

Report for Periodic Monitoring of Emissions to Atmosphere

Part 1: **Executive Summary**
Permit Number: **PPC/028**
Operator: **Atritor Ltd**
Installation: **Coventry**
Emission Point: **PMA1**
Monitoring Date: **19th August 2014**



Contract Reference: FTBS 31524
Operator: Atritor Ltd
Address: Edgewick Park Industrial Estate
Canal Road
Coventry
CV6 5RD
Monitoring Organisation: RPS Consultants
Address: Noble House,
Capital Drive,
Linford Wood,
Milton Keynes,
MK14 6QP
Report Date: 22nd September 2014
Report Approved By: Richard Harvey
Position: Principal Consultant
MCERTS Registration No.: MM 02 020
MCERTS Certification Level: Level 2
Technical Endorsements: TE 1, TE2, TE3, TE4

Signature:

A rectangular box containing a handwritten signature in black ink, which appears to be 'Richard Harvey'.

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Monitoring Objectives

At the request of Bob Percival of Atritor Ltd, RPS Consultants conducted stack emission monitoring at the Coventry site in August 2014.

The monitoring programme at this installation was carried out to provide data on emissions to atmosphere for comparison with the limits specified in the air emission criteria for this site.

The following tables detail the parameters requested for monitoring at each emission point and the actual monitoring conducted.

Table 1.1

Parameters Requested to be Monitored	Emission Point
	PMA1
	Main Scrubber
Total Particulate Matter	✓
Specific Requirements	Normal

Notes:

✓ Represents pollutants sampled

Monitoring Results

Table 2.1 Monitoring results for emission point PMA1, Carried out on 19th August 2014

Substance Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty (Expressed expanded k=2)	Reference Conditions 273K, 101.3kPa	Sampling Date	Sampling Times	Monitoring Reference Method	Accreditation Status	Operating Status
Total Particulate Matter	50	8.5	mg/m ³	+/- 0.31	273K, 101.3kPa, Wet	19/08/2014	11:27 – 13:27	BS EN 13284-1:2002	MCERTS	Normal

Operating Information

Table 3.1 Operating conditions during the monitoring of emission point PMA1 carried out on 19th August 2014

Parameter	Result
Sample Date	19/08/2014
Process Type	Batch Process 11:27 Fume tunnel & casting 11:41 – 12:45 Knocking out, Melting & moulding from 12:45 to end of test.
Process Duration	~ 2 hrs
If 'Batch', was monitoring carried out over the whole batch?	Yes
Abatement/Operational?	Wet Scrubber / Operational

Comparison of Operator CEM and Periodic Monitoring Results		
Substance	CEMs Results (mg/m ³)	Periodic Monitoring Results (mg/m ³)
No CEMS Installed/Data Available		

Monitoring Deviations

Table 4.1 Monitoring Deviations for Emission Point PMA1

Pollutant	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Total Particulate Matter	None	None	None

Report for Periodic Monitoring of Emissions to Atmosphere

Part 2: **Supporting Information**

Permit Number: **PPC/028**

Operator: **Atritor Ltd**

Installation: **Coventry**

Emission Point: **PMA1**

Monitoring Date: **19th August 2014**



Contract Reference: FTBS 31524

Operator: Atritor Ltd

Address: Edgewick Park Industrial Estate
Canal Road
Coventry
CV6 5RD

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APPENDIX 1: General Information

Monitoring Organisation Staff Details

Table 5.1 Sampling Personnel

Sampling Personnel	Position	MCERTS Level	Technical Endorsements	Expiry Dates	MCERTS Registration Number
Carl Redgrove	Senior Consultant	Level 2	TE1, TE2, TE3, TE4	10/19 03/15 03/16 03/16	MM 03 173
Alex Shepherd	Trainee Technician	-	-	-	MM 14 1270

Table 5.2 Report Author

Report Author	Position	MCERTS Level	Technical Endorsements	Expiry Dates	MCERTS Registration Number
Carl Redgrove	Senior Consultant	Level 2	TE1, TE2, TE3, TE4	10/19 03/15 03/16 03/16	MM 03 173

