



	Contents	Page
	Executive Summary	1
1	Introduction	3
2	Sampling Methods	4
3	Summary of Results	5
4	Sampling Locations and Process Details	7
5	Monitoring Deviations	8
	Appendix	9



1 Introduction

Sarginsons Precision Components operates a melting furnaces process as part of its aluminium casting business at its Coventry site.

The process is regulated with respect to its emissions to atmosphere by the IPPC Regulations 2000. Under this legislation potentially harmful emissions are to meet the emission concentration limits specified in the site permit, which are normally based on the limits suggested by the published Process Guidance Notes.

In order to check compliance with those emission limits Sarginsons Precision Components contracted Bureau Veritas of Manchester to quantify the emissions from the process.

The project was given the Bureau Veritas Project Number MMCX0501.

The work was carried out on the 19th of April 2006 by the following Site Team:

Team Leader:	Paul Jones MCERTs Level 2, TE1 & TE4 MCERTs number MM 02 021
Assistants:	Mark Stowell MCERTs Level 2, TE1, TE2 & TE4 MCERTs number MM 02 025
Report Writer:	Mark Stowell



2 Sampling Methods

Sampling methods were chosen according to the hierarchy of methods outlined in Environment Agency Technical Guidance Document (Monitoring) M2. i.e. CEN, ISO, BS, US EPA etc.

The following table details the sampling methods used and the parameters monitored at each of the emissions points:

Parameter	Method	Technical Procedure	Accreditation	Wet Arrester	Dry Arrester
Total Particulate Matter	BS EN 13284	TP25-IEM	UKAS MCERTS	✓	✓



3 Summary of Results

The following tables are a summary of the results of the monitoring exercise. The site data record sheets are given in the appendix to this report.

All parameters are covered by Bureau Veritas' UKAS accreditation.

3.1 Wet Arrester – 19/4/06

Pollutant Parameters

Parameter	Time	Unit	Result	Uncertainty +/-	ELV	Mass Emission (g/s)
Total Particulate Matter	11:50 - 12:38	mg/Nm ³	22.9	3.5	50	0.0796

Stack emission concentrations are expressed at reference conditions of 273K, 101.3kPa, dry.

Non-pollutant Parameters

Parameter	Unit	Result
Gas Velocity	m/s	12.59
Volumetric Flow @STP	Nm ³ /s	3.51
Stack Gas Temperature	°C	19.31
Moisture	%	1.22



3.2 Dry Arrester – 19/04/06

Pollutant Parameters

Parameter	Time	Unit	Result	Uncertainty +/-	Mass Emission (g/s)
Total Particulate Matter	13:40 - 14:28	mg/Nm ³	1.7	0.4	0.0151

Stack emission concentrations are expressed at reference conditions of 273K, 101.3kPa, dry.

Non-pollutant Parameters

Parameter	Unit	Result
Gas Velocity	m/s	12.05
Volumetric Flow @STP	Nm ³ /s	8.93
Stack Gas Temperature	°C	21.44
Moisture	%	0.34



4 Sampling Location and Process Details

4.1 Wet Arrester

The flows at the sampling location meet all the flow-stability criteria for isokinetic sampling as specified in ISO 10396.

Configuration	Square, Vertical
Dimensions (m)	0.55 x 0.55
Area (m²)	0.30
No. of Sample Lines	1
Sample Points per Line	8

The process was operating normally during the monitoring period.

4.2 Dry Arrester

The flows at the sampling location meet all the flow-stability criteria for isokinetic sampling as specified in ISO 10396.

Configuration	Square, Vertical
Dimensions (m)	0.90 x 0.90
Area (m²)	0.81
No. of Sample Lines	1
Sample Points per Line	8

The process was operating normally during the monitoring period.



5 Monitoring Deviations

5.1 Wet Arrester

All parameters were monitored according to the monitoring objectives, with no deviations from the required sampling methods.

Measurement uncertainty: Total Particulate Matter +/- 15%

5.2 Dry Arrester

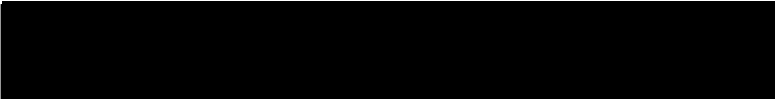
All parameters were monitored according to the monitoring objectives, with no deviations from the required sampling methods, apart from the following:

- Only one access port was available for sampling due the fact that adjacent duct work prevented another installation of a second port.
- However the number of sampling points was doubled on the available sampling line to compensate for this problem.
- The presence of baffles upstream of the sampling plane could potentially cause turbulence across the sampling plane.

