climate Change Manager AENOR

**SECTION A. Executive summary**

AENOR has been contracted by RIMA Industrial S/A as a project participant, to undertake the validation for the renewal of the crediting period for the CDM project activity "Conversion of SF6 to the alternative cover gas SO2 at RIMA magnesium production". The validation has been performed through a process of document review based on the updated PDD Version 01, dated 6/11/2015, initially submitted for validation and the subsequent revisions, follow-up email interviews with the stakeholders, resolution of outstanding issues and issuance of the validation report.

The purpose of the project activity was substituting the cover gas used at RIMA magnesium factory, sulphur hexafluoride (SF6), a high global warming potential (GWP) gas with sulphur dioxide (SO2) a non-global warming gas. The facilities of RIMA magnesium factory where the project activity is implemented are located in Bocaiuva city, Minas Gerais state, Brazil. The geographical coordinates of project activity "Conversion of SF6 to the alternative cover gas SO2 at RIMA magnesium production" are: latitude 17° 36' 07" South and longitude 43° 48' 28" West.

The primary objective of RIMA Project is to contribute to the environmental, social and economic sustainability in Brazil by reducing greenhouse gas (GHG) emissions.

The project activity applies the approved baseline and monitoring methodology AM0065 "Replacement of SF6 with alternate cover gas in the magnesium industry" (version 02.1). The sectoral scope linked to this methodology for this case is only sectoral scope 9 (Metal production) according to decision from the Chair and Vice Chair of the CDM Executive Board that considered the case with Reference Number: INQ-04269-M6D2. Notification regarding this was received in AENOR on 28/12/2015.

The project activity "Conversion of SF6 to the alternative cover gas SO2 at RIMA magnesium production" was registered on 02/07/2009 as a CDM project, with a 7 year renewable crediting period. Project's first crediting period was from 02/07/2009 to 01/07/2016 and the second crediting period corresponds to the period from 02/07/2016 to 01/07/2023. The lifetime of the project activity is defined as 21 years, 0 months, from the start of first crediting period, so the remaining lifetime is compatible with the second crediting period (ending at 01/07/2023).

The fulfilment of the requirements as set forth in Article 12 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), the modalities and procedures for a CDM (CDM M&P) and relevant decisions of the Conference of the Parties, serving as meeting of the Parties to the Kyoto Protocol (COP/MOP) and the Executive Board of the CDM (CDM-EB) have been evaluated and conformance to the validation requirements were confirmed based on the given information. A risk based approach was taken to conduct the validation, and corrective action requests (CARs) and clarifications (CLs) were raised for relevant actions by the PP.

The validation team has raised 9 CAR and 1 CL during the validation process. The PP has taken actions and submitted to AENOR revised project design document. The validation team is of the opinion that the proposed project activity as described in the revised project design document Version 02 dated 27/09/2016 meets all the relevant UNFCCC requirements for the CDM, as well as the host country's national requirements and is likely to achieve the emission reductions and contribute to the sustainable development of the host country. AENOR therefore requests the renewal of the crediting period of the project activity "Conversion of SF6 to the alternative cover gas SO2 at RIMA magnesium production" to the CDM Executive Board.

**SECTION B. Validation team, technical reviewer and approver****B.1. Validation team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader	IR	Pellitero	Marcelino	AENOR	√	N/A	√	√
2.	Validator	IR	González	María del Carmen	AENOR	√	N/A	√	√
3.	Technical Expert	EI	Dufour	Javier	Rey Juan Carlos University	√	N/A		√
..	Financial/ Other Expert		N/A						
..	...								
..	Trainee		N/A						
..	...								

**B.2. Technical reviewer and approver of the validation report for RCP**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Arribas	Luis Javier	AENOR
2.	Technical expert	EI	Utrilla Esteban	Victoria	University Rey Juan Carlos (URJC)
3.	Approver	IR	Robles Olmos	Luis	AENOR

**SECTION C. Means of validation****C.1. Desk review**

The validation has been performed through a process of document review based on the PDD Version 01, dated 6/11/2015. Based on the desk review, follow-up email interviews with RIMA representatives and resolution of outstanding issues, the PDD was revised. The last version of the PDD Version 2 dated 27/09/2016 was checked and confirmed as complete and according to the form and its attachment PDD "Instructions for filling out the project design document form for CDM project activities" version 08.

The following documents were reviewed as part of the scope of the activity:

- PDD updated (initial and final versions) /1/ /2/
- PDD and monitoring plan registered /3/
- Revised monitoring plan /4/
- Methodology AM0065 - Replacement of SF6 with alternate cover gas in the magnesium industry version 02.1 /8/
- CDM Validation and Verification Standard, version 09.0 /5/
- Clean Development Mechanism Project Cycle Procedure, version 09.0 /6/
- Clean Development Mechanism Project Standard, version 09.0. /7/
- Sampling and surveys for CDM project activities and programme of activities, version 05 /10/
- Guidelines for sampling and surveys for CDM project activities and programme of activities, version 04 /11/.
- Associated documentation (calculation spreadsheets) /13/ /14/
- Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board.

A complete list of all documents reviewed is attached in Appendix 3 of this report.

## C.2. On-site inspection

Duration of on-site inspection: DD/MM/YYYY to DD/MM/YYYY				
No.	Activity performed on-site	Site location	Date	Team member
1.	Not applicable			

The validation team performed follow-up actions as per VVS para 23. Telephone and email interviews along with desk review have provided the validation team sufficient evidence to determine the fulfilment of all stated criteria. Thus on-site inspection is not applied for this process.

**C.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Moreira	Igor	RIMA Industrial	23/03/2016; 15/04/2016	Resolution of CARs and CL.	Marcelino Pellitero M. Carmen González
2	De Lima	Arnaldo Luiz	RIMA Industrial	2/12/2015; 30/12/2015	Validity of baseline and update; applicability of AM0065, baseline and monitoring	Marcelino Pellitero
3	Leite	Omar	RIMA Industrial	18/04/2016; 27/09/2016; 28/9/2016	PDD form version, local legal requirements	Marcelino Pellitero M. Carmen González

**C.4. Clarification requests, corrective action requests and forward action requests raised**

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	0	1 (CAR 9)	0
Application of baseline and monitoring methodology and standardized baseline	0	5 (CAR 2, CAR 3, CAR 5, CAR 6, CAR 7)	0
Validity of original baseline or its update	0	1 (CAR 1)	0
Estimated GHG emission reductions or net anthropogenic GHG removals	0	0	0
Validity of monitoring plan	1 (CL1)	2 (CAR 4, CAR 8)	0
Crediting period	0	0	0
Project participants	0	0	0
Others (please specify)	0	0	0
<b>Total</b>	<b>1</b>	<b>9</b>	<b>0</b>

**SECTION D. Validation findings****D.1. Compliance with PDD form**

<b>Means of validation</b>	The validation team has reviewed the updated PDD provided by the PP and checked the version of the PDD form applied against the information published in UNFCCC website. The findings were communicated and the PP updated the PDD form version. The validation team has confirmed that the CDM-PDD-FORM version 08 has been correctly applied and its instructions have been followed. It was also confirmed that the information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD and in the revised MP. This has been done through a comparison of both documents (registered PDD, revised MP and last version of the updated PDD).
<b>Findings</b>	CAR 9 was raised as follows: The PDD form used is not the last version in force according to CDM requirements.
<b>Conclusion</b>	The PP has updated the CDM-PDD-FORM to version 8 and the validation team has confirmed that this is the form in force at the moment of this submission according to document published in CDM website. The validation team has confirmed as well that the information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD and in the revised MP.

