Monitoring report form for CDM project activity
(Version 08.0)

Complete this form in accordance with the instructions attached at the end of this form.

MONITORING REPORT			
Title of the project activity	Transalloys Manganese Alloy Smelter Energy Efficiency Project		
UNFCCC reference number of the project activity	1027		
Version number of the PDD applicable to this monitoring report	6		
Version number of this monitoring report	5		
Completion date of this monitoring report	03/09/2021		
Monitoring period number	Fifth Monitoring Period		
Duration of this monitoring period	01/05/2011 – 30/09/2014 (including both days)		
Monitoring report number for this monitoring period	1		
Project participants	Highveld Steel and Vanadium Corporation Limited		
Host Party	Republic of South Africa		
Applied methodologies and standardized baselines	Methodology: AM0038 - Methodology for improved electrical energy efficiency of an existing submerged electric arc furnace used for the production of SiMn ver. 1 and ACM0002 ver. 6 - Consolidated methodology for grid-connected electricity generation from renewable sources		
Sectoral scopes	Sectoral Scopes: 9 (Metal production) and 1 (Energy industries (renewable - / non-renewable sources))		
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013 until 31 December 2020	Amount achieved from 1 January 2021
	360,565 tCO_2e	250,244 tCO_2e	0 tCO_2e
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	227,739 tCO_2e		

SECTION A. Description of project activity

A.1. General description of project activity

At its facility close to Emalahleni, South Africa Transalloys (Pty) Ltd. produces silicomanganese (SiMn) alloy which is a key component in steel making). The Transalloys facility currently operates 5 submerged electric arc furnaces (designation; F1, F3, F5, F6 and F7).

Purpose of the project activity

The Transalloys Manganese Alloy Smelter Energy Efficiency Project (the "Project") is an industrial energy efficiency project that reduces the electricity consumption in the production of SiMn alloy.

Measures taken for GHG emission reductions

The Project displaces electricity from the South African grid, which is predominantly coal based by retrofitting and implementing new technology into the existing furnace infrastructure.

A.2. Location of project activity

The Project is located approximately 100 km east of Tshwane (formerly known as Pretoria). The location of the Project site can be uniquely identified as follows:

- Host Country: Republic of South Africa
- Region/State/Province: Mpumalanga
- City/Town/Community: Emalahleni, formerly known as Witbank
- GPS Coordinates: S25º53'43" E29º07'00"

The below map assists in the identification of the Project location:

A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Republic of South Africa (host)	Highveld Steel and Vanadium Corporation Limited	No

Table 1: Parties and project participants

A.4. References to applied methodologies and standardized baselines

- AM0038 - Methodology for improved electrical energy efficiency of an existing submerged electric arc furnace used for the production of SiMn (version 1); https://cdm.unfccc.int/filestorage/C/D/M/CDMWF_AM_TP3XH1K34Q0RXZRQYH1LI1ECI91N87/EB26_repan05_AM0038-NM0146.pdf?t=VGd8cHgwM3NnfDAPJ9gyD2eksOHIPKg1nWor

- ACM0002 - Consolidated methodology for grid-connected electricity generation from renewable sources (version. 6); https://cdm.unfccc.int/filestorage/C/D/M/CDMWF_AM_BW759ID58ST5YEEV6WUCN5744MN763/eb24_repan07_ACM0002_ver06_for_web.pdf?t=NDN8cHgwM3ZsfDDsde9FgdcJAI0J7alYtuDA

- TOOL01 - Tool for the demonstration and assessment of additionality (version 7.0.0); https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf

A.5. Crediting period type and duration

Fixed crediting period: 01/10/2004 – 30/09/2014 (including both days).

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

Furnaces 1, 3, and 5 (subsequently “F1”, “F3”, and “F5”) are of “Elkem” design, while Furnace 6 (subsequently “F6”) is a self built furnace based on that design. Furnace 7 (subsequently “F7”) is of “Demag” design.

The retrofit of the furnaces consists of the following:

- F5 and F7: the Pitch Centre Diameter (subsequently “PCD”) which measures the distance between the three electrodes (please refer to Figure 3 of the registered PDD), was optimised in order to reduce electricity consumption. If the PCD is too large, then the furnace requires a higher current density; whereas if the PCD is too small, the outside of the furnace(s) cool(s) excessively, resulting in operational difficulties. The decision to change the PCD was based on assumptions and mathematical models that still require actual confirmation in practice, since such innovative changes imply an element of uncertainty. Changing the PCD means that all 3 electrode column assemblies and the material inlets have to be changed, in addition to adaptation of the existing roofing structure (to the new dimensions). For F5, the investment cost was relatively high since the off-take systems (i.e. stacks) also had to be changed, and new lining and foundations installed for the furnace. “Pyromet” provided the technology for these furnaces, and it was the first time such technology was employed for a Brownfield project.

- The same principles apply to F1, F3, and F6, however, these units being smaller, the design was slightly different. For instance, F3 was converted from a rotating (around its vertical axle) to a static furnace, and the old pneumatic slipping system (allowing the electrode paste down the electrode) was changed – both elements make the scope of this retrofitting unique and challenging. “Bateman” provided the technology for these furnaces.

The diagram below is a schematic of one furnace, representing inputs and outputs of products and energy:

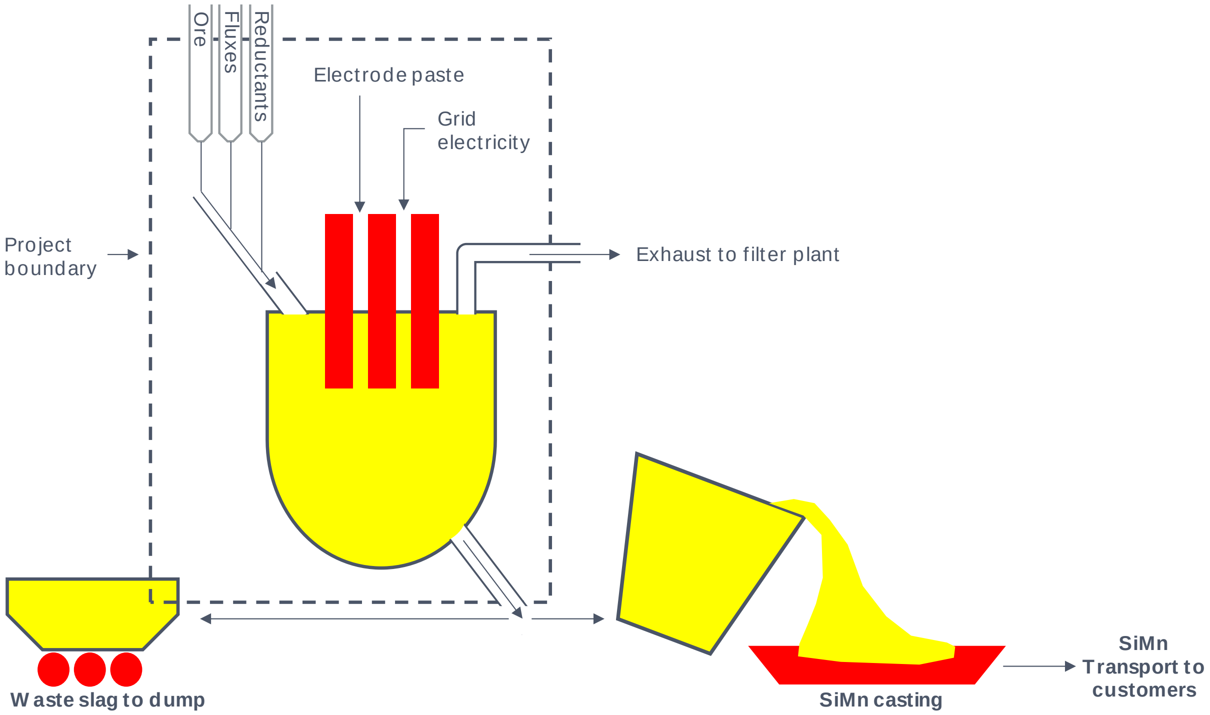

Diagram 1: Schematic of furnace (representing input(s)/output(s) of product(s)/energy

Commencement date of operation of the project activity

The project employs a phased implementation since it covers 5 furnaces at the project site. The project commenced operations on 01/10/2004, and the retrofit schedule is as the table below:

#	Retrofit status
F7	Retrofit completed 09/2004. Operation commencement 01/10/2004.
F3	Retrofit completed 10/2005. Operation commencement 30/11/2005.
F5	Retrofit completed 12/2005. Operation commencement 04/12/2005.
F6	Originally planned to be retrofitted in 2008, but delayed due to poor market conditions. To date, no retrofit.
F1	Originally planned to be retrofitted in 2009, but delayed due to poor market conditions. To date, no retrofit.

Table 2: Retrofit schedule for furnaces

Information regarding the actual operation of the project activity during this monitoring period:

F3, F5, and F7 operated throughout this monitoring period. The table below provides an overview of the downtime of F3, F5, and F7 during the monitoring period.

#	Event	F#	Date off	Date on	Duration (d)
1	Furnace Downtime	3	05/07/2011	20/07/2011	15
2	Furnace Downtime	3	12/12/2011	29/03/2012	108
3	Furnace Downtime	3	14/06/2012	15/06/2012	1
4	Furnace Downtime	3	27/07/2012	28/07/2012	1
5	Furnace Downtime	3	26/09/2012	01/10/2012	5
6	Furnace Downtime	3	01/12/2012	03/06/2013	184
7	Furnace Downtime	3	05/06/2013	06/06/2013	1
8	Furnace Downtime	5	23/06/2011	24/06/2011	1
9	Furnace Downtime	5	05/07/2011	31/07/2011	26
10	Furnace Downtime	5	01/08/2011	02/08/2011	1
11	Furnace Downtime	5	03/08/2011	04/08/2011	1
12	Furnace Downtime	5	30/11/2011	01/12/2011	1
13	Furnace Downtime	5	12/12/2011	01/06/2012	172
14	Furnace Downtime	5	02/06/2012	03/06/2012	1
15	Furnace Downtime	5	26/09/2012	01/10/2012	5
16	Furnace Downtime	5	25/02/2013	04/07/2013	129
17	Furnace Downtime	5	22/11/2013	09/12/2013	17
18	Furnace Downtime	5	18/08/2014	20/08/2014	2
19	Furnace Downtime	7	04/07/2011	23/07/2011	19
20	Furnace Downtime	7	04/08/2011	05/08/2011	1
21	Furnace Downtime	7	03/11/2011	04/11/2011	1
22	Furnace Downtime	7	12/12/2011	01/04/2012	111
23	Furnace Downtime	7	26/09/2012	01/10/2012	5
24	Furnace Downtime	7	01/12/2012	25/02/2013	86
25	Furnace Downtime	7	06/04/2013	28/05/2013	52
26	Furnace Downtime	7	01/10/2013	03/10/2013	2
27	Furnace Downtime	7	11/10/2013	12/12/2013	62
28	Furnace Downtime	7	26/08/2014	29/08/2014	3
Total					**1013**

Table 3: Furnace downtime

Events or situations affecting the applicability of the methodology:

No events occurred that affected the applicability of the methodology.