The problems described above lead to an increased uncertainty of +/- 25%.



Part 2 Appendix

Operator	Sarginsons Precision Components
Site	Torrington Avenue Coventry CV4 9AG
Plant	Wet Arrester and Dry Arrester
PPC Permit Number	PPC/020
Monitoring Date	19 th April 2006
Bureau Veritas Project Number	MMCX0501
Approved By MCERTS Number MCERTS Accreditation Position	Mr. Paul Jones MM 02 021 Level 2, TE1 & TE4 Team Leader
Signed	
Monitoring Organisation	Bureau Veritas Unit C1 Broadoak Business Park Ashburton Road West Trafford Park M17 1RW
Report Ref	MMCX0501/AC/Rep1/Rev0
Issue Date	28th April 2006



Appendix

Schedule of Tables

Wet Arrester

- A.1.1 Preliminary Velocity and Temperature Survey
- A.1.2 K Factor Calculation
- A.1.3 Sample Record
- A.1.4 Results Summary

Dry Arrester

- B.1.1 Preliminary Velocity and Temperature Survey
- B.1.2 K Factor Calculation
- B.1.3 Sample Record
- B.1.4 Results Summary

TABLE A.1.2



K - Factor Calculation

Client:	Sarginsons	Operators:	MS/PJ
Site:	Coventry	Method:	TP25-IEM
Duct:	Wet Arrester	Job Number:	MMCX0501
		Date:	19-Apr-06

$dH = K \cdot dP$

dH = Pressure difference of orifice meter (cm H₂O)

dP = Pressure difference of Pitot tube (cm H₂O)

$K = K1 \cdot (Dn)^4 \cdot (dH@) \cdot (Cp)^2 \cdot (1 - Bwo)^2 \cdot (Tm/Ts) \cdot (Ps/Pb) \cdot (Md/Ms)$

Where	K1	= constant	8.04 x 10 ⁻⁵		0.0000804	
	Dn	= nozzle diameter			6.16	mm
	dH@	= meter box constant			51.2292	mm H ₂ O
		= meter box correction factor			0.9819	
	Cp	= pitot tube co-efficient			0.854	for S Type
	Bwo	= volume fraction of moisture in stack gas			0.01	(5%=0.05, 10%=0.1, 15%=0.15)
	Tm	= absolute expected meter temp. (K= °C + 273)			298	K
	Ts	= absolute stack Temp.			287	K
	Pst	= static pressure (=cm H ₂ O/10.2)			-0.015686	kPa
	Ps	= absolute stack pressure (Pb+static)	99.98431373	kPa x 7.502=	750.08	mmHg
	Pb	= barometric absolute pressure	100	kPa x 7.502=	750.20	mmHg
	Md	=Stack O ₂			20.90	% Ambient O ₂ = 20.9%
		=Stack CO ₂			0.04	% Ambient CO ₂ = 0.04%
		=Stack N ₂			79.06	%
		=Stack CO			0.00	% Ambient N ₂ = 79%
		<i>dry gas molecular weight (29 for dry air)</i> <i>= 0.44(%CO₂) + (0.32(%O₂) + 0.28(%CO+%N₂))</i>			28.8424	g/g-mole
	Ms	= stack gas molecular weight (27.88"Wet Air"X10%H ₂ O)				
		= Md (1-Bwo) + 18(Bwo)				
		= Md (1-) + 18()			28.73	g/ g-mole

Assume where data is unavailable: Ps/Pb ~ 1, Md/Ms ~ 1.04

$K = 0.0000804 \cdot (dH@) \cdot (Cp)^2 \cdot (1 - Bws)^2 \cdot (Tm/Ts) \cdot (Ps/Pb) \cdot (Md/Ms) \cdot (Dn)^4$