**D.2. Application of baseline and monitoring methodology and standardized baseline**

<b>Means of validation</b>	The project participant has updated sections of the PDD relating to the baseline, estimated GHG emission reductions, the monitoring plan and the crediting period using the valid version of the approved baseline and monitoring methodology AM0065 Replacement of SF6 with alternate cover gas in the magnesium industry (version 02.1). The validation team has confirmed, after performing the desk review and the evaluation of corrective actions and clarifications implemented by the PP to address the outstanding issues, that the baseline and monitoring methodology
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	AM0065 version 02.1 has been applied correctly as well as its associated tools and guidelines. In particular the validation team has reviewed the final updated PDD, associated documents (calculation spreadsheets), previous validation/verification documentation and has performed email interviews. No standardized baseline is applied in this project.
<b>Findings</b>	The following CARs were raised: CAR 2: GHG emission sources identified in the PDD are not consistent with those required by the applied methodology. CAR 3: List of parameters presented in chapter B.6.2 of the PDD is incomplete and their nomenclature and information requirements are not consistent with the applied version of the methodology. Section B.6.3 of the PDD is not complete: not all equations and options selected from the methodology are mentioned. CAR 5: CSF6,CON,PJ,k,j,y: The title of the parameter and source of data are not in line with the methodology. CAR 6: CALTGAS,PJ,k,j,y: The title of the parameter, its source of data and unit are not in line with the methodology. CAR 7: SO2 emissions: The unit of the parameter is not in line with the methodology and local regulation stated is not the one in force.
<b>Conclusion</b>	AENOR hereby confirms that the selected baseline and monitoring methodology, is previously approved by the CDM Executive Board, and is applicable to the project, which complies with all the applicability conditions therein. The validation team hereby confirms that the chosen baseline and monitoring methodology is correctly applied to the proposed project.

### D.3. Validity of original baseline or its update

<b>Means of validation</b>	<p>According to methodology AM0065 version 02.1 and the “<i>Combined tool to identify the baseline scenario and demonstrate additionality</i>” version 06.0, the baseline scenario is the continuation of current practice of using SF<sub>6</sub> as a cover gas. The following steps stipulated in the methodological tool, “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”, version 03.0.1, were applied by the project activity. The validation team reviewed the updated PDD against this tool and raised some issues that were addressed by the PP. The following steps were taken for the assessment:</p> <p><b>Step 1: Assess the validity of the current baseline for the next crediting period</b></p> <p>The assessment performed by the PP as described in the updated PDD has been validated through a review of information obtained from official sources in the host country to confirm relevant mandatory policies and regulations.</p> <p><b>Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies</b></p> <p>The current baseline is the continuation of SF<sub>6</sub> consumption, that complies with all relevant mandatory national and/or sectoral policies which are applicable at the time of requesting renewal of the crediting period. The validation team initially raised a CAR regarding the applicable local regulations, that was addressed by the PP in the last version of the PDD. In this case the assessment goes to Step 1.2.</p> <p><b>Step 1.2: Assess the impact of circumstances</b></p> <p>The project participant updated the PDD after addressing the outstanding issues raised by the validation team. In particular regarding the local regulation that establishes the SO<sub>2</sub> emission limit for internal ambient concentration. The updated value is 1,800 mg/Nm<sup>3</sup>. This was confirmed against the local regulation in force: Deliberation normative COPAM number 187 of 19/09/2013 (from the Environmental Council in Minas Gerais State in Brazil).</p> <p>This value has been applied in the project activity in the last period and has no impact on it since the results of measurements performed by RIMA are below this</p>
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	<p>limit as informed by its representatives.</p> <p><b>Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.</b></p> <p>This sub-step is not applicable since the identified baseline scenario at the validation of the project activity did not correspond to the continuation of use of the current equipment without any investment and, the projects proponents or third party (or parties) would undertake an investment later.</p> <p>The necessary investments were made prior to submission of project activity for validation, and are not expected future investments related to equipment involved in the continuation of the project for the new crediting period according to the information obtained from RIMA. The validation team has confirmed by comparison of updated and registered PDDs as well as the previous validation/verification documents that the facilities included in the project for the next crediting period are the same.</p> <p><b>Step 1.4: Assessment of the validity of the data and parameters</b></p> <p>According to the methodological tool “<i>Assessment of the validity of the original/current baseline and update of the baseline at the renewal of a crediting period</i>”, updates should be undertaken in the following cases:</p> <ul style="list-style-type: none"> <li>• <i>Where IPCC default values are used, the values should be updated if any new default values have been adopted and published by the IPCC, for example, in guidelines for national GHG inventories, IPCC assessment report or special reports by the IPCC;</i></li> <li>• <i>Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity.</i></li> </ul> <p>In the case of this renewal, the PP has considered the second option: the emission factors are based on the historical situation at the site of the project activity and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity. The validation team considered this option correct regarding the historical situation at the site.</p> <p><b>Step 2: Update the current baseline and the data and parameters</b></p> <p><b>Step 2.1: Update the current baseline</b></p> <p>The validation team has confirmed that the PP has updated the baseline for the second crediting period considering the changes in the value of GWP (SF<sub>6</sub>). The GWP changed from 23,900 to 22,800 accordingly with 69th meeting EB. The value of GWP (SF<sub>6</sub>) 22,800 has been correctly used in the calculations.</p> <p><b>Step 2.2: Update the data and parameters</b></p> <p>Considering the changes in GWP (SF<sub>6</sub>) as explained above, the PP has revised the calculation of baseline emissions BE<sub>y</sub> for the second crediting period. The calculations have been reproduced by the validation team and the same result was obtained so they are considered correct after including the updated values.</p>
<b>Findings</b>	<p>CAR 1</p> <p>Local regulations appearing in the PDD are not the current laws in force at the time of validation for renewal of crediting period.</p>
<b>Conclusion</b>	<p>The stepwise procedure of the methodological tool, “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the</p>

crediting period" was correctly applied by the project activity for assessing the validity of the original baseline and its update, as well as the update of other IPCC default values, i.e. GWP (SF<sub>6</sub>) as explained above.

