

Project Title: Energy efficiency improvement in Electric Arc Furnace at Indian
Seamless Metal Tube Limited (ISMT), Jejuri, Maharashtra

UNFCCC Reference no.: 0777
Registration Date: 25th December 2006.

Request for revision of monitoring plan
Dated: 30th December 2008

Request for Revision of monitoring plan

Parameter ID: P.4

Data Variable: Auxiliary Power consumption of Electric Arc Furnace

Data Type: Measured

Revision Requested:

Data Type: Calculated

Monitoring procedure: Data will be calculated by deducting the measured values of power consumption by various other units from the total power consumption for the plant.

Auxiliary Power Consumption is calculated by deducting the power consumed by Electric Arc Furnace, Laddle Furnace, Boggy furnace, Rolling Mill and Inox from the Total power consumed by the plant. The power consumed by the individual units are measured from electric meters. The formula is given below.

Auxiliary Power Consumption = Total Electricity Consumption – [sum of Electricity Consumption by various units]

The Various Units are Laddle Furnace (LF), Electric Arc Furnace (EAF), Boggy Furnace (BHF), Rolling Mill and INOX O₂ plant.

The project participant would follow rest of the monitoring plan as per the registered PDD Section D.

D.1. Name and reference of approved <u>monitoring methodology</u> applied to the <u>small-scale project activity</u>:
--

>>

Title: Monitoring Methodology for the category II D – Energy efficiency and fuel switching measures for industrial facilities.

Reference: ‘Paragraph 6 to 8’ as provided in Type II.D of Appendix B of the simplified modalities and procedures for small-scale CDM project activities - Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories.

D.2. Justification of the choice of the methodology and why it is applicable to the <u>small-scale project activity</u>:

>> As established in Section A.4.2 and B.2, the project activity falls under Category II.D. The project activity proposes to replace part of electrical energy used in EAF with chemical energy of LPG/LDO, thereby improving the overall energy efficiency of EAF. The improved efficiency has resulted in reduced consumption of fossil fuels and reducing the GHG emissions to the atmosphere related with the activity.

GHG emission mitigation due to the project activity will be monitored by monitoring electricity and fuel consumption in EAF in both the pre-project and project scenarios, representing baseline and project emissions respectively. The difference in the baseline emissions and project emissions would be the emission reductions from the project activity.

The revised monitoring plan would be as below:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
Monitoring parameters during project activity								
<i>P.1</i>	Liquid Metal Production	Plant Records	Ton	<i>Measured & Calculated</i>	<i>Monthly</i>	<i>100%</i>	electronic/ paper	<i>Instrument used:</i> <i>Weigh bridge for raw material measurement and liquid metal is calculated.</i> <i>Calibration:</i> <i>As per TS procedure</i> <i>Accuracy:</i> <i>+/- 2%</i> <i>Data to be archived:</i> <i>crediting period +2 years</i>
<i>P.2</i>	Power Consumption of Electric Arc Furnace	Plant Records	kWh	<i>Measured</i>	<i>Monthly</i>	<i>100%</i>	electronic/ paper	<i>Instrument used:</i> <i>electrical meter</i> <i>Calibration:</i> <i>As per TS procedure</i> <i>Accuracy:</i> <i>+/- 0.3%</i> <i>Data to be archived:</i> <i>crediting period +2</i>

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
								years
P.3	Power Consumption in Laddle Furnace	Plant Records	kWh	Measured	Monthly	100%	electronic/ paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
P.4	Auxiliary Power Consumption of Electric Arc Furnace	Plant Records	kWh	Calculated	Monthly	100%	electronic/ paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
P.5	O ₂ consumption at EAF	Plant Records	SCM	Measured	Monthly	100%	electronic/ paper	Instrument used: flow meter Calibration: As per TS procedure Accuracy: +/- 5%

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
								Data to be archived: crediting period +2 years
P.6	Specific Power consumption for O ₂ production	Oxygen Supplier/IPCC	kWh/SCM	Measured and estimated	Monthly	100%	electronic/ paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
P.7	Power Consumption at O2 INOX Plant	Plant Records	kWh	Measured	Monthly	100%	Electronic/paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	Comment
P.8	Power Consumption in Boggy Furnace	Plant Records	kWh	Measured	Monthly	100%	Electronic/paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
P.9	Total Power Consumption by Plant	Plant Records	kWh	Measured	Monthly	100%	Electronic/paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
P.10	Power Consumption in Rolling Mill	Plant Records	kWh	Measured	Monthly	100%	Electronic/paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3%