$K = 0.0000804 \cdot x \cdot 38.15975808 \cdot (Dn)^4$

$K = 0.003068 \cdot x \cdot 1439.87 \cdot mm^4$

K - Factor =	4.418	Nozzle Size =	6.16	mm
Max sampling rate (cm H ₂ O)	8.305	Nozzle Serial No. =	C393	
Min sampling rate (cm H ₂ O)	4.594			
If using BS EN 13284 the nozzle size should be ≥6mm, does the nozzle size conform?				Y

TABLE A.1.3

Sample Record Sheet



Client: Sarginsons	Operators: MS/PJ	Method: TP25-IEM
Site: Coventry	Job No: MMCX0501	Meter No: C55
Duct: Wet Arrester	Date: 19-Apr-06	Probe No: C646
Run: 1	K Factor: 4.42	Nozzle Size: 6.16 mm
Filter No: 100323	Wash No: 100323W	Pilot Cp: 0.854
Atmos Pressure (kPa): 100.0	Stack Diameter (m): 0.55	Leak Test - (l/min) (See table below)
Static Pressure (kPa): -0.02	Analysis: Particulate	Pretest: 0.2 Post-test 0.22

Sample Point	Distance (m)	Time	Velocity Head (cm H2O)	Sample Rate (cm H2O)	DGM Reading (Litres)	Stack Temp. (C)	DGM Temp		Probe Temp (C)	Filter Temp (C)	Cond Temp (C)
							In (C)	Out (C)			
A1	0.03	11:50	1.28	5.65	5567.44	18	11	11	158	157	6
		11:53	1.3	5.74	5628	19	11	11	159	161	6
A2	0.10	11:56	1.32	5.83	5700	19	11	11	159	159	6
		11:59	1.3	5.74	5764	19	12	11	161	163	6
A3	0.17	12:02	1.08	4.77	5833	19	12	12	160	159	6
		12:05	1.06	4.68	5900	19	12	12	162	163	6
A4	0.24	12:08	1.06	4.68	5958	19	13	12	161	162	7
		12:11	1.08	4.77	6027	19	13	12	162	159	7
A5	0.31	12:14	1.1	4.86	6090	19	13	12	158	159	7
		12:17	1.08	4.77	6155	19	13	13	159	160	7
A6	0.38	12:20	1.48	6.54	6228	20	13	13	158	159	7
		12:23	1.36	6.01	6300	20	13	13	161	162	7
A7	0.45	12:26	1.48	6.54	6389	20	13	13	162	160	7
		12:29	1.52	6.71	6444	20	14	13	161	159	7
A8	0.52	12:32	1.68	7.42	6517	20	14	13	160	159	7
		12:35	1.76	7.77	6588	20	14	13	163	158	7
END		12:38			6662.42						
Total/Average			1.30875	5.78	1094.98	19	13	12	160	160	7
											(Max)

Balance Serial No. C604	Check Weight No.	Calibrated Weight (g)	Balance Reading (g)	In Tolerance(+/-0.1g)	
	1 C376/A	1000	999.9	Y	
	2 C376/B	500	499.9	Y	
	3 C376/C	49.8	49.8	Y	
Set No:	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5 (opt)
Contents	DI Water	DI Water	Empty	Silica Gel	
Initial Mass (g)	728.3	593.6	518.1	584.8	
Final Mass (g)	729.1	593.6	519.6	592.5	
Net Gain (g)	0.8	0	1.5	7.7	0
Mass of Solids (mg)	23.3				Total 10

Ambient Temp (°C)	12
Probe Length	0.98
Probe Liner Material	Titanium

Leak Check	
Proposed Sample Rate (l/min)	17.00
5% of Sample Rate (l/min)	0.85
2% of Sample Rate (l/min)	0.34
1% of Sample Rate (l/min)	0.17