The validation team confirmed that the changes made to update the baseline were only for alignment purposes with the version in force of the applied methodology and the reference approved by the EB.

#### D.4. Estimated GHG emission reductions or net anthropogenic GHG removals

Means of validation

The validation team has evaluated whether the steps taken and equations applied to calculate project emissions, baseline emissions and emission reductions comply with the requirements of the selected baseline and monitoring methodology and that the equations and parameters in the updated PDD have been correctly applied. AENOR has also assessed all data sources and assumptions to confirm whether it will result in a conservative estimate of the emission reductions. The summary of the validation is as below:

**Baseline emissions**

According to methodology AM0065 version 02.1, there are two ways to calculate Baseline emissions:

- Case 1: In case historical annual consumption for SF<sub>6</sub> and magnesium production per equipment *k* in each segment *j* is available, baseline emissions shall be calculated using the following equations; or
- Case 2: In case only the historical annual consumption for SF<sub>6</sub> for the total facility is available, emissions shall be calculated using the following equations;

The PP has selected case 2 for RIMA project since there is no historical annual consumption of SF<sub>6</sub> per equipment and only historical annual consumption of SF<sub>6</sub> for the total facility is available. This option is considered correct.

Baseline Emissions shall be calculated using the following equations:

$$BE_y = P_{Mg,PJ,y} \times GWP_{SF_6} \times EF_{SF_6,Mg}$$

Where:

$BE_y$  = Baseline emissions in year “y” (tCO<sub>2</sub>e/yr)

$EF_{SF_6,Mg}$  = Baseline emission factor for the facility calculated as the minimum emission factor for 3 years of data (tSF<sub>6</sub>/tMg)

$P_{Mg,PJ,y}$  = Annual amount of Mg products manufactured in project scenario in the facility per year “y”

$GWP_{SF_6}$  = Global Warming Potential of SF<sub>6</sub> (tCO<sub>2</sub>e/tSF<sub>6</sub>)

The values applied are:

$BE_y = 12,402 \times 22.800 \times 0.000458$

$BE_y = 129,507 \text{ tCO}_2\text{e/yr}$

For the whole crediting period the values are:

No	Year	Total PMg,PJ,y	GWP SF <sub>6</sub>	EF SF <sub>6</sub> ,Mg (tSF <sub>6</sub> /tMg)	BE tCO <sub>2</sub> /year
1	02/07/2016 a 31/12/2016	12.402	22.800	0,000458	129.507
2	2017	26.123	22.800	0,000458	272.787
3	2018	27.517	22.800	0,000458	287.344
4	2019	28.990	22.800	0,000458	302.725
5	2020	30.547	22.800	0,000458	318.984
6	2021	30.547	22.800	0,000458	318.984



7	2022	30.547	22.800	0,000458	318.984
8	01/01/2023 a 01/07/2023	15.232	22.800	0,000458	159.059

$$EF_{SF_6, Mg} = \min \left\{ \frac{C_{SF_6, EM, BL, y}}{P_{Mg, BL, Total, y}} \right\}$$

y = 1,2,3 (corresponding to the last three years before the implementation of the project activity)

Where:

$P_{Mg, BL, Total, y}$  = Total Amount of Mg products manufactured in baseline scenario in the facility in year "y" for each year of the 3 years prior to the project. One year may be used if 3 years of data are not available (tMg/yr)

$C_{SF_6, EM, BL, y}$  = Total  $SF_6$  actually emitted in the baseline in the facility in year "y" (t $SF_6$ /yr)

The values applied are:

$$EF_{SF_6, Mg} = \frac{9.049}{19,744} = 0.000458 \text{ t}SF_6/\text{tMg}$$

$$C_{SF_6, EM, BL} = C_{SF_6, CON, BL} \times DF_{SF_6}$$

$$C_{SF_6, EM, BL, y} = 18.098 \text{ t}SF_6/\text{yr} \times 0.5 = 9.049 \text{ t}SF_6/\text{yr}$$

Where:

$C_{SF_6, CON, BL}$  = Total annual consumption of  $SF_6$  in the industrial facility, in the baseline (t $SF_6$ /yr)

$DF_{SF_6}$  = Degradation Factor of  $SF_6$  that reacts with the magnesium in the production process assumed as 0.5

For the purpose of ex ante baseline calculations for reporting in the CDM-PDD, future production levels shall be assumed as the past 3-year minimum production levels i.e.  $P_{Mg, PJ, y} = P_{Mg, BI, Total}$

The Annual Consumption of  $SF_6$  ( $C_{SF_6, CON, BL}$ ) shall be estimated as the minimum of the following values:

- Minimum of Annual TOTAL consumption of  $SF_6$  in the facility for the last three years prior to validation (1 year data can be used in case 3 years data are not available) ( $C_{SF_6, Total, BL}$ ), multiplied by data integrity factor  $DI_{SF_6, CON, BL}$ , which is a conservative factor portraying the Data Integrity of measured total  $SF_6$  consumption, estimated as per information in Data and Parameters not monitored section; and
- Total consumption of  $SF_6$  in the facility, per year as per the 2006 IPCC Guidelines ( $C_{SF_6, IPCC, BL}$ ) as per following equation;

$$C_{SF_6, IPCC, BL} = C_{SF_6, SPIPCC} \times P_{Mg, BL, Total}$$

Minimal amount of  $SF_6$  consumption is delivered from the historical consumption of the plant that corresponds to 19.050 t $SF_6$ /yr, thus:

$$C_{SF_6, CON, BL} = 19.050 \times DI_{SF_6, CON, BL}$$

$$C_{SF_6, CON, BL} = 19.050 \times 0.95$$

$$C_{SF_6, CON, BL} = 18.098 \text{ t}SF_6/\text{yr}$$

**Project emissions**

	<p>In the RIMA project activity it is considered that project emissions are 0 because none of the gases indicated in the methodology will be used during the new crediting period.</p> <p><b>Leakage</b> No leakage is expected from the project activity according to the methodology.</p> <p>According to the calculations reproduced by the validation team with the information contained in the PDD and the spreadsheets the total value estimated for the crediting period is 2,108,374 tCO<sub>2</sub>e and the yearly average amounts 301,196 tCO<sub>2</sub>e.</p>
<b>Findings</b>	None
<b>Conclusion</b>	<p>AENOR considers that baseline methodology has been applied correctly to calculate project emissions, baseline emissions and emission reductions. The data sources are referenced. The applied values have been crosschecked by AENOR's validation team and found to be plausible, conservative and in line with the last version of the methodology applied. The validation team confirmed that the changes made to update the baseline in comparison with the registered PDD were only for alignment purposes with the version in force of the applied methodology and the reference approved by the EB. Details of the calculations of emission reductions are presented in a spreadsheet called: "RIMA_SF6_CER". Calculation input values and formulae have been verified for completeness, correctness and consistency. AENOR confirms that all assumptions and data used by the PP are listed in the final updated PDD, including their references and sources.</p> <p>Furthermore, all documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD and all values used in the PDD are considered reasonable in the context of the proposed CDM project activity that result in a conservative estimate of emission reductions.</p>