B.2. Post-registration changes

B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

No temporary deviations have been applied.

B.2.2. Corrections

No Corrections have been made for this monitoring period.

B.2.3. Changes to the start date of the crediting period

No changes to the start of the crediting period have been made.

B.2.4. Inclusion of monitoring plan

No inclusion of a monitoring plan has taken place during this monitoring period.

B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

The Monitoring Plan was revised and approved on 25/10/2009 (reference: https://cdm.unfccc.int/filestorage/Z/W/L/ZWL0IXEFJP4S8CKM5TVU1BA7HD6OGR/Revised_Monitoring_Plan.pdf?t=Q2d8cXhiYnl2fDAxG8uf7b8LUbY9WvOn7ix8. The approval changes are applicable from the period prior to this monitoring period and during this monitoring period.

B.2.6. Changes to project design

No changes to the project design have been made.

B.2.7. Changes specific to afforestation or reforestation project activity

Not applicable to this project type.

SECTION C. Description of monitoring system

Data collection procedures

The monitored data is collected at different stages of the process, in different parts of the plant, as explained below:

- Amount of SiMn produced, electricity, paste, coke, and coal used at the project furnaces are collected from meters via a Distributed Control System (subsequently "DCS") and directly displayed on an interface in the control room directly. The values are entered in the respective furnace log-sheets by the furnace operator. After being checked by the Production Engineer, the daily totals are then summed and entered in the CDM workbook. Paste cylinders are tallied as they are placed into their casings. To obtain the monthly average weight of the paste cylinders (used to calculate the amount of paste as per Monitoring Plan), the readings from the weighbridge (at the facility entrance) are recorded in a spreadsheet by the weighbridge personnel for each paste delivery. The monthly total weight and number of cylinders weighed

is then entered in the CDM workbook, where the monthly average weight of the paste cylinders is calculated.

- Quality of coal, coke (used to calculate emission factor for coke in the CDM workbook), SiMn, ore, and fluxes are obtained via composition analysis performed at the plant laboratory. The results are then entered in the CDM workbook.
- Paste quality details are obtained from the supplier.
- Values for grid emission factor and coal emission factor are taken directly from the PDD and entered in the CDM workbook, as per the Monitoring Plan.

Please refer to sections D.2 and E for detail of emission reduction calculation. The monitored parameter data is taken from the CDM workbook and reported in the CDM Monitoring Report prior to verification.

Organisational structure, roles, and responsibilities

An on-site CDM Manager is responsible for organising the monitoring team and ascertaining that the monitoring system is as per the Monitoring Plan. Furnace operators who collect monitored data report to the Production Engineer who checks the production data (including CDM monitored data). Laboratory staff performing the analyses are organised under a Laboratory Manager. Maintenance teams are in place at the plant to ascertain that monitoring equipment is maintained and calibrated as per the Monitoring Plan. Roles and responsibilities are clearly defined in the site procedures that are part of the ISO9001 certified quality management system.

Emergency procedures for the monitoring system

Since all measurements and analyses employed for project CDM monitoring are also used for internal reporting, emergency procedures are in place on-site for possible equipment failures. The metering system is represented in the diagram below.

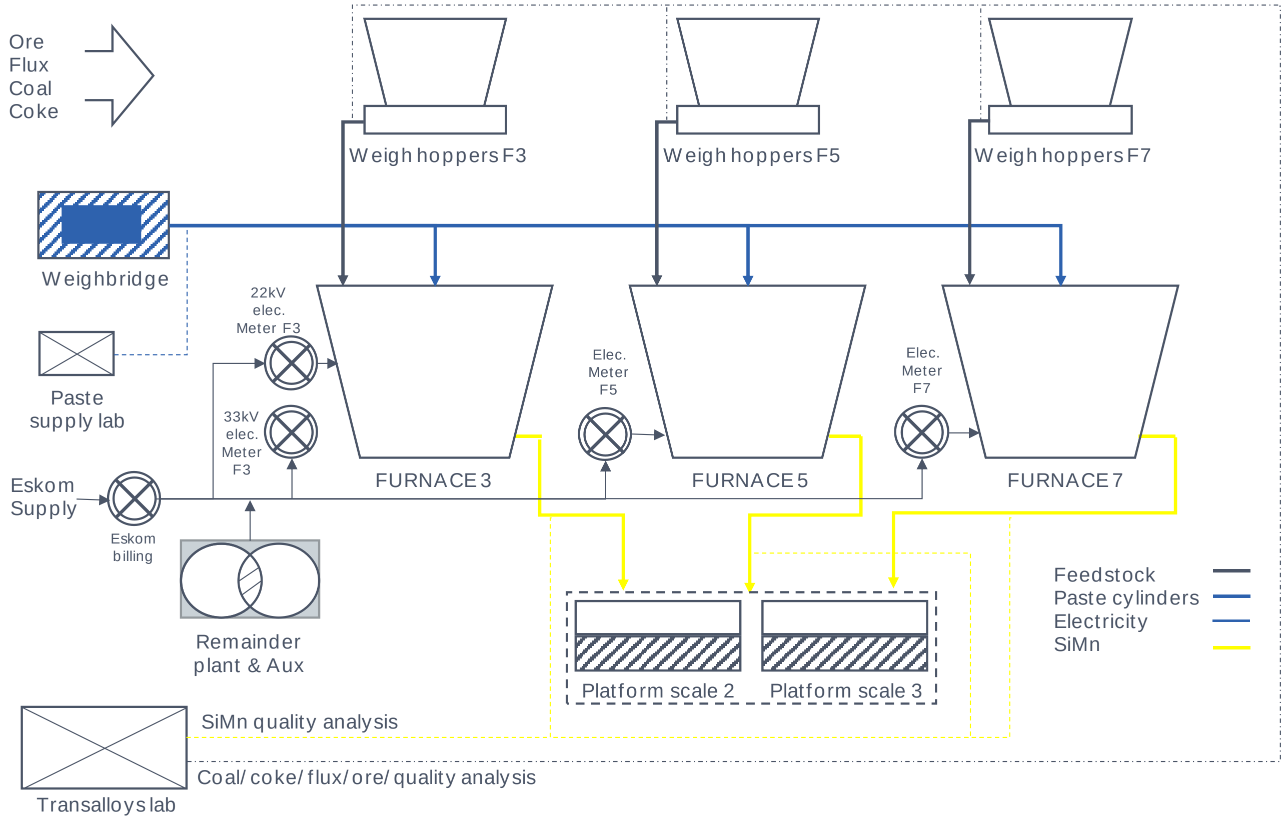

Diagram 2: Transalloys metering system

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data/Parameter	**QP_i**
Unit	Tonnes of SiMn/year
Description	Quantity of SiMn production for 7 years preceding the project activity
Source of data	Project proponent
Value(s) applied	(see table below)
Choice of data or measurement methods and procedures	Measurement methods are the same as the ones used for $QP_{y,monitored}$ (see section D.2)
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

QPi (tSiMn/y)					
Furnace	**1**	**3**	**5**	**6**	**7**
1997	21,685	21,930	38,847	22,571	40,685
1998	7,506	9,518	42,005	24,188	42,399
1999	21,779	17,680	35,788	8,238	44,477
2000	18,641	19,731	35,877	21,269	34,862
2001	21,809	22,660	34,843	21,846	31,933
2002	23,349	22,159	41,898	22,618	43,700
2003	21,321	21,601	35,108	21,632	37,717
Total 97-03	**136,090**	**135,279**	**264,366**	**142,362**	**275,773**

Data/Parameter	**EC_i**
Unit	MWh/year
Description	Annual grid electricity consumption by the submerged electric arc furnace for 7 years preceding the project activity
Source of data	Project proponent
Value(s) applied	(see table below)
Choice of data or measurement methods and procedures	Measurement methods are the same as the ones used for EC_y (see section D.2)
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

ECi (MWh/y)					
Furnace	**1**	**3**	**5**	**6**	**7**
1997	115,511	115,381	224,774	130,113	231,635
1998	41,735	51,814	248,046	136,458	256,158
1999	111,837	93,474	205,295	44,755	260,410
2000	97,656	100,458	214,388	120,804	208,377
2001	107,293	111,287	168,826	107,474	173,106
2002	109,409	104,833	200,136	119,525	216,880
2003	99,142	99,678	172,039	110,109	192,187
Total 97-03	**682,583**	**676,925**	**1,433,504**	**769,238**	**1,538,753**

Data/Parameter	**$Q_{bcoal,i}$**
Unit	Tonnes of coal/year

Description	Annual consumption of coke used as reductant in the submerged electric arc furnace for 7 years preceding the project activity
Source of data	Project proponent
Value(s) applied	(see table below)
Choice of data or measurement methods and procedures	Measurement methods are the same as the ones used for $Q_{pcoal,i}$ (see section D.2)
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

Qbcoal,i (tcoal/y)					
Furnace	**1**	**3**	**5**	**6**	**7**
1997	14,538	15,064	28,939	17,345	31,098
1998	4,494	5,862	33,313	16,586	31,741
1999	13,005	11,529	31,738	5,764	37,165
2000	13,426	13,055	33,574	17,146	31,216
2001	16,304	17,863	31,619	19,936	26,698
2002	16,704	16,871	35,932	20,993	37,788
2003	18,501	19,475	32,739	20,195	33,883
Total 97-03	**96,972**	**99,719**	**227,854**	**117,965**	**229,589**

Data/Parameter	$Q_{bcoke,i}$
Unit	Tonnes of coke/year
Description	Annual consumption of coke used as reductant in the submerged electric arc furnace for 7 years preceding the project activity
Source of data	Project proponent
Value(s) applied	(see table below)
Choice of data or measurement methods and procedures	Measurement methods are the same as the ones used for $Q_{pcoke,i}$ (see section D.2)
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