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
								Data to be archived: crediting period +2 years
P.11	LPG consumption	Plant Records	Kg	Calculated	Monthly	100%	electronic/ paper	Instrument used: flow meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
P.12	Emission factor of LPG	IPCC	Kg CO ₂ /kg	Estimated	Monthly	100%	electronic/ paper	IPCC default value Uncertainty: Low Data to be archived: crediting period +2 years
P.13	LDO consumption	Plant Records	Kg	Calculated	Monthly	100%	electronic/ paper	Instrument used: flow meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
								<i>crediting period +2 years</i>
<i>P.14</i>	Emission factor of LDO	IPCC	Kg CO ₂ /kg	<i>Estimated</i>	<i>Monthly</i>	<i>100%</i>	electronic/ paper	<i>IPCC default value Uncertainty: Low Data to be archived: crediting period +2 years</i>

Relevant data necessary for determining the baseline of anthropogenic emissions by sources of GHGs within the project boundary and how such data will be collected and archived :

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
Monitoring parameters for baseline case								
<i>B.1</i>	Liquid Metal Production	Plant Records	Ton	<i>Measured & Calculated</i>	<i>Monthly</i>	<i>100%</i>	electronic/ paper	<i>Instrument used:</i> <i>Weigh bridge for</i>

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
								<i>raw material measurement and liquid metal is calculated.</i> Calibration: <i>As per TS procedure</i> Accuracy: <i>+/- 2%</i> Data to be archived: <i>crediting period +2 years</i>
B.2	Power Consumption of Electric Arc Furnace	Plant Records	kWh	<i>Measured</i>	<i>Monthly</i>	<i>100%</i>	electronic/ paper	Instrument used: <i>electrical meter</i> Calibration: <i>As per TS procedure</i> Accuracy: <i>+/- 0.3%</i> Data to be archived: <i>crediting period +2 years</i>
B.3	Power Consumption in Laddle Furnace	Plant Records	kWh	<i>Measured</i>	<i>Monthly</i>	<i>100%</i>	electronic/ paper	Instrument used: <i>electrical meter</i> Calibration: <i>As per TS procedure</i>

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
								Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
B.4	Auxiliary Power Consumption of Electric Arc Furnace	Plant Records	kWh	<i>Calculated</i>	<i>Monthly</i>	100%	electronic/ paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
B.5	O ₂ consumption at EAF	Plant Records	SCM	<i>Measured</i>	<i>Monthly</i>	100%	electronic/ paper	Instrument used: flow meter Calibration: As per TS procedure Accuracy: +/- 5% Data to be archived: crediting period +2 years
B.6	Specific Power consumption for O ₂	Oxygen Supplier/IPCC	kWh/SCM	<i>Measured and</i>	<i>Monthly</i>	100%	electronic/ paper	Instrument used: electrical meter

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
	production			<i>estimated</i>				<i>Calibration:</i> As per TS procedure <i>Accuracy:</i> +/- 0.3% <i>Data to be archived:</i> crediting period +2 years
B.7	EF _{OM, y}	Published data from electricity board	tCO ₂ /MWh	C	Once at the beginning of the crediting period	100%	Electronic	Calculated as Step 1 of ACM0002
B.8	EF _{BM, y}	Published data from electricity board	tCO ₂ /MWh	C	Once at the beginning of the crediting period	100%	Electronic	Calculated as Step 2 of ACM0002
B.9	F _{i,y}	Published data from electricity board	Tonnes	C	Once at the beginning of the	100%	Electronic	Calculated based on the Total power generation, Average Net Calorific Value

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
					crediting period			of the fuel used and the Designed
<i>B.10</i>	$COEF_i$	IPCC/local	tCO ₂ /ton of fuel	Standard / calculated	Once at the beginning of the crediting period	100%	Electronic	Calculated based on the IPCC default value of the Emission Factor, Net Calorific Value and Oxidation Factor of the Fuel used by the power plants of the state grid
<i>B.11</i>	$GEN_{j,y}$	Published data from electricity board	MWh / annum	M	Once at the beginning of the crediting period	100%	Electronic	Obtained from authentic and latest local statistics
<i>B.12</i>	Power Consumption at O2 INOX Plant	Plant Records	kWh	Measured	Monthly	100%	Electronic/paper	Instrument used: electrical meter Calibration: As per TS procedure