#### D.5. Validity of monitoring plan

<b>Means of validation</b>	<p>The validation team has examined the monitoring plan included in the updated PDD and associated documents (sampling plan calculation spreadsheet) against the requirements of the methodology AM0065 "Replacement of SF6 with alternate cover gas in the magnesium industry" (version 02.1) and the VVS. It is confirmed that the monitoring plan includes all data, parameters and related information required in the applied methodology. The previous validation/verification documentation has been checked as well to confirm the monitoring information. The monitored parameters are the following:</p> <ul style="list-style-type: none"> <li>• <i>PMg,PJ,k,j,y: Production output: annual amount of Mg or Mg products manufactured in project scenario in each equipment "k" in each segment "j", per year.</i> According to the information provided by RIMA, produced amount of ingots, liquid metal and die casting pieces are measured by calibrated scales in various points of the plant. These values are used to calculate emission reductions. Sold amount of ingots and die casting pieces are measured by calibrated scale (01 BAL 0005) at the Gatehouse. These values are used to cross-check purpose. In order to calculate the value of parameter <math>P_{(Mg,PJ,k,j,y)}</math> RIMA has implemented a sampling to establish the value for the weight of the die casting pieces. Details are included below.</li> <li>• <i>CSF6,CON,PJ,k,j,y: The total consumption of SF6 in the industrial facility in the project scenario in each equipment "k" in each segment "j", per year.</i> This parameter is not applicable to RIMA project, as SF<sub>6</sub> is not used since its implementation.</li> <li>• <i>CALTGAS,PJ,k,j,y: Consumption of alternate gas SO2, in project scenario for each equipment "k" in each segment "j" per year.</i> RIMA uses a combination of the accounting method and the weight difference method for the gas cylinders as recommended by the IPCC.</li> <li>• <i>SO2 emissions:</i> Measurements are taken 4 four times a year by an external laboratory specialized.</li> <li>• <i>Magnesium sales reports:</i> Data used for comparison with PMg,PJ,k,j,y to</li> </ul>
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	<p>avoid overestimation of Mg production and CERs.</p> <p>The changes included in comparison with the registered monitoring plan are related to calibration frequency (annually) of scales and flow meters in order to comply with the current version of the methodology and the new applicable local regulations in force at the moment of the renewal of the crediting period. This changes are related to parameters PMg,PJ,k,j,y and CSF6,CON,PJ,k,j,y respectively.</p> <p><u>Sampling</u></p> <p>In order to calculate the value of parameter <math>P_{(Mg,PJ,k,j,y)}</math> RIMA has implemented a sampling to establish the value for the weight of the die casting pieces. The calculations has been reproduced by the validation team according to the data included in the PDD and the calculation spreadsheet of the sampling and the same results have been obtained as detailed below:</p> <p>A random sampling has been performed to obtain the weight produced of die casting pieces, the weight of the sample is used to determine the monthly average weight of the die casting pieces. The value obtained is multiplied by the quantity of produced die casting pieces. The reliability calculations have been verified considering 95/10 confidence/precision as required in the "Guideline - Sampling and surveys for CDM project activities and programmes of activities" version 04.0 for large scale projects.</p> <p>The target population is defined by all types of the die casting pieces of magnesium that are not homogeneous and consist of several sub-populations or strata that are homogeneous, so a stratified random sampling has been selected.</p> <p>The sample size has been estimated considering the total number of die casting pieces produced, the average weight of each type of die casting pieces, the standard deviation and the level of reliability/precision.</p> <p>The total number of die casting pieces produced used for sample size calculation refers to the 7<sup>th</sup> monitoring period (01/10/2012 to 31/12/2014) which was the most updated information that the PP had at the moment of preparing the new PDD.</p> <p>The PP had performed calculations for sample size based on definition in section 3.2 and 3.2.1 of "Appendix 1: Best-practice examples for sample size calculations" of the "Guideline - Sampling and surveys for CDM project activities and programmes of activities".</p> <p>The sample size has been estimated considering the total number of die casting pieces produced, the average weight of each type of die casting pieces, standard deviation and the level of reliability/precision. For each stratification group the mean and standard deviation have been calculated and subsequently the overall mean and standard deviation were estimated.</p> <p>In order to achieve the values of 95/10 confidence/precision the PP took two additional samples and finally it was concluded that the sample size that meets the required specifications for reliability/precision is three samples per month for each type of die casting pieces.</p> <p>The validation team has reproduced the sample size calculations with the data provided in the PDD and in the calculation spreadsheet "RIMA_SAMPLING_PLAN.xls" obtaining the same results.</p> <p>AENOR confirms that the calculations follow the requirements of the Standard "Sampling and surveys for CDM project activities and programmes of activities" version 05.0.</p>
<b>Findings</b>	<p>CAR 4: PMg,PJ,k,j,y :The source of data is not in line with the methodology. Calculation spreadsheet used for the sampling calculations has not been provided.</p> <p>CAR 8: Magnesium sales reports: The monitoring frequency of the parameter is not in line with the methodology.</p> <p>CL1: Clarify the measurement method used for Mg die-casting parts which differs from the method used in previous verifications.</p>
<b>Conclusion.</b>	<p>The validation team has checked the monitoring plan information included in section B.7 and Appendix 5 of the updated PDD and confirms that it includes monitoring procedures that cover the following:</p> <p>(a) The operational and management structure to be put in place to implement the monitoring plan;</p>

	<p>(b) Provisions to ensure that data monitored and required for verification and issuance be kept and archived for two years after the end of the crediting period or the last issuance of CERs, whichever occurs later;</p> <p>(c) Definition of responsibilities and institutional arrangements for data collection and archiving;</p> <p>(d) Quality assurance and quality control (QA/QC) procedures;</p> <p>(e) Uncertainty levels, methods and the associated accuracy level of measuring instruments to be used for various parameters and variables;</p> <p>(f) Specifications of the calibration frequency for the measuring equipments: scales and flow meters will be calibrated annually according to local standards.</p> <p>The validation team hereby confirms that the monitoring plan contained in the final updated PDD is in compliance with the requirements of the methodology and it is feasible within the project design. AENOR's team considers that the project participants have ability to implement the monitoring plan.</p>
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#### D.6. Crediting period