Qbcoke,i (tcoke/y)					
Furnace	**1**	**3**	**5**	**6**	**7**
1997	1,480	1,718	3,644	1,734	3,702
1998	554	803	3,361	2,245	4,172
1999	1,652	1,479	2,986	788	3,517
2000	1,234	1,409	2,656	1,687	2,085
2001	1,163	1,234	1,151	1,002	1,964
2002	563	836	2,247	823	1,880
2003	1,011	973	1,507	1,118	1,689
Total 97-03	**7,657**	**8,452**	**17,552**	**9,397**	**19,009**

Data/Parameter	$Q_{bpaste,i}$
Unit	Tonnes of paste/year
Description	Annual consumption of electrode paste used as electrode in the submerged electric arc furnace for 7 years preceding the project activity
Source of data	Project proponent

Value(s) applied	Qbpaste,i (tpaste/y) Furnace | 1 | 3 | 5 | 6 | 7 1997 | 1,127 | 1,136 | 2,123 | 1,175 | 2,023 1998 | 350 | 487 | 2,344 | 1,275 | 2,045 1999 | 1,086 | 946 | 1,763 | 417 | 2,123 2000 | 1,032 | 104 | 2,045 | 1,143 | 2,009 2001 | 1,141 | 1,147 | 2,031 | 958 | 1,543 2002 | 1,029 | 1,025 | 1,968 | 975 | 1,739 2003 | 1,097 | 956 | 1,690 | 1,028 | 1,721 **Total 97-03** | **6,862** | **5,801** | **13,964** | **6,971** | **13,203**
Choice of data or measurement methods and procedures	Measurement methods are the same as the ones used for $Q_{p\ paste,i}$ (see section D.2)
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

Data/Parameter	**$EF_{bcoal,i}$**
Unit	tCO_2/tcoal
Description	Emission factor applied for the coal consumed as reductant based on carbon content
Source of data	IPCC (2006) – Vol. 3, Ch. 4, section 4.3.3.2, table 4.6, p. 4.37
Value(s) applied	EFbcoal,i (tCO2/tcoal) 3.1 | tCO2/tcoal Source: IPCC (2006) Vol3, Ch4, p4.37, Table 4.6
Choice of data or measurement methods and procedures	Project specific values cannot be used because previous coal carbon contents monitoring precluded a calculation of EF_{bcoal} (several coal types have been used and no weighted average can be done)
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

Data/Parameter	**$EF_{bcoke,i}$**
Unit	tCO_2/tcoke
Description	Emission factor applied for the coke consumed as reductant based on carbon content
Source of data	Project proponent

<table>
<tr><td>Value(s) applied</td><td>
<table>
<tr><th colspan="2">EFbcoke,i (tCO2/tcoke)</th></tr>
<tr><th>Year</th><th>EF</th></tr>
<tr><td>1997</td><td>3.09</td></tr>
<tr><td>1998</td><td>3.13</td></tr>
<tr><td>1999</td><td>3.1</td></tr>
<tr><td>2000</td><td>3.12</td></tr>
<tr><td>2001</td><td>3.15</td></tr>
<tr><td>2002</td><td>3.17</td></tr>
<tr><td>2003</td><td>3.19</td></tr>
<tr><td>Average 97-03</td><td>3.13</td></tr>
</table>
</td></tr>
<tr><td>Choice of data
or measurement methods
and procedures</td><td>Measurement methods are the same as those that will be used for $EF_{p\ coke,y}$ (see section D.2)</td></tr>
<tr><td>Purpose of data/parameter</td><td>Calculation of baseline emissions</td></tr>
<tr><td>Additional comments</td><td>-</td></tr>
</table>

<table>
<tr><td>Data/Parameter</td><td>$EF_{bpaste,i}$</td></tr>
<tr><td>Unit</td><td>tCO2/t of carbon paste</td></tr>
<tr><td>Description</td><td>Emission factor applied for the electrode paste consumed as electrode based on carbon content</td></tr>
<tr><td>Source of data</td><td>Paste supplier</td></tr>
<tr><td>Value(s) applied</td><td>3.32</td></tr>
<tr><td>Choice of data
or measurement methods
and procedures</td><td>
The paste supplier supplied the following information on the composition of the paste:
<table>
<tr><th>PROPERTY</th><th>UNIT</th><th>STANDARD</th><th>TYPICAL</th></tr>
<tr><td>Ash Content</td><td>%</td><td><6 - 7</td><td>6.4</td></tr>
<tr><td>Volatile Matter</td><td>%</td><td>13 - 15</td><td>13.6</td></tr>
<tr><td>Fixed Carbon Content</td><td>%</td><td>> 79</td><td>79.8</td></tr>
</table>
The emission factor is then calculated using equation 4.19, p. 4.33 of IPCC (2006):
<table>
<tr><td>Equation 4.19
Carbon Content of Ferroalloys Reducting Agents
Total C-content in reducing agent i = fix C in i + Content of volatiles in i * Cv</td></tr>
</table>
Where:
Cv = Carbon content in volatiles. Unless other information is available, Cv = 0.65 is used for coal and 0.80 for coke.

Cv value employed is the same as for coke (0.80), since both have similar characteristics:
- 78.5% of the paste is anthracite, which is a form of coal with high calorific value and carbon content (like coke)
- 21.5% of the paste is the binder, which itself is composed of a minimum of 45% of coking-value.

Therefore the %m/m of carbon in the paste is 79.8 + (13.6 * 0.80) = 90.68% and EFb paste = 3.32tCO2/t paste (which is still lower than the IPCC value of 3.4).
</td></tr>
</table>

Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

Data/Parameter	**Quality of coalb**
Unit	Mass fraction of each component (%m/m)
Description	Quality of coal based on elementary analysis and other relevant properties
Source of data	Project proponent
Value(s) applied	see table below
Choice of data or measurement methods and procedures	Measurement methods are the same as the ones that will be used for the Quality of coalp (see section B.7.2). The value for 2003 is used to facilitate the comparison with the quality of coal at the beginning of the project activity.
Purpose of data/parameter	-
Additional comments	Project proponent's lab analyses are preferred to supplier's data and are used to determine the emission factor of the coal EFbcoal,i.

Quality of coalb				
Composition (%)	**Fixed C**	**Volatiles**	**S**	**P**
Average 2003	52.9	30.4	0.74	0.22

Data/Parameter	**Quality of cokeb**
Unit	Mass fraction of each component (%m/m)
Description	Quality of coke based on elementary analysis and other relevant properties
Source of data	Project proponent
Value(s) applied	see table below
Choice of data or measurement methods and procedures	Measurement methods are the same as the ones that will be used for the Quality of coalp (see section B.7.2). The value for 2003 is used to facilitate the comparison with the quality of coal at the beginning of the project activity.
Purpose of data/parameter	-
Additional comments	Project proponent's lab analyses are preferred to supplier's data and are used to determine the emission factor of the coke EFbcoke,i.

Quality of cokeb				
Composition (%)	**Fixed C**	**Volatiles**	**S**	**P**
Average 2003	85.6	1.7	0.93	0.35

Data/Parameter	**Quality of electrode pasteb**
Unit	Mass fraction of each component (%m/m)
Description	Quality of electrode paste based on elementary analyses and other relevant properties
Source of data	Supplier

Value(s) applied

GREEN PASTE			
Property	**Unit**	**Standard**	**Typical**
Ash Content	%	< 6 - 7	6.4
Volatile Matter	%	13 - 15	13.6
Fixed Carbon Content	%	> 79	79.8
Apparent Density	g/cm^3	> 1.56	1.6
Plasticity Range	%	15 - 55	24
Specific Heat	J/gC	> 0.8	0.88
Softening Point	C	55 - 59	Per customer
		68 - 73	
Size (Cylinders)	mm	Diameter: 400 x Length 550	Per customer
		Diameter: 500 x Length 550	
		Diameter: 400 x Length 1000	
		Diameter: 600 x Length 1000	
		Diameter: 700 x Length 1000	
Extruder Block Size	mm	100 x 100 x 80	

PASTE BAKED @ 1000C			
Property	**Unit**	**Standard**	**Typical**
Ash Content	%	< 8	7.3
Fixed Carbon Content	%	> 90	93
Apparent Density	g/cm^3	> 1.35	1.4
Relative Density	g/cm^3	> 1.8	1.87
Total Porosity	%	> 23	24.9
Specific Electrical Resistivity	Ohm.mm^2/m	< 80	65.7
Thermal Shock Resistance	kW	> 12	12.5
Thermal Conductivity	W/mK	8.0 - 9.0	8.8
Specific Heat	J/gC	> 0.7	0.75
Cold Crushing Strenght	kg/cm^2	> 50	54
Bending Strenght	kg/cm^2	30 - 50	46.4
Elasticity Modulus	kg/cm^2 x 104	3.0 - 5.0	4.4
Linear Coeff. Of Thermal Expansion	20 - 950 C		Nil

Choice of data or measurement methods and procedures	-
Purpose of data/parameter	-
Additional comments	Green paste is bought from the supplier and put into the electrodes. As the heat increases when it goes down the electrodes, it is baked before it reaches the core of the furnace. The quality of green paste should be used for the comparison between the composition of the paste before and after the project activity, and for the calculation of emission factors.