Table 5.3 Report Reviewer

Report Reviewer	Position	MCERTS Level	Technical Endorsements	Expiry Dates	MCERTS Registration Number
Richard Harvey	Principle Consultant	Level 2	TE1, TE2, TE3, TE4	11/17 03/15 03/16 12/15	MM 02 020

Monitoring Organisation Method Details

Table 6.1 Monitoring Methods

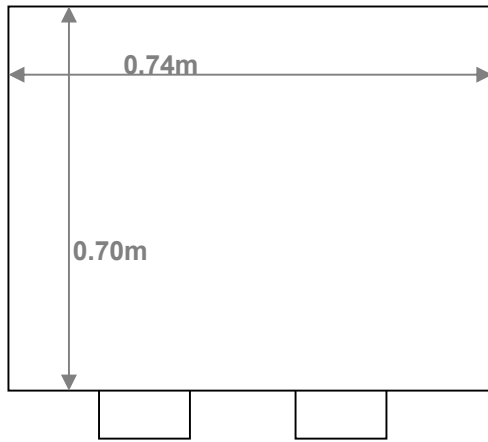
Emission Parameter	Standard Method	Monitoring Procedure No.	Monitoring Accreditation	Analysis	Analysis Procedure No.	Analytical Laboratory	Analysis Accreditation
Practical Considerations Prior to Monitoring	N/A	RPSCE/1/1	UKAS	N/A	N/A	N/A	N/A
Gas Flows	BS-EN 13284-1:2001	RPSCE/1/2	MCERTS	N/A	N/A	N/A	N/A
Gas Temperatures	BS-EN 13284-1:2001	RPSCE/1/2	MCERTS	N/A	N/A	N/A	N/A
Low Concentration Total Particulate Matter	BS EN 13284-1:2002	RPSCE/1/7c	MCERTS	Gravimetric	D9	RPS Laboratories	UKAS

Table 7.1 – Checklist Used

Equipment Checklist Used	File Location Address
FTBS31524 Checklist	FTBS31524 Electronic & Work File

**APPENDIX 2:
PMA1 Sampling, Analysis & Uncertainty Data**

Stack Diagram – PMA1



Working from ground level. Sample ports approximately 1.5m above ground level.
>2.5m free space in front of sample ports.

Company Name: Atritor Ltd.
Site Name: Coventry
Sampling Point Ref: PMA1
Project Reference: FTBS31524

Date: 19/08/14
Run: TPM

Stack Width (m) 0.70
Stack Depth (m) 0.74
Stack Area (m2): 0.518

Traverse Point No.	Traverse Point (m)	Port A			Port B		
		Δ p, mm H ₂ O	Root Δ p	Stack Temp °C	Δ p, mm H ₂ O	Root Δ p	Stack Temp °C
1	0.11	5.2	2.280	16	13.5	3.674	16
2	0.63	6.3	2.510	16	14.9	3.860	16
3	N/A						
4	N/A						
5	N/A						
6	N/A						
7	N/A						
8	N/A						
9	N/A						
10	N/A						
	Minimum	5.2	2.280	16	13.5	3.674	16
	Maximum	6.3	2.510	16	14.9	3.860	16
	Mean	5.8	2.395	16.0	14.2	3.767	16.0
	Sum	11.5	4.790	32	28.4	7.534	32
	Total Sum						

Max. pitot press. =	14.9
Min. pitot press. =	5.2
Ratio Max:Min =	2.9 :1

Gas Data

Oxygen %	20.9
CO ₂ %	0.04
CO %	

Oxygen Correction

Required Correction Value	0
Actual Oxygen Factor	1.000
Enter 0 if correction is not required	

BS EN 13284-1 & M1 Sample Point Requirements	Requirement Met?
Duct gas Flow: angle with regard to duct access <15°?	Y
Duct Gas Flow Negative Velocity: Not Permitted	Y
Duct Gas Flow: Ratio of max to min velocity <3:1?	Y
Working Area > 5m ² ?	Y
Handrails with removable chains / self closing gates across the top of the ladder?	Y
Handrails (approx 0,5 and 1,0 m high) and vertical baseboards (approx 0,25m high)?	Y
Scaffold Built to 'Heavy Duty' Scafftag Rating or at least 2.5kN/m2 loading	Y
Handrails not restricting access to ports?	Y
Room opposite sampling port equal or greater than the length of the sampling probe plus 1 metre?	Y
Sufficient Power (Waterproof 110V BS4343 Standard) close or on the platform?	Y