<b>Means of validation</b>	AENOR reviewed the updated PDD, the registration information in the UNFCCC website (project No.2486) and information from the PP regarding the previous notification to the secretariat of their intention to renew the crediting period. The project activity "Conversion of SF6 to the alternative cover gas SO2 at RIMA magnesium production" was registered on 02/07/2009 as a CDM project, with a 7 year renewable crediting period. The second crediting period commences on the day immediately after the expiration of the first crediting period. Project's first crediting period was from 02/07/2009 to 01/07/2016 and the second crediting period corresponds to the period from 02/07/2016 to 01/07/2023.
<b>Findings</b>	None
<b>Conclusion</b>	AENOR hereby confirms that the second period was correctly and clearly defined as from 02/07/2016 to 01/07/2023 and that the notification to the secretariat was sent within the required period (Intention of renewing crediting period notification form sent on 18/11/2015 according to evidence provided by RIMA /16/)

#### D.7. Project participants

<b>Means of validation</b>	<p>AENOR reviewed the updated PDD, the registration information in the UNFCCC website (project No.2486): Modalities of communication and registered PDD to confirm the project participants.</p> <p>Project participants have already obtained the letter of approval (LoA) at Validation stage and, as per the CDM PCP §297, for the purpose of renewal of crediting period it is not necessary to obtain new letters of approval from Parties involved. The following participants were identified:</p> <ul style="list-style-type: none"> <li>• RIMA Industrial S/A</li> <li>• Nordic Environment Finance Corporation (NEFCO)</li> <li>• Electrabel NV/SA</li> </ul>
<b>Findings</b>	None
<b>Conclusion</b>	AENOR confirms that the project participants of the proposed CDM project activity are listed in the updated PDD (including Appendix 1 with contact information), and that this information is consistent with the Modalities of communication published in UNFCCC website.

#### D.8. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline	N	N/A	N/A
Corrections	N	N/A	N/A
Inclusion of a monitoring plan to a registered project activity	N	N/A	N/A
Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline	N	N/A	N/A

Changes to the project design of a registered project activity	N	N/A	N/A
Types of changes specific to afforestation and reforestation project activities	N	N/A	N/A

## SECTION E. Internal quality control

Following the completion of the assessment process by the validation team, all documentation undergoes an internal quality control through a technical review before submission to the CDM-EB. The Technical reviewer is a qualified member of AENOR, independent from the team that carried out the validation of the project activity. The technical reviewer or the team appointed for the technical review are qualified in the technical area(s) and sectoral scope(s) of the project activity.

## SECTION F. Validation opinion

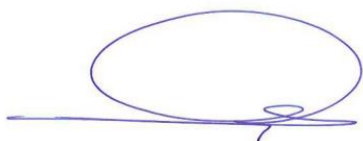
AENOR has undertaken the validation for renewal of the second crediting period for the registered project activity, "Conversion of SF6 to the alternative cover gas SO2 at RIMA magnesium production" (UNFCCC Ref. No 2486). The validation was performed on the basis of UNFCCC criteria, procedures for renewal of the crediting period of a registered CDM project activity and also on the criteria given to provide for consistent project operations, monitoring and reporting. The validation has been performed through a process of document review based on the updated PDD and associated documentation, follow-up email interviews with the stakeholders, resolution of outstanding issues and issuance of the validation report. The validation has covered all components of the project activity and issues according to CDM requirements.

The purpose of the project activity was substituting the cover gas used at RIMA magnesium factory, sulphur hexafluoride (SF6), a high global warming potential (GWP) gas with sulphur dioxide (SO2) a non-global warming gas in order to reduce the GHG emissions.

The validation team is of the opinion that the proposed project activity correctly applies the baseline and methodology AM0065 version 02.1, conforms to all the relevant UNFCCC requirements for the CDM as well as the host country's national requirements and that the monitoring arrangements described in the monitoring plan are feasible within the project design.

The project participants are able to implement the monitoring plan and it is deemed likely that the forecasted emission reductions of 2,108,374 tCO<sub>2</sub>e over the second 7 year crediting period, averaging 301,196 tCO<sub>2</sub>e annually, will be achieved, given that the underlying assumptions do not change.

The review of the final project design document (Version 02) and associated documents, and the subsequent follow-up interviews have provided AENOR with sufficient evidence to determine the fulfilment of stated criteria. Therefore AENOR requests the renewal of the crediting period of the project activity "Conversion of SF6 to the alternative cover gas SO2 at RIMA magnesium production" (UNFCCC Ref. No 2486).



Luis Robles Olmos  
Climate Change Manager

AENOR



Marcelino Pellitero  
Team Leader  
AENOR

## Appendix 1. Abbreviations

Abbreviations	Full texts
AENOR	Spanish Association for Standardization and Certification
AM0065	Approved Methodology AM0065 Replacement of SF6 with alternate cover gas in

	the magnesium industry version 02.1.
CAR	Corrective action request
CL	Clarification Request
CDM	Clean Development Mechanism
CER	Certified emission reductions
EB	Executive Board of the CDM of the Kyoto Protocol
GHG	Greenhouse Gasses
FAR	Forward Action Request
GWP	Global warming potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring plan
NEFCO	Nordic Environment Finance Corporation
PDD	Project Design Document
PCP	CDM Project Cycle Procedure
PP	Project Participant
PS	CDM Project Standard
RCP	Renewal of crediting period
UNFCCC	United Nations Framework Convention on Climate Change
VVS	CDM Validation and Verification Standard

## Appendix 2. Competence of team members and technical reviewers

Necessary skills and competences to undertake the verification are confirmed by the qualification certificate of all team involved in the process.

**CERTIFICATE OF QUALIFICATION**

Subject: Validation for renewal of crediting period "Conversion of SF<sub>6</sub> to the alternative cover gas SO<sub>2</sub> at RIMA magnesium production"

Madrid, 18/10/2016

Hereby I confirm the following records of qualification, according with AENOR internal instruction "Validation, Verification and Certification of Clean Development Mechanism (CDM) project activities" IE-DTC-039, and in relation with the verification process of the above mentioned project activity:

Name: Marcelino PELLITERO

CDM Team Leader: YES

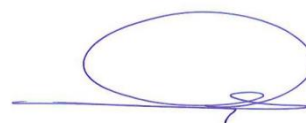
CDM Validator: N/A

CDM Technical Reviewer: N/A

External Technical Expert: N/A

Technical areas related with the project activity:

N/A



Luis Robles Olmos  
Authorised person

**CERTIFICATE OF QUALIFICATION**

Subject: Validation for renewal of crediting period "Conversion of SF<sub>6</sub> to the alternative cover gas SO<sub>2</sub> at RIMA magnesium production"

Madrid, 18/10/2016

Hereby I confirm the following records of qualification, according with AENOR internal instruction "Validation, Verification and Certification of Clean Development Mechanism (CDM) project activities" IE-DTC-039, and in relation with the verification process of the above mentioned project activity:

Name: M<sup>a</sup> Carmen GONZALEZ GALÁN

CDM Team Leader: N/A

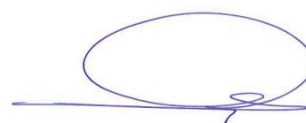
CDM Validator: Yes

CDM Technical Reviewer: N/A

External Technical Expert: N/A

Technical areas related with the project activity:

N/A



Luis Robles Olmos  
Authorised person



**CERTIFICATE OF QUALIFICATION**

Subject: Validation for renewal of crediting period "Conversion of SF<sub>6</sub> to the alternative cover gas SO<sub>2</sub> at RIMA magnesium production"

Madrid, 18/10/2016

Hereby I confirm the following records of qualification, according with AENOR internal instruction "Validation, Verification and Certification of Clean Development Mechanism (CDM) project activities" IE-DTC-039, and in relation with the verification process of the above mentioned project activity:

Name: Javier DUFOUR ANDIA

CDM Team Leader: N/A

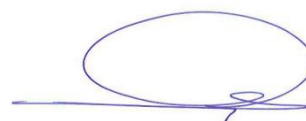
CDM Validator: N/A

CDM Technical Reviewer: N/A

External Technical Expert: YES

Technical areas related with the project activity:

TA 9.1: Aluminium and magnesium production.



Luis Robles Olmos  
Authorised person

**CERTIFICATE OF QUALIFICATION**

Subject: Validation for renewal of crediting period "Conversion of SF<sub>6</sub> to the alternative cover gas SO<sub>2</sub> at RIMA magnesium production"

Madrid, 18/10/2016

Hereby I confirm the following records of qualification, according with AENOR internal instruction "Validation, Verification and Certification of Clean Development Mechanism (CDM) project activities" IE-DTC-039, and in relation with the verification process of the above mentioned project activity:

Name: Luis Javier ARRIBAS

CDM Team Leader: N/A

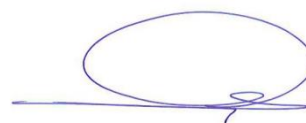
CDM Validator: N/A

CDM Technical Reviewer: YES

External Technical Expert: N/A

Technical areas related with the project activity:

N/A



Luis Robles Olmos  
Authorised person

**CERTIFICATE OF QUALIFICATION**

Subject: Validation for renewal of crediting period "Conversion of SF<sub>6</sub> to the alternative cover gas SO<sub>2</sub> at RIMA magnesium production"

Madrid, 18/10/2016

Hereby I confirm the following records of qualification, according with AENOR internal instruction "Validation, Verification and Certification of Clean Development Mechanism (CDM) project activities" IE-DTC-039, and in relation with the verification process of the above mentioned project activity:

Name: Victoria Utrilla Esteban

CDM Team Leader: N/A

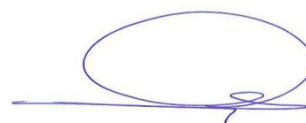
CDM Validator: N/A

CDM Technical Reviewer: N/A

External Technical Expert: YES

Technical areas related with the project activity:

TA 9.1: Aluminium and magnesium production.



Luis Robles Olmos  
Authorised person

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	RIMA	Initial PDD	Version 1 (6/11/2015)	RIMA
2	RIMA	PDD (updated final version)	Version 2 (27/09/2016)	RIMA
3	RIMA	Registered PDD	3/03/2009	UNFCCC website
4	RIMA	Revised monitoring plan	6/01/2011	UNFCCC website
5	UNFCCC	CDM Validation and Verification Standard	Version 09.0	UNFCCC website
6	UNFCCC	Clean Development Mechanism Project Cycle Procedure.	Version 09.0	UNFCCC website
7	UNFCCC	Clean Development Mechanism Project Standard.	Version 09.0	UNFCCC website
8	UNFCCC	Methodology AM0065 - Replacement of SF6 with alternate cover gas in the magnesium industry.	Version 02.1.	UNFCCC website
9	UNFCCC	Combined tool to identify the baseline scenario and demonstrate additionality	Version 06.0	UNFCCC website
10	UNFCCC	Sampling and surveys for CDM project activities and programme of activities.	Version 05	UNFCCC website
11	UNFCCC	Guidelines for sampling and surveys for CDM project activities and programme of activities	Version 04	UNFCCC website
12	UNFCCC	Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period version 03.0.1	Version 03.0.1	UNFCCC website
13	RIMA	Calculation spreadsheet "RIMA_SF6_CER"		RIMA
14	RIMA	Calculation spreadsheet "RIMA_SAMPLING_PLAN"		RIMA
15	Environmental Council in Minas Gerais State in Brasil	Deliberation normative COPAM number 187 of 19/09/2013 (from the Environmental Council in Minas Gerais State in Brasil).	19/09/2013	Public Ministry of Minas Gerais State (Brasil) official website
16	RIMA	Intention of renewing crediting period notification form (CDM - RENN-FORM)	18/11/2015	RIMA

## Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CL from this validation

CL ID	01	Section no.	D.5	Date:	23/03/2016
<b>Description of CL</b>					
<i>Clarify the measurement method used for Mg die-casting parts which differs from the method used in previous verifications.</i>					
<b>Project participant response</b>					<b>Date:</b> 27/09/2016
<p>As requested by AENOR we does review and correction of data regarding the measurement method for Mg Die-Casting.</p> <p>Regarding the measurement procedures of magnesium Die Casting parts we clarify that:</p> <p>Daily samples of each type of Magnesium Die-Casting parts produced are weighed in the balance located in the inspection room parts factory.</p> <p>The quantity/number of each type of Magnesium Die-Casting parts produced is also recorded and controlled for each injector.</p> <p>The total amount by weight of each type of Magnesium Die-Casting parts is obtained by multiplying the quantity/ number of parts by your respective weight.</p> <p>The average monthly weight of each type of Magnesium Die-Casting parts is multiplied by the quantity / number of parts produced, obtaining then the gross monthly volume.</p> <p>The quantity / number of each type of Magnesium Die-Casting parts non-conform is too recorded and controlled. For obtain your volume in weight must be multiplied then by average monthly weight.</p> <p>To obtain the net monthly weight of each type of Magnesium Die-Casting parts, it is necessary deduce of the gross volume the weight of non-conform parts.</p> <p>In Annex 5 of the new version of PDD contains the information that to calculate output in weight of each part type is used the weekly average weight.</p> <p>However, as explanation above to calculate the yield by weight is used the average monthly weight.</p> <p>So we are correcting this information in the new version of the PDD, from average weekly to monthly average.</p>					
<b>Documentation provided by project participant</b>					
Updated PDD					
<b>DOE assessment</b>					<b>Date:</b> 06/10/2016
The measurement method for MG die-casting parts is described in Appendix 5 of the final PDD. CL 1 is closed.					