Data/Parameter	**Quality of SiMnb**
Unit	Text
Description	Quality of SiMnb, based on elementary analysis and other relevant properties
Source of data	Project proponent

Value(s) applied	

Quality of SiMnb				
SiMn Specifications (Contractual elements with customer):				
Elements		**Max (%)**	**Min (%)**	**Typical (%)**
Mn	Manganese	68*	65.0	66.7
Si	Silicon	18.0	16.0	17.1
C	Carbon	2.0	-	1.6
P	Phosporus	0.150	-	0.1
S	Sulphur	0.015	-	0.01
* Mn content of SiMn produced by furnaces 1 and 3 don't have a maximum Mn content allowed (because it is used for different applications)				

Choice of data or measurement methods and procedures	The specifications of the SiMn produced will be used to compare the quality of the SiMn produced before and after the project activity.
Purpose of data/parameter	-
Additional comments	-

Data/Parameter	**Quality of ore**
Unit	Text
Description	Quality of ore, based on elementary analysis and other relevant properties
Source of data	Project proponent
Value(s) applied	

Quality of ore			
Composition (%)	*Mn*	*Fe*	*SiO_2*
Average 2003	38.2	4.4	5
Composition (%)	*CaO*	*MgO*	*P*
Average 2003	15.1	3.6	0.017

Choice of data or measurement methods and procedures	Measurement methods are the same as the ones that will be used for the Quality of ore in the project (see section B.7.2). The value for 2003 is used to facilitate the comparison with the quality of coal at the beginning of the project activity.
Purpose of data/parameter	-
Additional comments	-

Data/Parameter	**Quality of fluxes**
Unit	Text
Description	Quality of fluxes, based on elementary analysis and other relevant properties
Source of data	Project proponent
Value(s) applied	

Quality of fluxes						
Composition of Metal rich slag:						
Composition (%)	*Mn*	*C*	*Si*	*Fe*	*CaO*	*MgN*
Average 2003	11.7	0.6	19.8	0.9	24.3	4.7
Composition of pellets:						
Composition (%)	*MnO*	*SiO2*	*CaO*	*MgO*	*FeO*	*C*
Average 2003	30.8	28.3	6.0	8.5	1.9	7.2

Choice of data or measurement methods and procedures	Measurement methods are the same as the ones that will be used for the Quality of fluxes in the project (see section B.7.2). The value for 2003 is used to facilitate the comparison with the quality of coal at the beginning of the project activity.
Purpose of data/parameter	-
Additional comments	-

D.2. Data and parameters monitored

Data/Parameter	**$QP_{y,monitored}$**
Unit	Tonnes of SiMn/year
Description	Quantity of SiMn production in year y during the project activity.
Measured/calculated/ default	Measured
Source of data	Weighting platform 2 and 3
Value(s) of monitored parameter	(see table below) The monitored values relate to the monitoring period only (from 01/01/2011 till 30/09/2014, including both days).
Monitoring equipment	**Weighting platform 2** Type: Load cell Accuracy class: +/- 2.5% Serial number: 1004206 Calibration frequency: Weekly Date of last calibration: Due to large number of dates moved to Annex I Validity: Due to large number of dates moved to Annex I **Weighting platform 3** Type: Load cell Accuracy class: +/- 2.5% Serial number: 1009758 Calibration frequency: Weekly Date of last calibration: Due to large number of dates moved to Annex I Validity: Due to large number of dates moved to Annex I
Measuring/reading/recording frequency	The data is recorded at every tapping of the furnaces. Daily totals are recorded daily.
Calculation method (if applicable)	Daily total is obtained by summing data from all tappings that occurred on that day.
QA/QC procedures	Measured data has been cross-checked with product sales records by the DOE.
Purpose of data/parameter	Baseline and Project emission calculations
Additional comments	As per EB52 Annex 60, when there is no calibration record, the maximum error is employed for conservativeness. The ER spreadsheet has been designed to apply this correction per furnace for each period a meter is outside its calibration window across the full crediting period.

Value(s) of monitored parameter:

Year	Months	Furnace 3	Furnace 5	Furnace 7
2011	8	15,909	27,995	30,390
2012	12	17,902	31,357	37,988
2013	12	15,117	32,598	28,911
2014	9	21,084	42,197	41,001
Total		**70,012**	**134,148**	**138,290**

Data/Parameter	**EC_y**
Unit	MWh/year
Description	Annual grid electricity consumption by the submerged electric arc furnace
Measured/calculated/ default	Measured
Source of data	Electricity meter(s)
Value(s) of monitored parameter	(see table below) The monitored values relate to the monitoring period only (from 01/01/2011 till 30/09/2014, including both days).

Year	Furnace 3	Furnace 5	Furnace 7
2011	56,773	115,540	120,258
2012	68,113	112,183	149,371
2013	60,543	140,224	124,234
2014	82,798	171,741	168,330
Total	**268,227**	**539,688**	**562,193**

	Furnace 3 (22kV)	
	Type:	Electricity meter
	Accuracy class:	0.50%
	Serial number:	95679335
	Calibration frequency:	N/A
	Date of last calibration:	23/10/2010
	Validity:	N/A
	Furnace 5	
	Type:	Electricity meter
	Accuracy class:	0.50%
	Serial number:	96756043
	Calibration frequency:	N/A
	Date of last calibration:	28/11/2010
	Validity:	N/A
	Furnace 7	
	Type:	Electricity meter
	Accuracy class:	0.50%
	Serial number:	96505392
	Calibration frequency:	N/A
	Date of last calibration:	19/09/2010
	Validity:	N/A
Measuring/reading/recording frequency	Continuously measures per furnace and recorded monthly.	
Calculation method (if applicable)	Not applicable	
QA/QC procedures	Consumption of each furnace is cross-checked monthly with total electricity bills.	
Purpose of data/parameter	Project emission calculation	
Additional comments	During this monitoring period the following meters were used: 95679335 (F3), 96756043 (F5) and 96505392 (F7). As per the supplier's manual (p.48) these meters are factory calibrated and do not require further calibration.	

Data/Parameter	**$Q_{pcoal,y}$**
Unit	Tonnes of coal/year
Description	Annual consumption of coal used as reductant in the submerged electric arc furnace

Measured/calculated/ default	Measured
Source of data	Load cells based weigh hoppers
Value(s) of monitored parameter	see table below. The monitored values relate to the monitoring period only (from 01/01/2011 till 30/09/2014, including both days).

Year	Furnace 3	Furnace 5	Furnace 7
2011	11,171	22,816	23,032
2012	12,540	24,210	26,695
2013	12,798	29,654	24,005
2014	17,171	33,491	30,885
Total	**53,680**	**110,172**	**104,616**

The monitored values relate to the monitoring period only (from 01/01/2011 till 30/09/2014, including both days).

Monitoring equipment		
	Furnace 3 Weigh Hoppers	
	Type:	Weigh hopper
	Accuracy class:	2.50%
	Serial number:	Comp: 1901253,1701022,1606080,1805235, 1605205,141364, 1501620,1906044,1607247, 1607251,1707160,1607250
	Calibration frequency:	Weekly
	Date of last calibration:	Due to large number of dates moved to Annex I
	Validity:	Due to large number of dates moved to Annex I
	Furnace 5 Weigh Hoppers	
	Type:	Weigh hopper
	Accuracy class:	2.50%
	Serial number:	Comp: 1301537,1301532,1301531
	Calibration frequency:	Weekly
	Date of last calibration:	Due to large number of dates moved to Annex I
	Validity:	Due to large number of dates moved to Annex I
	Furnace 7 Weigh Hoppers	
	Type:	Weigh hopper
	Accuracy class:	2.50%
	Serial number:	Comp: 1501436,1501423,1501425,1501422
	Calibration frequency:	Weekly
	Date of last calibration:	Due to large number of dates moved to Annex I
	Validity:	Due to large number of dates moved to Annex I

Measuring/reading/recording frequency	Weighted per batch used in each furnace, recorded daily.
Calculation method (if applicable)	Not applicable.
QA/QC procedures	The load cells will be maintained and calibrated regularly in line with manufacturer's requirements.
Purpose of data/parameter	Project emission calculation.
Additional comments	For clarity purposes Annex I lists all the dates at which the monitoring equipment has been calibrated, during the Monitoring Period, as well as their corresponding validity. As per EB52 Annex 60, when there is no calibration record, the maximum error is employed for conservativeness. The ER spreadsheet has been designed to apply this correction per furnace for each period a meter is outside its calibration window.

Data/Parameter	**$Q_{pcoke,y}$**
Unit	Tonnes of coke/year
Description	Annual consumption of coke used as reductant in the submerged electric arc furnace

Measured/calculated/ default	Measured
Source of data	Load cells based weigh hoppers
Value(s) of monitored parameter	<table><tr><th>Year</th><th>Furnace 3</th><th>Furnace 5</th><th>Furnace 7</th></tr><tr><td>2011</td><td>61</td><td>1,417</td><td>1,009</td></tr><tr><td>2012</td><td>572</td><td>1,564</td><td>2,009</td></tr><tr><td>2013</td><td>29</td><td>975</td><td>1,262</td></tr><tr><td>2014</td><td>105</td><td>2,270</td><td>2,200</td></tr><tr><td>**Total**</td><td>**766**</td><td>**6,226**</td><td>**6,480**</td></tr></table>The monitored values relate to the monitoring period only (from 01/01/2011 till 30/09/2014, including both days).
Monitoring equipment	**Furnace 3 Weigh Hoppers** Type: Weigh hopper Accuracy class: 2.50% Serial number: Comp: 1901253,1701022,1606080,1805235, 1605205,141364, 1501620,1906044,1607247, 1607251,1707160,1607250 Calibration frequency: Weekly Date of last calibration: Due to large number of dates moved to Annex I Validity: Due to large number of dates moved to Annex I **Furnace 5 Weigh Hoppers** Type: Weigh hopper Accuracy class: 2.50% Serial number: Comp: 1301537,1301532,1301531 Calibration frequency: Weekly Date of last calibration: Due to large number of dates moved to Annex I Validity: Due to large number of dates moved to Annex I **Furnace 7 Weigh Hoppers** Type: Weigh hopper Accuracy class: 2.50% Serial number: Comp: 1501436,1501423,1501425,1501422 Calibration frequency: Weekly Date of last calibration: Due to large number of dates moved to Annex I Validity: Due to large number of dates moved to Annex I
Measuring/reading/recording frequency	Weighted per batch used in each furnace, recorded daily.
Calculation method (if applicable)	Not applicable
QA/QC procedures	The load cells will be maintained and calibrated regularly in line with the manufacturer's requirements.
Purpose of data/parameter	Project emission calculation.
Additional comments	For clarity purposes Annex I lists all the dates at which the monitoring equipment has been calibrated, during the Monitoring Period, as well as their corresponding validity. As per EB52 Annex 60, when there is no calibration record, the maximum error is employed for conservativeness. The ER spreadsheet has been designed to apply this correction per furnace for each period a meter is outside its calibration window.

Data/Parameter	$Q_{ppaste,y}$
Unit	Tonnes of paste/year
Description	Annual consumption of electrode paste used as electrode in the submerged electric arc furnace.