TABLE A.1.4



Run 1 Summary of Results						
Client:	Sarginsons			Job No:	MMCX0501	
Client Site:	Coventry			Method:	TP25-IEM	
Duct:	Wet Arrester			Operators:	MS/PJ	
Date:	19-Apr-06					
Pollutant	Dry s.t.p. Conc mg/Nm ³	Wet s.t.p. Conc. mg/Nm ³	Dry Oxygen Ref Conc mg/Nm ³	Wet Oxygen Ref Conc mg/Nm ³	Mass Emission Rate g/s	Mass Emission Rate kg/hr
Total Particulates	22.9500	22.6709	22.9500	3.7264	0.0796	0.2864
Particulates (Filter)	3.4474	3.4055	3.4474	0.5666	0.0120	0.0430
Particulates (Washings)	19.5026	19.2654	19.5026	3.2056	0.0676	0.2434
Hydrogen Fluoride	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hydrogen Chloride	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ammonia	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hydrogen Sulphide	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sulphur Dioxide	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Chemical	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Chemical	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	mg/Nm ³	mg/Nm ³	mg/Nm ³	mg/Nm ³	g/s	kg/hr
Arsenic (As)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Cadmium (Cd)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Chromium (Cr)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Cobalt (Co)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Copper (Cu)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Manganese (Mn)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nickel (Ni)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lead (Pb)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Antimony (Sb)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Thallium (Tl)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vanadium (V)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mercury (Hg)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tin (Sn)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Selenium (Se)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	ng/Nm ³	ng/Nm ³	ng/Nm ³	ng/Nm ³	ug/s	mg/hr
Dioxins (NATO) - min	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Dioxins (NATO) - max	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	ng/Nm ³	ng/Nm ³	ng/Nm ³	ng/Nm ³	ug/s	mg/hr
Dioxins (WHO) - min	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Dioxins (WHO) - max	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Duct Diameter	0.55 m					
Average Temperature	19.31 °C					
Stack Gas Velocity	12.59 m/s					
S.t.p. Volume Flow	3.51 m ³ /s					
Stack Gas Moisture	1.22 %					
% Isokinetic	103.22 %					
Measured Oxygen	20.90 %					
Oxygen reference	20.90 %					
Dry O ₂ correction factor	1.00					
Mass > 0.3% Tare?	Y					
Wet O ₂ correction factor	0.16					
S.t.p. volume sampled	1.02 m ³					

TABLE B.1.1

Preliminary Velocity and Temperature Survey

Duct : Dry Arrester

Client: Sarginsons

Date: 19-Apr-06

Client Site: Coventry

Stack Internal Diameter (m) : 0.9
X 0.9

Method: TP25-IEM

Port Depth: 0 cm.

Positional Requirements met ? No



Sampling Point	First Sampling Line			Second Sampling Line			
	Distance Along Line (m)	PitotStatic Reading (cm H ₂ O)	Gas Temperature (°C)	Sampling Point No.	Distance Along Line (m)	PitotStatic Reading (cm H ₂ O)	Gas Temperature (°C)
1	0.045	0.68	22	1	0.045		
2	0.135	0.42	22	2	0.135		
3	0.225	0.7	22	3	0.225		
4	0.315	1.02	22	4	0.315		
5	0.405	0.98	21	5	0.405		
6	0.495	1.28	21	6	0.495		
7	0.585	1.78	21	7	0.585		
8	0.675	1.88	22	8	0.675		
9	0.765	1.06	22	9	0.765		
10	0.855	0.1	22	10	0.855		
	Mean (A) 0.99	Mean (1) 21.7			Mean (B)		Mean (2)
					Mean A,B 0.99		

Mean Flue Gas Temp (in K) $T_p = ((\text{Mean (1)} + \text{Mean (2)})/2) + 273 = 295$

Permitted range of gas temperature readings (C) = $(0.95T_p - 273)$ to $(1.05T_p - 273) = 7$ to 36

Highest Pitot Static Reading (either sampling line) (cm H₂O) = 1.88

Lowest Pitot Static Reading (either sampling line) (cm H₂O) = 0.1

Ratio Highest/Lowest (Max Permitted = 9:1) 18.8 :1

Pitot Head at Right Angles ?	Y
Manometer Tube Leak Check ?	Y
Static Pressure (cm H ₂ O)	-0.04
Range of Gas Temps OK ?	Y
No. Points Sampling?	8
Leak Check OK ?	Y
Gas Flow Angle < 15deg ?	Y
Swirl Test OK at all Pitot Points?	Y

Stopwatch Accuracy OK / Calibrated ?	Y
Temp Indicator OK?	Y
Nozzle Condition OK ?	Y
Probe cleaned out ?	Y
Spare seals and gaskets loaded ?	Y

Job Number :	MMCX0501
Work Carried Out By :	MS/PJ

Instrument	Model	Serial No.
Manometer	CAE	C55
Temp. Ind.	CAE	C55
Thermocouple	K-Type	C646
Probe/Pitot	Westech	C646