Table 2. CAR from this validation

CAR ID	01	Section no.	D.3	Date:	23/03/2016
<b>Description of CAR</b>					
<i>Local regulations appearing in the PDD are not the current laws in force at the time of validation for renewal of crediting period.</i>					
<b>Project participant response</b>					<b>Date:</b> 27/09/2016

*As requested by AENOR we does review and correction of data regarding the local regulation of the limit of emissions of SO<sub>2</sub> (internal emissions).*

*We inform that the Brazil has a local regulation about SO<sub>2</sub> emissions, thus the project activity must be in accordance with this regulation.*

*When the project activity was approved in 2009, the local regulation was the deliberation normative number 01 of 1992 established the SO<sub>2</sub> emission limit in 2,500 mg / Nm<sup>3</sup>.*

*In 2013 it was published the new local regulation that is the deliberation normative number 187 of 19 September 2013 which established the new limit in 1,800 mg / Nm<sup>3</sup>.*

*Therefore, the SO<sub>2</sub> limit emissions for internal ambient concentration purposes in the project activity has reduced from 2,500 mg/Nm<sup>3</sup> to 1,800 mg / Nm<sup>3</sup>.*

*This change has no impact on project activity and/or in the baseline, since the results obtained in the measurements are far below this limit (1,800 mg/Nm<sup>3</sup>).*

*We presented in section B.4, step 1.2, of the new PDD, a table containing the results of measurements of the last certificated monitoring period.*  
*In the updated version of PDD are completed the necessary revisions and corrections regarding the actual local regulation of SO<sub>2</sub> emissions.*

<b>Documentation provided by project participant</b>	
Updated PDD	
<b>DOE assessment</b>	<b>Date:</b> 6/10/2016
The PDD has been updated according to the local regulations currently in force. The limit for SO <sub>2</sub> emissions has been updated to 1,800 mg / Nm <sup>3</sup> . The reference to the official source of information for the legal requirement is included in the PDD. CAR 1 is closed.	

<b>CAR ID</b>	02	<b>Section no.</b>	D.2	<b>Date:</b> 23/03/2016
<b>Description of CAR</b>				
<i>GHG emission sources identified in the PDD are not consistent with those required by the applied methodology</i>				
<b>Project participant response</b>				<b>Date:</b> 27/09/2016
<i>As requested by AENOR we does review and correction of data regarding the project boundary.</i>  <i>The project activity consists in change the cover gas SF<sub>6</sub> to SO<sub>2</sub> (not greenhouse gas).</i>  <i>The project activity don't use more SF<sub>6</sub>.</i> <i>The project activity don't use HFC-134a or Perfluoro-2-methyl_3-pentanone.</i> <i>In the updated version of PDD are completed the necessary revisions and corrections regarding the table of emissions sources included in or excluded from the project boundary.</i>				
<b>Documentation provided by project participant</b>				
Updated PDD				
<b>DOE assessment</b>				<b>Date:</b> 6/10/2016
The verification team has checked the last version of the PDD and section B.3 have been corrected according to the requirements of methodology regarding the emissions sources included in or excluded from the project boundary. CAR 2 is closed.				

<b>CAR ID</b>	03	<b>Section no.</b>	D. 2	<b>Date:</b> 23/03/2016
<b>Description of CAR</b>				
<i>List of parameters presented in chapter B.6.2 of the PDD is incomplete and their nomenclature and information requirements are not consistent with the applied version of the methodology. Section B.6.3 of the PDD is not complete: not all equations and options selected from the methodology are mentioned.</i>				
<b>Project participant response</b>				<b>Date:</b> 27/09/2016

As requested by AENOR we does review and correct data regarding the parameters presented in chapter B.6.2.

We do corrections regarding the data, unit, description, source of data and values of all parameters presented in chapter B.6.2.

In the updated version of PDD are completed the necessary revisions and corrections regarding the list of parameters presented in chapter B.6.2 and their nomenclature and information requirements in accordance with the applied methodology.

All equations and options described in the methodology regarding the case 2 were included in the section B.6.3.

#### Documentation provided by project participant

Updated PDD

#### DOE assessment

Date: 6/10/2016

Section B.6.2 has been revised in the final PDD. The following parameters have been updated according to applied methodology:

- $GWP_{SF6}$ ,
- $PMg_{BL,TOTAL,y}$
- $CSF6_{TOT,BL}$
- $GWP_{ALTGAS}$
- $DISF6_{CON,PJ,k,j,y}$

The value applied for  $GWP_{SF6}$  in the PDD is 22,800 tCO<sub>2</sub> eq/t SF<sub>6</sub> according to IPCC guidelines from 2006 as required in the EB69 meeting report and its Annex 3. AENOR considers that the value used in the last version of the PDD is correct and conservative.

All parameters and values included in section B.6.2 of the last PDD are considered correct and according to the methodology.

Section B.6.3 of the PDD has been revised and the methodology choices and all equations used have been explained and are considered correct. CAR 3 is closed.

CAR ID	04	Section no.	D.5.	Date: 23/03/2016
Description of CAR				
<i>PMg,PJ,k,j,y: The source of data is not in line with the methodology. Calculation spreadsheet used for the sampling calculations has not been provided.</i>				
Project participant response				Date: 27/09/2016
As requested by AENOR we does review and correction of data regarding the source data of parameter PMg.				
This parameter had reported that the data source is the internal control industry. But to comply with the methodology changed the data source for industrial facility.				
In the updated version of PDD are completed the necessary revisions and corrections regarding this parameter.				
Documentation provided by project participant				
Updated PDD and the spreadsheet used for sampling calculations (RIMA_SAMPLING_PLAN)				
DOE assessment				Date: 6/10/2016

The information for parameter  $PMg_{PJ,k,j,y}$  has been updated in the last version of the PDD. The source of data is according to the methodology.

The spreadsheet with sampling calculations has been provided. The calculations have been checked and are in accordance to applicable criteria from Guidelines "Sampling and surveys for CDM project activities and programmes of activities" version 04. Calculations have been reproduced by the validation team and the same result has been obtained.

CAR 4 is closed.

<b>CAR ID</b>	05	<b>Section no.</b>	D.2.	<b>Date:</b> 23/03/2016
<b>Description of CAR</b>				
<a href="#"><i>CSF6,CON,PJ,k,j,y:-The title of the parameter and source of data are not in line with the methodology.</i></a>				
<b>Project participant response</b>				<b>Date:</b> 27/09/2016
As requested by AENOR we does review and correction of data regarding the title and source of parameter $C_{SF6}$ .				
This parameter had reported that the data source is the internal control industry. But to comply with the methodology changed the data source for industrial facility.				
In the updated version of PDD are completed the necessary revisions and corrections regarding this parameter.				
<b>Documentation provided by project participant</b>				
Updated PDD				
<b>DOE assessment</b>				<b>Date:</b> 6/10/2016
The title of the parameter and source of data detailed in section B.7.1. of the last version of the PDD is in line with the methodology AM0065. CAR 5 is closed.				