Measured/calculated/ default	Measured and calculated.
Source of data	Weighbridge (for the weight of the cylinders) and production log (for the number of cylinders).
Value(s) of monitored parameter	Year | Furnace 3 | Furnace 5 | Furnace 7 2011 | 348 | 984 | 930 2012 | 433 | 1,246 | 1,150 2013 | 433 | 1,204 | 1,105 2014 | 625 | 1,569 | 1,500 **Total** | **1,839** | **5,002** | **4,684** The monitored values relate to the monitoring period only (from 01/01/2011 till 30/09/2014, including both days).
Monitoring equipment	**Weighbridge** Type: Weighbridge Accuracy class: 0.20% Serial number: 1382 I/O Calibration frequency: 2 years Date of last calibration: 30/07/2010, 29/07/2012, 08/01/2013 Validity: 29/07/2012, 28/07/2012, 07/01/2015
Measuring/reading/recording frequency	The number of paste cylinders put into the electrode is logged each time a new cylinder is used. The average weight of each cylinder is calculated based on weighing paste trucks (arriving at the facility) on a weighbridge and dividing on a monthly basis the total weight by number of cylinders delivered to the facility.
Calculation method (if applicable)	The annual figure is obtained by summing the daily product of number of cylinders used and monthly average weight.
QA/QC procedures	The weighbridge will be maintained and calibrated regularly in line with the manufacturer's requirements to ensure its accuracy. Average weight of each cylinder will be compared to indications of the supplier.
Purpose of data/parameter	Project emission calculation
Additional comments	-

Data/Parameter	**$EF_{pcoal,y}$**
Unit	tCO_2/t coal.
Description	Emission factor applied for the coal consumed as reductant in year y.
Measured/calculated/ default	Default.
Source of data	IPCC (2006) – Vol3, Ch4, section 4.3.3.2, table 4.6 page 4.37.
Value(s) of monitored parameter	3.1
Monitoring equipment	-
Measuring/reading/recording frequency	The 2006 IPCC value of 3.1tCO_2/t coal is employed in the project. If new IPCC guidelines are released, this value may be updated according to latest relevant EB guidance.
Calculation method (if applicable)	-
QA/QC procedures	IPCC data will used to ensure consistency with the emission factor employed in the baseline.
Purpose of data/parameter	Project emission calculation.

Additional comments	Note that each coal type used has a historically measured emission factor that is lower than IPCCC values, and therefore taking project-specific values for EFpcoal,y would not be conservative. Moreover, a correct project value for EFp,coal,y is not available because the amount of each type of coal used in the project is not monitored at the entrance of each project furnace hence a weighted average of EFp,coal,y is impossible to obtain.

Data/Parameter	**$EF_{pcoke,y}$**
Unit	tCo_2/tcoke
Description	Emission factor applied for the coke consumed as reductant in year y
Measured/calculated/ default	Calculated
Source of data	- Carbon content provided by laboratory analyses - Carbon content of volatiles from IPCC (2006)
Value(s) of monitored parameter	<table><tr><th>Year</th><th>tCO2e/tcoke</th></tr><tr><td>2011</td><td>3.01</td></tr><tr><td>2012</td><td>3.05</td></tr><tr><td>2013</td><td>3.09</td></tr><tr><td>2014</td><td>3.06</td></tr></table>
Monitoring equipment	-
Measuring/reading/recording frequency	Monthly
Calculation method (if applicable)	Coke samples are prepared at Transalloys and sent to the laboratory for analysis of volatile and fixed carbon content. Monthly averages of carbon contents are employed for the calculation of a monthly emission factor. The emission factor is then calculated using equation 4.19, p. 4.33 of IPCC (2006): **Equation 4.19** **Carbon Content of Ferroalloys Reducting Agents** Total C-content in reducing agent i = fix C in i + Content of volatiles in i * Cv Where: Cv = Carbon content in volatiles. Unless other information is available, Cv = 0.65 is used for coal and 0.80 for coke. The annual emission factor is calculated as the average of monthly emission factors and used for emission calculations.
QA/QC procedures	Lab analyses are done according to applicable national and international standards. If values are missing or inconsistent for some months, the average of previous and next 3 months will be used.
Purpose of data/parameter	Project emissions calculation
Additional comments	This project-specific approach is preferred to IPCC values

Data/Parameter	**$EF_{ppaste,y}$**
Unit	tCo2/t of carbon paste.
Description	Emission factor applied for the electrode paste consumed as electrode in year y.
Measured/calculated/ default	Calculated.
Source of data	Supplier or independent laboratory (and IPCC/external literature reference).

Value(s) of monitored parameter	<table><tr><th>Year</th><th>Furnace 3</th><th>Furnace 5</th><th>Furnace 7</th></tr><tr><td>2011</td><td>3.67</td><td>3.67</td><td>3.67</td></tr><tr><td>2012</td><td>3.67</td><td>3.67</td><td>3.67</td></tr><tr><td>2013</td><td>3.67</td><td>3.67</td><td>3.67</td></tr><tr><td>2014</td><td>3.67</td><td>3.67</td><td>3.67</td></tr></table>
Monitoring equipment	-
Measuring/reading/recording frequency	Monthly
Calculation method (if applicable)	The emission factor is then calculated using equation 4.19, p. 4.33 of IPCC (2006): **Equation 4.19** **Carbon Content of Ferroalloys Reducing Agents** Total C-content in reducing agent i = fix C in i + Content of volatiles in i * Cv Where: Cv = Carbon content in volatiles. Unless other information is available, Cv = 0.65 is used for coal and 0.80 for coke. Fix carbon and volatiles content will be taken from the supplier. Carbon content in volatiles (Cv) will be taken from supplier if available; if not available, the same Cv as for coke will be taken (see justification in the table of EF_{bpaste}).
QA/QC procedures	This project-specific value will be compared to $EF_{bpaste,y}$ and the maximum between the two values will be taken for $EF_{ppaste,y}$.
Purpose of data/parameter	Project emissions calculation.
Additional comments	An analysis on the paste used will be carried out monthly hence this parameter will be updated monthly. In case a monthly analysis is not available the conservative value 3.67 tCO_2/t will be used for that month.

Data/Parameter	**Quality of coal$_p$**
Unit	Mass fraction of each component (%m/m).
Description	Quality of coal based on elementary analysis and other relevant properties.
Measured/calculated/ default	Calculated.
Source of data	Project proponent.
Value(s) of monitored parameter	<table><tr><th colspan="5">Quality of coalp</th></tr><tr><th>Composition (%)</th><th>Fixed C</th><th>Volatiles</th><th>S</th><th>P</th></tr><tr><td>Avarage 2011 (01/05/2011 - 31/12/2011)</td><td>49.72</td><td>30.80</td><td>0.58</td><td>0.07</td></tr><tr><td>Avarage 2012</td><td>48.97</td><td>32.24</td><td>0.58</td><td>0.06</td></tr><tr><td>Average 2013</td><td>49.29</td><td>31.96</td><td>0.57</td><td>0.04</td></tr><tr><td>Average (01/01/2014 - 30/09/2014)</td><td>49.4</td><td>31.3</td><td>0.5</td><td>0.1</td></tr></table>
Monitoring equipment	-
Measuring/reading/recording frequency	Monthly.
Calculation method (if applicable)	Fixed carbon, volatiles, S and P contents will be monitored at the start of the project activity. This will be done by lab analyses according to applicable national and international standards.
QA/QC procedures	Project proponent's lab analyses are preferred to supplier's data and are used to determine the emission factor of the coal EFpcoal,y.
Purpose of data/parameter	-
Additional comments	-

Data/Parameter	**Quality of coke$_p$**
Unit	Mass fraction of each component (%m/m).
Description	Quality of coke based on elementary analysis and other relevant properties.
Measured/calculated/ default	Calculated.
Source of data	Project proponent.
Value(s) of monitored parameter	(see table below)
Monitoring equipment	-
Measuring/reading/recording frequency	Monthly
Calculation method (if applicable)	Fixed carbon, volatiles, S and P contents will be monitored at the start of the project activity. This will be done by lab analyses according to applicable national and international standards.
QA/QC procedures	Project proponent's lab analyses are preferred to supplier's data and are used to determine the emission factor of the coal EFpcoke,y.
Purpose of data/parameter	-
Additional comments	-

Quality of cokep				
Composition (%)	Fixed C	Volatiles	S	P
Avarage 2011 (01/05/2011 - 31/12/2011)	79.25	3.24	0.61	0.16
Avarage 2012	81.47	2.02	0.64	0.17
Average 2013	82.70	1.81	0.63	0.08
Average (01/01/2014 - 30/09/2014)	81.9	1.9	0.6	0.1

Data/Parameter	**Quality of electrode paste$_p$**
Unit	Text.
Description	Quality of electrode paste based on elementary analysis and other relevant properties.
Measured/calculated/ default	-
Source of data	Supplier

Value(s) of monitored parameter	See tables below

Ferroveld

GREEN PASTE			
Property	**Unit**	**Standard**	**Typical**
Ash Content	%	<6 - 7	6.4
Volatile Matter	%	13 - 15	13.6
Fixed Carbon Content	%	> 79	79.8
Apparent Density	g/cm^3	> 1.56	1.6
Plasticity Range	%	15 - 55	24
Specific Heat	J/gC	> 0.8	0.88
Softening Point	C	55 / 59 & 68 / 73	Per customer
Size (Cylinders)	mm	Dia. : 500, 600 & 700	Per customer
		Length : 1000	
Briquette Size	mm	100 x 100 x 80	

BAKED @ 1000 C			
Property	**Unit**	**Standard**	**Typical**
Ash Content	%	< 8	7.3
Fixed Carbon Content	%	> 90	93
Apparent Density	g/cm^3	> 1.35	1.4
Relative Density	g/cm^3	> 1.8	1.87
Total Porosity	%	> 23	24.9
Specific Electrical Resistance	$Ohm.mm^2/m$	< 80	65.7
Thermal Shock Resistance	kW	>12	12.5
Thermal Conductivity	W/mK	8.0 - 9.0	8.8
Spesific Heat	J/gC	> 0.7	0.75
Cold Crushing Strenght	kg/cm^2	> 50	54
Bending Strength	kg/cm^2	30 - 50	46.4
Elasticity Modulus	kg/cm^2 x 104	3.0 5.0	4.4
Linear Coeff. Of Thermal Expansion	20 - 950 C		Nill

SiliconSmelters

UNBAKED PASTE				
Unbaked Paste	**Unit**	**EMA Standard**	**Typical Normal Grade**	**Typical High Purity**
Ash	%		7.3	3.5
Volatiles	%		16	14
Fixed Carbon	%		77	82
Plasticity	%	20 - 40	28	28
Apparent Density	g/cm3		1.6	1.6
Iron (Fe)	%		0.5	0.3
Titanium (Ti)	ppm		450	250
Phosphorus (P)	ppm		280	180

BAKED PASTE			
Laboratory@900C	**Unit**	**Typical Normal Grade**	**Typical High Purity**
Flexural Strength	Mpa	3.8	4.1
Compressive Strength	MPa	21	15
Electrical Resistivity	μΩ.m	60	58
Apparent Density	g/cm3	1.3	1.3

Monitoring equipment	-
Measuring/reading/recording frequency	-
Calculation method (if applicable)	The quality of the paste will be taken from supplier's data at the time of purchase.
QA/QC procedures	Results will be compared to factors supplied by IPCC or other suppliers.
Purpose of data/parameter	-
Additional comments	(see below)

Unbaked Paste	Baseline	Project (Ferroveld)	Project (SiliconSmelters)	Difference
Ash	< 6 - 7	<6 - 7	7.3	4.29%
Volatiles	13 - 15	13 - 15	16	6.67%
Fixed Carbon	> 79	> 79	77	3.75%

The carbon specifications of the unbacked (green) paste has been compared between the baseline and the two suppliers in the project scenario. No deviation between the baseline specification and the Ferroveld project specification has been found. However, the SiliconSmelter project specification varies between 3.75% and 6.67% from the baseline. As per the guidance in the comment section for $EF_{ppaste,y}$ a conservative value 3.67 tCO_2/t has been applied for the full monitoring period.