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	Comment
								Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
<i>B.13</i>	Power Consumption in Boggy Furnace	Plant Records	kWh	Measured	Monthly	100%	Electronic/paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
<i>B.14</i>	Total Power Consumption by Plant	Plant Records	kWh	Measured	Monthly	100%	Electronic/paper	Instrument used: electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years
<i>B.15</i>	Power Consumption in Rolling Mill	Plant Records	kWh	Measured	Monthly	100%	Electronic/paper	Instrument used:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
								electrical meter Calibration: As per TS procedure Accuracy: +/- 0.3% Data to be archived: crediting period +2 years

D.4. Qualitative explanation of how quality control (QC) and quality assurance (QA) procedures are undertaken:

>>

Quality control (QC) and quality assurance (QA) procedures are being undertaken for data monitored		
Data (Indicate table and ID number e.g. 3.-1.; 3.2.)	Uncertainty level of data (High/Medium/Low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
P.1	Low	ISO 9001 or similar type of quality system is used
P.2	Low	ISO 9001 or similar type of quality system is used
P.3	Low	ISO 9001 or similar type of quality system is used

P.4	Low	ISO 9001 or similar type of quality system is used
P.5	Low	ISO 9001 or similar type of quality system is used
P.6	Moderate	ISO 9001 or similar type of quality system is used
P.7	Low	ISO 9001 or similar type of quality system is used
P.8	Low	ISO 9001 or similar type of quality system is used
P.9	Low	ISO 9001 or similar type of quality system is used
P.10	Low	ISO 9001 or similar type of quality system is used
P.11	Low	ISO 9001 or similar type of quality system is used
P.12	Low	IPCC values, No system is required.
P.13	Low	ISO 9001 or similar type of quality system is used
P.14	Low	IPCC values, No system is required.
B.1	Low	ISO 9001 or similar type of quality system is used
B.2	Low	ISO 9001 or similar type of quality system is used
B.3	Low	ISO 9001 or similar type of quality system is used
B.4	Low	ISO 9001 or similar type of quality system is used
B.5	Low	ISO 9001 or similar type of quality system is used
B.6	Moderate	ISO 9001 or similar type of quality system is used
B.7	Low	Published data from government sources
B.8	Low	Published data from government sources
B.9	Low	Published data from government sources
B.10	Low	Published data from government sources
B.11	Low	Published data from government sources
B.12	Low	ISO 9001 or similar type of quality system is used
B.13	Low	ISO 9001 or similar type of quality system is used
B.14	Low	ISO 9001 or similar type of quality system is used
B.15	Low	ISO 9001 or similar type of quality system is used

D.5. Please describe briefly the operational and management structure that the project participant(s) will implement in order to monitor emission reductions and any leakage effects generated by the project activity:

>> The operational and management structure that will monitor the project activity is described in Fig D.1 below and the monitoring activities and responsibility is also listed in Table D.1 below:

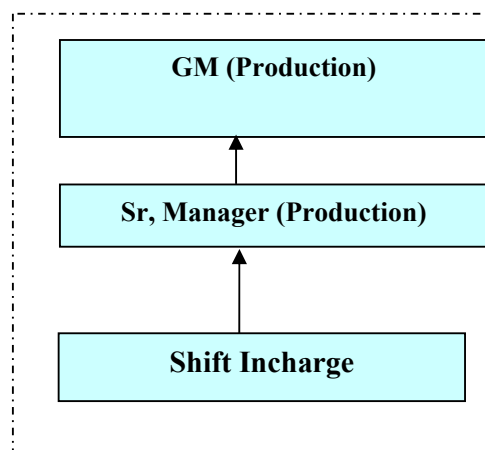


Fig D.1 Organisation structure and responsibility for CDM data gathering and reporting

Table D.1: Monitoring activities and responsibility

Monitoring activities	Procedure and responsibility
Data source and collection	ISMT has implemented quality management systems and the data would be collected as per the same.
Frequency	Monitoring frequency would be as per section D.3 of this chapter
Review	All received data would be reviewed by the Sr. Manager (Production)
Data compilation	All the data would be compiled and stored in the CDM cell.
Emission calculation	Emission reduction calculations will be done annually based on the data collected and recorded. Engineers/Executives of CDM cell will do the calculations

Review	Sr. Manager (Production) will review the calculation.
Emission data review	Final calculations would be reviewed and approved by GM (Production)
Record keeping	All calculation and data record will be kept with the CDM cell.

D.6. Name of person/entity determining the monitoring methodology:

>> ISMT and its associated consultants.