<b>CAR ID</b>	06	<b>Section no.</b>	D.2.	<b>Date:</b> 23/03/2016
<b>Description of CAR</b>				
<a href="#"><i>CALTGAS,PJ,k,j,y: The title of the parameter, its source of data and unit are not in line with the methodology.</i></a>				
<b>Project participant response</b>				<b>Date:</b> 27/09/2016



As requested by AENOR we reviewed and corrected data regarding the title, source of data and unit of parameter CALTGAS.

This parameter had reported that the data source is the internal control industry. But to comply with the methodology changed the data source for industrial facility.

In the updated version of PDD are completed the necessary revisions and corrections regarding this parameter.

Regarding calculation/estimation of SO<sub>2</sub> consumption per equipment:

The mix of supply (SO<sub>2</sub> + N<sub>2</sub>) to the Fusion Area and Die Casting Area is realized through two separate supply lines. However, each of these areas has several points of consumption mixture (SO<sub>2</sub> + N<sub>2</sub>), where:

- Fusion Area: 16 consumption points (11 furnaces, 2 casting machines and 3 points in the Buffer Area);
- Die Casting Area: 12 consumption points (12 injector);

Each point of consumption has flow meters to measure the consumption of mixture (N<sub>2</sub> + SO<sub>2</sub>) and not directly the consumption of SO<sub>2</sub>.

The effective consumption of SO<sub>2</sub> is obtained by the weight difference method, it is weighted full SO<sub>2</sub> cylinder and after use it is weighted empty SO<sub>2</sub> cylinder. Thus to obtain the consumption of SO<sub>2</sub> per equipment is necessary to perform a proportional calculation between the amount of mixture (SO<sub>2</sub> + N<sub>2</sub>) consumed (in each equipment and each area) and the effective consumption of SO<sub>2</sub>.

To perform the estimation SO<sub>2</sub> consumption of 91,014 t for the 2nd crediting period (02/07/2016 - 01/07/2023), it was considered the estimate of total magnesium production (201,905 t) for the period multiplied by the average consumer SO<sub>2</sub> (0.451 tSO<sub>2</sub>/tMg) calculated based on effective consumption (difference in cylinder weight for gas used/returned divided by the total production of magnesium) in the baseline (2012-2014).

Therefore, it is only possible to obtain the consumption of SO<sub>2</sub> per equipment after the effective consumption of the mixture (SO<sub>2</sub> + N<sub>2</sub>) and the realization of the proportional calculation.

To make an estimate of SO<sub>2</sub> consumption per equipment would be necessary that all the facilities were in operation every day of the 2nd crediting period on their maximum capacity, which is not a viable option, since the determination of the use of equipment depends on production planning.

Thus, it is not possible to estimate which of the facilities (11 furnaces, 2 casting machines, 3 points in the Buffer Area and 12 injectors) will be in operation throughout the 2nd crediting period or which day or in which work shift.

#### Documentation provided by project participant

Updated PDD

DOE assessment

Date: 6/10/2016

The PP has clarified how the estimation of the value "SO<sub>2</sub> emissions" is calculated and that the information in the PDD is consistent with the way this value is estimated. CAR 6 is closed.

CAR ID	07	Section no.	D.2.	Date: 23/03/2016
Description of CAR				
SO <sub>2</sub> emissions: The unit of the parameter is not in line with the methodology and local regulation stated is not the one in force.				
Project participant response				Date: 27/09/2016

As requested by AENOR we does review and correction of data regarding the unit and local regulation of parameter SO<sub>2</sub> emissions.

As our response in CAR n° 1, Brazil has a local regulation about SO<sub>2</sub> emissions, thus the project activity must be in accordance with this regulation.

When the project activity was approved in 2009, the local regulation was the deliberation normative number 01 of 1992 established the SO<sub>2</sub> emission limit in 2,500 mg / Nm<sup>3</sup>.

In 2013 it was published the new local regulation that is the deliberation normative number 187 of 19 September 2013 which established the new limit in 1,800 mg / Nm<sup>3</sup>.

Therefore, the SO<sub>2</sub> limit emissions for internal ambient concentration purposes in the project activity has reduced from 2,500 mg/Nm<sup>3</sup> to 1,800 mg / Nm<sup>3</sup>.

This change has no impact on project activity and/or in the baseline, since the results obtained in the measurements are far below this limit (1,800 mg/Nm<sup>3</sup>).

We presented in section B.4, step 1.2 of the new PDD, a table containing the results of measurements of the last certificated monitoring period.

In the updated version of PDD are completed the necessary revisions and corrections regarding this parameter and local regulation.

#### Documentation provided by project participant

Updated PDD

#### DOE assessment

Date: 6/10/2016

The references to the unit of parameter SO<sub>2</sub> emissions (mg/m<sup>3</sup>) and to the applicable local regulation has been updated in the PDD according to COPAM Norm 187, 19 September 2013. The monitoring method is considered according to the methodology. CAR 7 is closed.

CAR ID	08	Section no.	D.5.	Date: 23/03/2016
<b>Description of CAR</b>				
<i>Magnesium sales reports: The monitoring frequency of the parameter is not in line with the methodology.</i>				
<b>Project participant response</b>				Date: 27/09/2016
As requested by AENOR we does review and correction of data regarding the monitoring frequency of parameter Magnesium sales report.				
We had informed that the monitoring frequency was continuous because sales are held daily. Control of magnesium sales are made continuously.				
But to comply with the methodology the monitoring frequency is changed to annually.				
In the updated version of PDD are completed the necessary revisions and corrections regarding this parameter.				
<b>Documentation provided by project participant</b>				
Updated PDD				
<b>DOE assessment</b>				Date: 6/10/2016
The last version of the PDD has been updated and it is in line with the methodology AM0065. The frequency for monitoring "magnesium sales reports" is annually. CAR 8 is closed.				

CAR ID	09	Section no.	D.1.	Date: 23/03/2016
<b>Description of CAR</b>				
<i>The PDD form used is not the last version in force according to CDM requirements.</i>				
<b>Project participant response</b>				Date: 27/09/2016
The PDD has been updated to the last version of the applicable format version CDM-PDD-FORM version 08.				
<b>Documentation provided by project participant</b>				

<i>Updated PDD</i>	
<b>DOE assessment</b>	<b>Date:</b> 6/10/2016
The PDD form has been updated to the last version (CDM-PDD-FORM version 08) CAR 9 is closed.	

<b>FAR ID</b>	N/A	<b>Section no.</b>		<b>Date:</b> DD/MM/YYYY
<b>Description of FAR</b>				
<b>Project participant response</b>				<b>Date:</b> DD/MM/YYYY
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY

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### Document information

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