Data/Parameter	**$EF_{y,offsite}$**
Unit	tCO_2/MWh.
Description	Grid emission factor.
Measured/calculated/ default	Calculated.
Source of data	Registered PDD.
Value(s) of monitored parameter	(see below)

Grid Emission factor	
EF	**tCO2/MWh**
OM	1.195
BM	1.248
CM	1.221

The CM factor is used during the whole crediting period.

Monitoring equipment	-
Measuring/reading/recording frequency	Once for the crediting period.
Calculation method (if applicable)	The Grid electricity emission factor ($EF_{y,offsite}$ in tCO_2e/MWh) for South Africa is established ex-ante, according to ACM0002. Methodological choices are described in section B.6.1 and detail of the data and assumptions used is provided in Annex 3.
QA/QC procedures	Transparent data is available and referenced. For some parameters where no data is available, conservative assumptions are made.
Purpose of data/parameter	-
Additional comments	-

Data/Parameter	**Quality of $SiMn_p$**
Unit	Text.
Description	Quality of SiMn.

Measured/calculated/ default	Calculated.
Source of data	Project proponent.

Value(s) of monitored parameter

Furnace 3

Quality of $SiMn_p$					
Composition (%)	**Mn**	**Si**	**C**	**P**	**S**
Avarage 2011 (01/05/2011 - 31/12/2011)	66.28	16.90	1.89	0.05	0.01
Avarage 2012	66.61	16.93	1.81	0.02	0.01
Average 2013	67.01	16.60	1.77	0.02	0.01
Average (01/01/2014 - 30/09/2014)	66.3	16.5	1.7	0.0	0.0

Furnace 5

Quality of $SiMn_p$					
Composition (%)	**Mn**	**Si**	**C**	**P**	**S**
Avarage 2011 (01/05/2011 - 31/12/2011)	66.63	16.93	1.76	0.05	0.01
Avarage 2012	66.40	17.00	1.83	0.02	0.01
Average 2013	66.59	16.51	1.88	0.04	0.01
Average (01/01/2014 - 30/09/2014)	66.2	16.4	1.8	0.0	0.0

Furnace 7

Quality of $SiMn_p$					
Composition (%)	**Mn**	**Si**	**C**	**P**	**S**
Avarage 2011 (01/05/2011 - 31/12/2011)	66.18	16.83	1.87	0.04	0.01
Avarage 2012	65.92	17.08	1.60	0.02	0.01
Average 2013	66.63	16.57	1.84	0.10	0.01
Average (01/01/2014 - 30/09/2014)	66.5	16.4	1.9	0.0	0.01

Monitoring equipment	-
Measuring/reading/recording frequency	Daily.
Calculation method (if applicable)	A sample is lab-analysed daily to ensure that the quality remains between pre-determined specifications for Mn, C, Si, P, and S.
QA/QC procedures	Lab analyses will be undertaken to national and international standards to ensure accuracy.
Purpose of data/parameter	-
Additional comments	-

Data/Parameter	**Quality of ore**
Unit	Text.
Description	Quality of ore.
Measured/calculated/ default	Calculated.
Source of data	Project proponent.

Value(s) of monitored parameter

Quality of ore						
Composition (%)	**Mn**	**Fe**	**SiO2**	**CaO**	**MgO**	**P**
Avarage 2011 (01/05/2011 - 31/12/2011)	41.15	7.36	7.53	9.87	1.76	0.02
Avarage 2012	40.98	7.41	7.09	9.92	1.78	0.02
Average 2013	40.79	5.93	7.28	9.60	1.67	0.03
Average (01/01/2014 - 30/09/2014)	39.9	7.4	5.4	10.1	1.8	0.01

Monitoring equipment	-
Measuring/reading/recording frequency	Monthly
Calculation method (if applicable)	A sample is lab analysed monthly to determine the composition of the ore (e.g. contents in Mn, Fe, SiO_2, and CaO).
QA/QC procedures	Lab analyses will be undertaken to national and international standards to ensure accuracy.
Purpose of data/parameter	-
Additional comments	-

<table>
<tr><th>Data/Parameter</th><th>Quality of fluxes</th></tr>
<tr><td>Unit</td><td>Text.</td></tr>
<tr><td>Description</td><td>Quality of fluxes.</td></tr>
<tr><td>Measured/calculated/ default</td><td>Calculated.</td></tr>
<tr><td>Source of data</td><td>Project proponent.</td></tr>
<tr><td>Value(s) of monitored parameter</td><td>
<table>
<tr><th colspan="5">Quality of Fluxes</th></tr>
<tr><td colspan="5">Quality of Fluxes (Quartz):</td></tr>
<tr><td>Composition (%)</td><td>Al2O3</td><td>SiO2</td><td>SO3</td><td>TiO2</td></tr>
<tr><td>Avarage 2011 (01/05/2011 - 31/12/2011)</td><td>0.83</td><td>99.08</td><td>0.07</td><td>0.03</td></tr>
<tr><td>Avarage 2012</td><td>1.21</td><td>98.68</td><td>0.07</td><td>0.04</td></tr>
<tr><td>Average 2013</td><td>1.05</td><td>98.85</td><td>0.06</td><td>0.03</td></tr>
<tr><td>Average (01/01/2014 - 30/09/2014)</td><td>1.3</td><td>98.6</td><td>0.1</td><td>0.0</td></tr>
</table>
</td></tr>
<tr><td>Monitoring equipment</td><td>-</td></tr>
<tr><td>Measuring/reading/recording frequency</td><td>Monthly</td></tr>
<tr><td>Calculation method (if applicable)</td><td>A sample will be lab analysed at least monthly to determine the composition of the fluxes (e.g. contents in Mn, Fe, SiO2, CaO).</td></tr>
<tr><td>QA/QC procedures</td><td>Lab analyses will be undertaken to national or international standards to ensure accuracy.</td></tr>
<tr><td>Purpose of data/parameter</td><td>-</td></tr>
<tr><td>Additional comments</td><td>-</td></tr>
</table>

D.3. Implementation of sampling plan

Not applicable.

SECTION E. Calculation of emission reductions or net anthropogenic removals

E.1. Calculation of baseline emissions or baseline net removals

Below each formula a sample calculation is provided. The data utilised was taken from the first full calendar year (2012) for furnace 5.

The baseline emissions are calculated as follows:

$$\boldsymbol{BE_y = BE_{y,offsite} + BE_{y,onsite}} \qquad \text{Equation (1)}$$

Variable		Definition	UoM
BE_y	=	Baseline emissions	tCO_2 in year y
$BE_{y,offsite}$	=	Offsite baseline (grid) electricity emissions associated with the electricity consumption of the submerged arc furnace	tCO_2 in year y
$BE_{Ey,\ onsite}$	=	Onsite baseline emissions associated with the consumption of Reductant (Coal and Coke) and electrode paste during the production of SiMn	tCO_2 in year y

Sample (2012, F5):

- BE_y = 95,798 + 207,695 = 303,493 tCO_2

$$BE_{y,offsite} = QP_{y,\,max} * sec_b * EF_{y,offsite}$$ Equation (2)

Variable		Definition	UoM
$BE_{y,offsite}$	=	Offsite baseline (grid) electricity emissions associated with the electricity consumption of the submerged arc furnace	tCO_2e in year y
$QP_{y,\,max}$	=	Quantity of SiMn production in year y maximised at historic average via equation 3. This value is used in both the baseline and the project emission calculations	tSiMn/y
sec_b	=	Historic (at least a three year vintage period) average grid electricity consumption per tonne of SiMn produced	MWh/tSiMn
$EF_{y,offsite}$	=	Grid electricity emissions factor, estimated using ACM0002	tCO_2e/MWh

Sample (2012, F5):

- $BE_{y,offsite}$ = 31,357 * 5.422 * 1.222 = 207,695 tCO_2e

$$QP_{y,\,max} = min^m \text{ of } (QP_{y,\,monitored}\,,\, QP_{historic})$$ Equation (3)

Variable		Definition	UoM
$QP_{y,\,max}$	=	Value of SiMn production used for estimating baseline and project emissions for the year y	tSiMn/y
$QP_{y,\,monitored}$	=	Monitored production of SiMn in year y during the project activity	tSiMn/y
$QP_{historic}$	=	Historic (at least a three year vintage period) average annual production of SiMn	tSiMn/y

Sample (2012, F5):

- $QP_{y,\,max}$ = MIN (31,357, 37,767) = 31,357 tSiMn

$$QP_{historic} = \sum_{i=1}^{n} Qp_i / n$$ Equation (4)

Variable		Definition	UoM
$QP_{historic}$	=	Historic (at least a three year vintage period) average annual production of SiMn	tSiMn/y
Qp_i	=	Annual SiMn production for the i^{th} year preceding the project activity	tSiMn/y

Sample (2012, F5):

- $QP_{historic}$ = SUM (264,366 / 7) = 37,767 tSiMn

$$sec_b = \sum_{i=1}^{n} EC_i / \sum_{i=1}^{n} Qp_i$$ Equation (5)

Variable		Definition	UoM
sec_b	=	Historic (at least a three year vintage period) average grid electricity consumption per tonne of SiMn produced	MWh/tSiMn
EC_i	=	Annual grid electricity consumption by the submerged electric arc furnace for the i^{th} year preceding the project activity	MWh consumed in year i
Qp_i	=	Annual SiMn production for the i^{th} year preceding the project activity	tSiMn

Sample (2012, F5):

- Sec_b = 1,433,504 / 264,366 = 5.422 MWh/tSiMn

$$EF_{y,offsite} = (EF_{OM} + EF_{BM}) / 2$$ Equation (7)

Variable		Definition	UoM
$EF_{y,offsite}$	=	Weighed-average of EF_{OM} and EF_{BM} determined exante and will be constant through the crediting period	tCO_2e/MWh
EF_{OM}	=	Determined ex ante for years 2002, 2003 and 2004 as this is the most recent period for which information is available	tCO_2e/MWh
EF_{BM}	=	Determined ex ante by using the same equation as above, except that the sample of plants used is not i	tCO_2e/MWh