TABLE B.1.2

K - Factor Calculation

Client: Sarginsons Operators: MS/PJ
 Site: Coventry Method: TP25-IEM
 Duct: Dry Arrester Job Number: MMCX0501
 Date: 19-Apr-06

dH = K.dP
 dH = Pressure difference of orifice meter (cm H₂O)
 dP = Pressure difference of Pitot tube (cm H₂O)

$$K = K1 * (Dn)^4 * (dH@) * (Cp)^2 * (1-Bwo)^2 * (Tm/Ts) * (Ps/Pb) * (Md/Ms)$$

Where	K1	= constant	8.04 x 10 ⁻⁵		0.0000804	
	Dn	= nozzle diameter		6.16	mm	
	dH@	= meter box constant		51.2292	mm H ₂ O	
		= meter box correction factor		2.0169		
	Cp	= pitot tube co-efficient		0.854	for S Type	
	Bwo	= volume fraction of moisture in stack gas		0.01	(5%=0.05, 10%=0.1, 15%=0.15)	
	Tm	= absolute expected meter temp. (K= °C + 273)		298	K	
	Ts	= absolute stack Temp.		294.7	K	
	Pst	= static pressure (=cm H ₂ O/10.2)		-0.003922	kPa	
	Ps	= absolute stack pressure (Pb+static)	99.99607843	kPa x 7.502=	750.17	mmHg
	Pb	= barometric absolute pressure	100	kPa x 7.502=	750.20	mmHg
	Md	=Stack O ₂		20.90	%	Ambient O ₂ = 20.9%
		=Stack CO ₂		0.04	%	Ambient CO ₂ = 0.04%
		=Stack N ₂		79.06	%	
		=Stack CO		0.00	%	Ambient N ₂ = 79%
		dry gas molecular weight (29 for dry air)				
		= 0.44(%CO ₂) + (0.32(%O ₂) + 0.28(%CO+%N ₂))				
	Ms	= stack gas molecular weight (27.88"Wet Air")(10%H ₂ O)		28.8424	g/g-mole	
		= Md (1-Bwo) + 18(Bwo)				
		= Md (1-) + 18()		28.73	g/ g-mole	

Assume where data is unavailable: Ps/Pb ~ 1, Md/Ms ~ 1.04

$$K = 0.0000804 * (dH@) * (Cp)^2 * (1-Bws)^2 * (Tm/Ts) * (Ps/Pb) * (Md/Ms) * (Dn)^4$$

$$K = 0.0000804 \times 37.16708254 * (Dn)^4$$

$$K = 0.0029882 \times 1439.87 \text{ mm}^4$$

K - Factor =	4.303	Nozzle Size =	6.16	mm
Max sampling rate (cm H ₂ O)	8.089	Nozzle Serial No. =	C393	
Min sampling rate (cm H ₂ O)	0.430			
If using BS EN 13284 the nozzle size should be ≥6mm, does the nozzle size conform?				Y

TABLE B.1.3

Sample Record Sheet



Client: Sarginsons	Operators: MS/PJ	Method: TP25-IEM
Site: Coventry	Job No: MMCX0501	Meter No: C55
Duct: Dry Arrestor	Date: 19-Apr-06	Probe No: C646
Run: 1	K Factor: 4.30	Nozzle Size: 6.16 mm
Filter No: 100324	Wash No: 100324w	Pilot Cp: 0.854
Atmos Pressure (kPa): 100.0	Stack Diameter (m): 0.9	Leak Test - (l/min) (See table below) Pretest: 0.15 Post-test 0.15
Static Pressure (kPa): 0.00	Analysis: Particulate	

Sample Point	Distance (m)	Time	Velocity Head (cm H2O)	Sample Rate (cm H2O)	DGM Reading (Litres)	Stack Temp. (C)	DGM Temp		Probe Temp (C)	Filter Temp (C)	Cond Temp (C)
							In (C)	Out (C)			
A1	0.05	13:40	0.56	2.41	6662.98	21	13	13	159	158	7
		13:43	0.62	2.67	6705	21	13	13	159	162	7
A2	0.16	13:46	0.68	2.93	6745	21	13	13	161	161	7
		13:49	0.72	3.10	6777	21	14	13	161	162	7
A3	0.28	13:52	0.88	3.79	6792	21	14	13	163	163	7
		13:55	1.18	5.08	6836	21	15	13	159	163	7
A4	0.39	13:58	1.16	4.99	6876	21	15	13	158	162	8
		14:01	1.21	5.21	6891	21	15	13	159	161	8
A5	0.51	14:04	1.26	5.42	6917	22	16	13	159	159	8
		14:07	1.37	5.89	6940	22	16	14	158	158	8
A6	0.62	14:10	1.68	7.23	6970	22	16	14	159	159	8
		14:13	1.78	7.66	7008	22	16	14	161	161	8
A7	0.73	14:16	1.86	8.00	7048	21	16	14	161	161	8
		14:19	1.88	8.09	7082	22	16	14	160	160	8
A8	0.84	14:22	1.12	4.82	7114	22	16	14	160	159	8
		14:25	1.16	4.99	7132	22	16	14	159	158	8
END		14:28			7160.76						
Total/Average			1.195	5.14	497.78	21	15	13	160	160	8

Balance Serial No. C604		Check Weight No. 1	Calibrated Weight (g) 1000	Balance Reading (g) 1000	In Tolerance (+/-0.1g) Y
		2	500	500	Y
		3	49.8	49.8	Y
Set No:	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5 (opt)
Contents	DI Water	DI Water	Empty	Silica Gel	
Initial Mass (g)	729.1	593.6	520.6	592.5	
Final Mass (g)	728	593.7	520.4	596.3	
Net Gain (g)	-1.1	0.1	-0.2	3.8	0
Mass of Solids (mg)	1.6				Total 2.6
Ambient Temp (°C)	13				
Probe Length	0.98				
Probe Liner Material	Titanium				

Leak Check	
Proposed Sample Rate (l/min)	10.00
5% of Sample Rate (l/min)	0.50
2% of Sample Rate (l/min)	0.20
1% of Sample Rate (l/min)	0.10

TABLE B.1.4



Run 1 Summary of Results						
Client:	Sarginsons		Job No:	MMCX0501		
Client Site:	Coventry		Method:	TP25-IEM		
Duct:	Dry Arrester		Operators:	MS/PJ		
Date:	19-Apr-06					
Pollutant	Dry s.t.p. Conc mg/Nm ³	Wet s.t.p. Conc. mg/Nm ³	Dry Oxygen Ref Conc mg/Nm ³	Wet Oxygen Ref Conc mg/Nm ³	Mass Emission Rate g/s	Mass Emission Rate kg/hr
Total Particulates	1.6984	1.6926	1.6984	0.6945	0.0151	0.0544
Particulates (Filter)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Particulates (Washings)	1.6984	1.6926	1.6984	0.6969	0.0151	0.0544
Hydrogen Fluoride	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hydrogen Chloride	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ammonia	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hydrogen Sulphide	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sulphur Dioxide	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Chemical	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Chemical	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	mg/Nm ³	mg/Nm ³	mg/Nm ³	mg/Nm ³	g/s	kg/hr
Arsenic (As)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Cadmium (Cd)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Chromium (Cr)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Cobalt (Co)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Copper (Cu)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Manganese (Mn)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nickel (Ni)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lead (Pb)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Antimony (Sb)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Thallium (Tl)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vanadium (V)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mercury (Hg)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tin (Sn)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Selenium (Se)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	ng/Nm ³	ng/Nm ³	ng/Nm ³	ng/Nm ³	ug/s	mg/hr
Dioxins (NATO) - min	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Dioxins (NATO) - max	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	ng/Nm ³	ng/Nm ³	ng/Nm ³	ng/Nm ³	ug/s	mg/hr
Dioxins (WHO) - min	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Dioxins (WHO) - max	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Duct Diameter	0.90 m					
Average Temperature	21.44 °C					
Stack Gas Velocity	12.05 m/s					
S.t.p. Volume Flow	8.93 m ³ /s					
Stack Gas Moisture	0.34 %					
% Isokinetic	99.86 %					
Measured Oxygen	20.90 %					
Oxygen reference	20.90 %					
Dry O ₂ correction factor	1.00					
Mass > 0.3% Tare?	Y					
Wet O ₂ correction factor	0.41					
S.t.p. volume sampled	0.94 m ³					



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END OF REPORT