Sample (2012, F5):

- $EF_{y,offsite}$ = (1.195 + 1.248) / 2 = 1.222 tCO_{2e}/MWh

$$BE_{y,onsite} = QP_{y,\,max} * EF_{b,onsite}$$ Equation (8)

Variable		Definition	UoM
$BE_{y,onsite}$	=	Onsite baseline emissions associated with the consumption of Reductant (Coal and Coke) and electrode paste during the production of SiMn	tCO_2e in year y
$QP_{y,\,max}$	=	Value of SiMn production used for estimating baseline and project emissions for the year y	tSiMn/y
$EF_{b,onsite}$	=	Baseline emission factor associated with the (onsite) consumption of reductant (Coal and Coke) and electrode paste per tonne of SiMn produced (tCO_2e/tSiMn). The average onsite emissions are based on historic (at least a three year vintage period) average annual consumption as calculated in equation 7	tCO_2e/MWh

Sample (2012, F5):

- $BE_{y,onsite}$ = 31,357 * 3.06 = 95,798 tCO_{2e}

$$EF_{b,onsite} = \left(\sum_{i=1}^{n} Q_{bcoal,i} * EF_{bcoal,i} + \sum_{i=1}^{n} Q_{bcoke,i} * EF_{bcoke,i} + \sum_{i=1}^{n} Q_{bpaste,i} * EF_{bpaste,i}\right) / \sum_{i=1}^{n} QP_i$$

Equation (9)

Variable		Definition	UoM
$EF_{b,onsite}$	=	Baseline emission factor associated with the (onsite) consumption of reductant (Coal and Coke) and electrode paste per tonne of SiMn produced	$tCO_2e/tSiMn$
$Q_{bcoal,\ i}$	=	Historic (at least a three year vintage period) annual consumption of coal used as reductant in the submerged electric arc furnace in tonnes of coal per year	tCoal consumed in year i
$EF_{bcoal,i}$	=	Emissions factor applied for the coal consumed as reductant	$tCO_2e/tCoal$
$Q_{bcoke,\ i}$	=	Historic (at least a three year vintage period) annual consumption of coke used as reductant in the submerged electric arc furnace in tonnes of coke per year	tCoke consumed in year i
$EF_{bcoke,i}$	=	Emissions factor applied for the coke consumed as reductant	$tCO_2e/tCoke$
$Q_{bpaste,\ i}$	=	Historic (at least a three year vintage period) annual consumption of electrode paste used as electrode in the submerged electric arc furnace in tonnes of electrode paste per year	tPaste consumed in year i
EF_{bpaste}	=	Emissions factor applied for the electrode paste consumed as electrode	$tCO_2e/tPaste$
QP_i	=	Annual SiMn production for the i^{th} year preceding the project activity	tSiMn

Sample (2012, F5):

- $EF_{b,onsite}$ = ((227,854 * 3.10) + (17,552 * 3.13) + (13,964 * 3.32)) / 264,366 = 3.1 $tCO_2e/tSiMn$

In the table below the baseline emission equations are applied across the monitoring period.

Period per furnace	BE_y	$BE_{y,offsite}$	$QP_{y,\ max}$	$QP_{historic}$	sec_b	$EF_{y,offsite}$	$BE_{y,onsite}$	$EF_{b,onsite}$
	tCO_2e	tCO_2e	tSiMn	tSiMn	MWh/t SiMn	tCO_2e	tCO_2e	$tCO_2e/tSiMn$
Furnace 3								
2011 (01/05/11 - 31/12/2011)	138,972	97,242	15,909	19,326	5.00	1.22	41,731	2.62
2012	156,376	109,419	17,902	19,326	5.00	1.22	46,957	2.62
2013	132,054	92,401	15,117	19,326	5.00	1.22	39,653	2.62
2014 (01/01/2014 - 30/09/2014)	173,427	118,123	19,326	19,326	5.00	1.22	55,304	2.62

Period per furnace	BE_y	$BE_{y,offsite}$	$QP_{y, max}$	$QP_{historic}$	sec_b	$EF_{y,offsite}$	$BE_{y,onsite}$	$EF_{b,onsite}$
	tCO_2e	tCO_2e	tSiMn	tSiMn	MWh/t SiMn	tCO_2e	tCO_2e	tCO_2e/tSiMn
Furnace 5								
2011 (01/05/11 - 31/12/2011)	270,949	185,424	27,995	37,767	5.42	1.22	85,525	3.06
2012	303,493	207,695	31,357	37,767	5.42	1.22	95,798	3.06
2013	315,502	215,913	32,598	37,767	5.42	1.22	99,588	3.06
2014 (01/01/2014 - 30/09/2014)	379,060	250,146	37,767	37,767	5.42	1.22	128,914	3.06
Furnace 7								
2011 (01/05/11 - 31/12/2011)	296,951	207,131	30,390	39,396	5.58	1.22	89,820	2.96
2012	371,191	258,916	37,988	39,396	5.58	1.22	112,275	2.96
2013	282,497	197,049	28,911	39,396	5.58	1.22	85,448	2.96
2014 (01/01/2014 - 30/09/2014)	389,691	268,512	39,396	39,396	5.58	1.22	121,179	2.96
Cumulative Baseline Emissions	**3,210,162**							

E.2. Calculation of project emissions or actual net removals

The project emissions are calculated as follows:

$$PE_y = PE_{y,offsite} + PE_{y,onsite}$$ Equation (10)

Variable		Definition	UoM
PE_y	=	Project emissions	tCO_2 in year y
$PE_{y,offsite}$	=	Offsite project (grid) electricity emissions associated with the electricity consumption of the submerged arc furnace	tCO_2 in year y
$PE_{Ey, onsite}$	=	Onsite project emissions associated with the consumption of Reductant (Coal and Coke) and electrode paste during the production of SiMn	tCO_2 in year y

Sample (2012, F5):

- PE_y = 136,976 + 84,387 = 221,363 tCO_2

$$PE_{y,offsite} = QP_{y, max} * sec_{p,y} * EF_{y,offsite}$$ Equation (11)

Variable		Definition	UoM

Variable		Definition	UoM
$PE_{y,offsite}$	=	Offsite project (grid) electricity emissions associated with the electricity consumption of the submerged arc furnace	tCO_2e in year y
$QP_{y, max}$	=	Value of SiMn production used for estimating baseline and project emissions for the year y, estimated using equation 3 of the baseline emission section	tSiMn/y
$sec_{p,y}$	=	Grid specific electricity consumption per tonne of SiMn produced in the project situation in year y	MWh/tSiMn
$EF_{y,offsite}$	=	Grid electricity emissions factor, estimated using ACM0002	tCO_2e/MWh

Sample (2012, F5):

- $PE_{y,offsite}$ = 31,357 * 3.58 * 1.221 = 136,976 tCO_2e

$$sec_{p,y} = EC_y / QP_{y,monitored} \quad \text{Equation (12)}$$

Variable		Definition	UoM
$sec_{p,y}$	=	Grid specific electricity consumption per tonne of SiMn produced in the project situation in year y	MWh/tSiMn
EC_y	=	Annual grid electricity consumption by the submerged electric arc furnace in year y	MWh
$QP_{y,monitored}$	=	Monitored production of SiMn in year y during the project activity	tSiMn/y

Sample (2012, F5):

- $sec_{p,y}$ = 112,183 / 31,357 = 3.58 MWh/tSiMn

$$PE_{y,onsite} = QP_{y, max} * EF_{p,onsite} \quad \text{Equation (13)}$$

Variable		Definition	UoM
$PE_{y,onsite}$	=	Onsite project emissions associated with the consumption of Reductant (Coal and Coke) and electrode paste during the production of SiMn	tCO_2e in year y
$QP_{y, max}$	=	Value of SiMn production used for estimating baseline and project emissions for the year y	tSiMn/y
$EF_{p,onsite}$	=	Project emission factor associated with the (onsite) average consumption of reductant (Coal and Coke) and electrode paste per tonne of SiMn in year y as calculated in equation 12	tCO_2e/tSiMn

Sample (2012, F5):

- $PE_{y,onsite}$ = 31,357 * 2.69 = 84,387 tCO_2e

$$EF_{p,y,onsite} = (Q_{pcoal,y} * EF_{pcoal,y} + Q_{coke,y} * EF_{pcoke,y} + Q_{ppaste,y} * EF_{ppaste,y}) / QP_{y,monitored}$$

Equation (14)

Variable		Definition	UoM
$EF_{p,y,onsite}$	=	Project emission factor associated with the (onsite) average consumption of reductant (Coal and Coke) and electrode paste per tonne of SiMn produced in year y	$tCO_2e/tSiMn$
$Q_{pcoal,\ y}$	=	Consumption of coal used as reductant in the submerged electric arc furnace in tonnes of coal per year	tCoal consumed in year i
$EF_{pcoal,y}$	=	Emissions factor applied for the coal consumed as reductant	$tCO_2e/tCoal$
$Q_{pcoke,\ y}$	=	Consumption of coke used as reductant in the submerged electric arc furnace in tonnes of coke per year	tCoke consumed in year i
$EF_{pcoke,y}$	=	Emissions factor applied for the coke consumed as reductant	$tCO_2e/tCoke$
$Q_{ppaste,\ y}$	=	Consumption of electrode paste used as electrode in the submerged electric arc furnace in tonnes of electrode paste per year	tPaste consumed in year i
$EF_{ppaste,y}$	=	Emissions factor applied for the electrode paste consumed as electrode, using the relevant emissions factor for the carbon paste as specified by the manufacturer for the vintage period	$tCO_2e/tPaste$
$Qp_{y,monitored}$	=	Monitored production of SiMn in year y during the project activity	tSiMn

Sample (2012, F5):

- $EF_{p,y,onsite}$ = ((24,210 * 3.1) + (1,564 * 3.05) + (1,231 * 3.67) / 31,357 = 2.69 $tCO_2e/tSiMn$

In the table below the project emission equations are applied across the monitoring period.

Period per furnace	PE_y	$PE_{y,offsite}$	$sec_{p,y}$	$PE_{y,onsite}$	$EF_{p,y,onsite}$
	tCO_2e	tCO_2e	MWh/tSiMn	tCO_2e	$tCO_2e/tSiMn$
Furnace 3					
2011 (01/05/11 - 31/12/2011)	105,412	69,320	3.57	36,092	2.27
2012	125,372	83,166	3.80	42,206	2.36
2013	118,102	73,923	4.00	44,179	2.92
2014 (01/01/2014 - 30/09/2014)	156,941	101,096	3.93	55,844	2.65
Furnace 5					
2011 (01/05/11 - 31/12/2011)	219,673	141,074	4.13	78,599	2.81
2012	221,307	136,976	3.58	84,387	2.69
2013	270,567	171,214	4.30	99,354	3.05

Period per furnace	PE_y	$PE_{y,offsite}$	$sec_{p,y}$	$PE_{y,onsite}$	$EF_{p,y,onsite}$
	tCO_2e	tCO_2e	MWh/tSiMn	tCO_2e	tCO_2e/tSiMn
2014 (01/01/2014 - 30/09/2014)	326,217	209,696	4.07	116,521	2.76
Furnace 7					
2011 (01/05/11 - 31/12/2011)	224,680	146,835	3.96	77,845	2.56
2012	275,477	182,382	3.93	93,095	2.45
2013	234,055	151,690	4.30	82,365	2.85
2014 (01/01/2014 - 30/09/2014)	313,502	205,531	4.11	107,971	2.63
Cumulative Project Emissions	**2,591,361**				

E.3. Calculation of leakage emissions

There are no leakage emissions from the Project.

E.4. Calculation of emission reductions or net anthropogenic removals

The project emission reductions are calculated as follows:

$ER_{uncertainty} = 0.09 * (BE_{y,onsite} - PE_{y,onsite})$ Equation (PDD: section B.6.3. chapter 4)

$0 \text{ if } ER_{onsite,y} \leq 0$

Variable		Definition	UoM
$ER_{uncertainty}$	=	Emission Reduction haircut in year y	tCO_2e
$BE_{y,onsite}$	=	Onsite baseline emissions associated with the consumption of Reductant (Coal and Coke) and electrode paste during the production of SiMn	tCO_2e in year y
$PE_{y,onsite}$	=	Onsite project emissions associated with the consumption of Reductant (Coal and Coke) and electrode paste during the production of SiMn	tCO_2e in year y

Sample (2012, F5):

- $ER_{uncertainty}$ = 0.09 * (95,798* 84,387) = 1,027 tCO_2e

$ER_y = BE_y – PE_y – L_y$ Equation (15)

Variable		Definition	UoM
ER_y	=	Emissions Reductions in year y	tCO_2e
BE_y	=	Emissions in the baseline scenario in year y	tCO_2e

Variable		Definition	UoM
EP_y	=	Emissions in the project scenario in year y	tCO_2e
L_y	=	Leakage in year y	tCO_2e
$ER_{uncertainty}$	=	Emission Reduction haircut in year y	tCO_2e

Sample (2012, F5):

- ER_y = 303,493 - 221,363 - 0.00 – 1,027 = 81,104 tCO_2e

When applied over the full monitoring period this results in the emission reductions as outlined in the table below.

	Baseline GHG emissions or baseline net GHG removals ($t CO_2e$)	Project GHG emissions or actual net GHG removals ($t CO_2e$)	Leakage GHG emissions ($t CO_2e$)	GHG emission reductions or net anthropogenic GHG removals ($t CO_2e$)			
				Before 01/01/2013	From 01/01/2013 until 31/12/2020	From 01/01/ 2021	Total amount
Total	**3,210,162**	**2,591,361**	**0**	**360,565**[1]	**250,244**	**0**	**610,809**

The difference between the baseline emissions minus the project emissions and the total emission reductions lies in the uncertainty haircut adjustment of 9% of on-site emission reductions (7,992 ERs).

E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD

Amount achieved during this monitoring period ($t CO_2e$)	Amount estimated ex ante for this monitoring period in the PDD ($t CO_2e$)
610,809	**227,739**

E.5.1. Explanation of calculation of "amount estimated ex ante for this monitoring period in the PDD"

The ex-ante calculation for the period overlapping the monitoring period is 1,460 days with a forecasted volume of emission reductions of 266,212 tCO_2e. By dividing the two figures a daily forecasted emission reduction volume of 182.337 tCO_2e is established.

The monitoring period runs from 01/05/2011till 30/09/2014 covering 1,249 days. The amount estimated ex ante for this monitoring period in the PDD is calculated by multiplying the days in the monitoring period with the estimated daily emission reduction volume (1,249 x 182.337) resulting in an estimated emission reduction forecast of 227,739 tCO_2e.

[1] Rounded down from 360,565.86 ERs for consistency reasons

E.6. Remarks on increase in achieved emission reductions

The forecasted emission reduction in the PDD for the monitoring period is 227,739 tCO_2e. During this monitoring period the emission reductions amount to 610,809 tCO_2e, which exceeds the forecast by 168%. The reasons for this difference are listed below:

- **On-site emission reductions**: The methodology requires the inclusion of on-site emissions in the project boundary, although it was assumed in the PDD that they would not be affected.

- **Higher electricity savings**: The savings realised were much closer to the initial target (i.e. 1 MWh/tSiMn) than the saving of 0.4 MWh/tSiMn originally forecast in the PDD;

- **Delay of F1 & F6 retrofit**: In the PDD, F6 was expected to be retrofitted in early 2008, and F1 in 2009. However, due to poor market conditions, the retrofitting works have not yet commenced. Hence the PDD estimates incorporate more furnaces than have contributed to the achieved emission reductions.

The table below provides a breakdown of the contribution to the additional emission reductions achieved per reason.

Reasons for difference between PDD forecast and ERs realised	All furnaces			
	PDD forecast	Monitoring report values	Difference (ERs)	%
Start assumptions	227,739	610,809	383,071	168%
Reason 1: On-site emission reductions: The methodology requires the inclusion of on-site emissions in the project boundary, although it was assumed in the PDD that they would not be affected [(1)].	227,739	534,614	306,875	135%
Reason 2: Higher electricity savings: The savings realised were much closer to the initial target (i.e. 1 MWh/tSiMn) than the saving of 0.4 MWh/tSiMn originally forecast in the PDD.	227,739	161,010	-66,729	-29%
Reason 3: Delay of F1 & F6 retrofit: In the PDD, F6 was expected to be retrofitted in early 2008, and F1 in 2009. However, due to poor market conditions, the retrofitting works have not yet commenced. Hence the PDD estimates incorporate more furnaces than have contributed to the achieved emission reductions [(2)].	161,010	161,010	0	0%

[(1)] MR minus difference between $BE_{y,onsite}$ - $PE_{y,onsite}$ less 9% for uncertainty.
[(2)] Furnace 1 and Furnace 6 were estimated to generate 3,927 ERs per month.

E.7. Remarks on scale of small-scale project activity

Not applicable.

Attachment: Annex I

Weighting platform 2		Weighting platform 3		Furnace 3 Weigh Hoppers		Furnace 5 Weigh Hoppers		Furnace 7 Weigh Hoppers	
Date of last calibration:	Validity:	Date of last calibration:	Validity:	Date of last calibration:	Validity:	Date of last calibration:	Validity:	Date of last calibration:	Validity:
05/07/2012	12/07/2012	05/09/2011	12/09/2011	03/07/2011	10/07/2011	15/09/2011	22/09/2011	06/09/2011	13/09/2011
23/08/2012	30/08/2012	02/05/2012	09/05/2012	04/09/2011	11/09/2011	22/09/2011	29/09/2011	08/09/2011	15/09/2011
30/08/2012	06/09/2012	06/03/2013	13/03/2013	11/09/2011	18/09/2011	13/10/2011	20/10/2011	15/09/2011	22/09/2011
18/09/2012	25/09/2012	19/03/2013	26/03/2013	18/09/2011	25/09/2011	31/10/2011	07/11/2011	22/09/2011	29/09/2011
02/10/2012	09/10/2012	11/06/2013	18/06/2013	16/10/2011	23/10/2011	03/11/2011	10/11/2011	29/09/2011	06/10/2011
09/10/2012	16/10/2012			23/10/2011	30/10/2011	10/11/2011	17/11/2011	13/10/2011	20/10/2011
23/10/2012	30/10/2012			03/11/2011	10/11/2011	17/11/2011	24/11/2011	21/10/2011	28/10/2011
01/11/2012	08/11/2012			13/11/2011	20/11/2011	24/11/2011	01/12/2011	31/10/2011	07/11/2011
13/11/2012	20/11/2012			17/11/2011	24/11/2011	08/12/2011	15/12/2011	03/11/2011	10/11/2011
20/11/2012	27/11/2012			01/12/2011	08/12/2011	13/06/2012	20/06/2012	10/11/2011	17/11/2011
27/11/2012	04/12/2012			16/03/2012	23/03/2012	21/06/2012	28/06/2012	17/11/2011	24/11/2011
05/06/2013	12/06/2013			22/03/2012	29/03/2012	28/06/2012	05/07/2012	25/11/2011	02/12/2011
11/06/2013	18/06/2013			05/04/2012	12/04/2012	05/07/2012	12/07/2012	01/12/2011	08/12/2011
18/06/2013	25/06/2013			19/04/2012	26/04/2012	12/07/2012	19/07/2012	08/12/2011	15/12/2011
26/06/2013	03/07/2013			26/04/2012	03/05/2012	19/07/2012	26/07/2012	04/04/2012	11/04/2012
03/07/2013	10/07/2013			28/04/2012	05/05/2012	08/08/2012	15/08/2012	12/04/2012	19/04/2012
09/07/2013	16/07/2013			03/05/2012	10/05/2012	16/08/2012	23/08/2012	19/04/2012	26/04/2012
16/07/2013	23/07/2013			10/05/2012	17/05/2012	23/08/2012	30/08/2012	26/04/2012	03/05/2012
23/07/2013	30/07/2013			17/05/2012	24/05/2012	30/08/2012	06/09/2012	03/05/2012	10/05/2012
01/08/2013	08/08/2013			24/05/2012	31/05/2012	06/09/2012	13/09/2012	10/05/2012	17/05/2012
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Document information

Version	*Date*	*Description*
08.0	6 April 2021	Revision to: • Reflect the "Clarification: Regulatory requirements under temporary measures for post-2020 cases" (CDM-EB109-A01-CLAR).
07.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM project standard for project activities" (CDM-EB93-A04-STAN); • Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period; • Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods; • Make editorial improvements.
06.0	7 June 2017	Revision to: • Ensure consistency with version 01.0 of the "CDM project standard for project activities" (CDM-EB93-A04-STAN); • Make editorial improvements.
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from *F-CDM-MR* to *CDM-MR-FORM*; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).

Version	*Date*	*Description*
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: Issuance
Keywords: monitoring report