Company Name: Atritor Ltd. In-stack Filter? Y Bar. Press.mm Hg 750 K Factor 2.917090177 Ambient Temp. 13 Leak Rate (fin / %) 0.00
 Site Name: Coventry Outstack Filter? N Cp 0.824 Dn used 5.967 Start Time 11:27 Leak Rate (start / %) 0.00
 Project Reference: FTBS31524 Date: 19/08/14 Operators CR AS Bws% 1.5 Nozzle No. 0 Stop Time 13:27 Box/Probe setting 160 +/- 5 °C
 Run: TPM Meter Correction Yd 0.946
 Sampling Point Ref: PMA1

Sample Filter Weights			
	Sample ID	Laboratory	Increase, mg
Filter	108181	RPS	14.7
Probe Washings	20008336	RPS	2.4

Sample Filter Blank Weighings			
	Sample ID	Laboratory	Increase, mg
Filter	112989	RPS	0.04
Probe Wash	20008335	RPS	1

Impinger Weights			
Weights	Initial	Final	Increase, g
Impinger 1			0.0
Impinger 2			0.0
Impinger 3			0.0
Impinger 4			0.0
Impinger 5			0.0
Silica Gel			0.0
Total			24.0

Sample Point	Clock Time min	Pilot Δ p. mm H ₂ O	Stack Temp. °C	Orifice Δ H, mm H ₂ O		Gas Meter Reading m ³	Temp at Gas Meter Outlet °C	Condenser Temp. °C	Filter Box Temp °C	Probe Temp °C	Pump Vacuum Inches Hg	Impinger Stem Temp. °C	Root Δ p.
				Desired	Actual								
	0	6	16	17.5	17.5	109427	13						2.449
	5	6.1	16	17.8	17.8		13						2.470
	10	7.1	16	20.7	20.7		15						2.665
	15	7	17	20.4	20.4		16						2.646
	20	7	17	20.4	20.4		17	Not Required	In Stack	In Stack			2.646
	25	7.1	17	20.7	20.7		17						2.665
	30	7	18	20.4	20.4		17						2.646
	35	7.2	18	21.0	21.0		17						2.683
	40	7.2	20	21.0	21.0		17						2.683
	45	7	21	20.4	20.4		17						2.646
	50	7.1	22	20.7	20.7		18						2.665
	55	7.1	22	20.7	20.7		18						2.665
Endpoint	60												
	0	16.5	23	48.1	48.1		18						4.062
	5	16.1	23	47.0	47.0		18						4.012
	10	16.1	21	47.0	47.0		19						4.012
	15	16.1	20	47.0	47.0		20						4.012
	20	12.8	20	37.3	37.3		20						3.578
	25	12.9	20	37.6	37.6		21						3.592
	30	12.9	20	37.6	37.6		21						3.592
	35	14	20	40.8	40.8		21						3.742
	40	14.4	20	42.0	42.0		21						3.795
	45	14.5	19	42.3	42.3		22						3.808
	50	14.4	19	42.0	42.0		22						3.795
	55	14.6	19	42.6	42.6		22						3.821
Endpoint	60					111679							
	120.00	10.758	19.3	31.4	31.4	2.252	18.3				-4.7	17.8	3.2

Site Name: Coventry
Project Reference: FTBS31524

Date: 19/08/14

Sampling Point Ref: PMA1	Run: TPM
Meter Volume Sampled, acm	2.252
Sample Run Start Time	11:27
Sample Run End Time	13:27
Total Actual Sampling Time, min	120.0
Barometric Pressure, mm Hg	750.00
Stack Pressure, mm Hg	731.60
Average Stack Temp, °C	19.3
Meter Volume at STP, scm	1.975
Meter Volume at Wet STP, scm	2.005
Stack Moisture Content, %	1.5
Average Stack Velocity, m/sec	10.958
Stack Area, m ²	0.52
Stack Flow Rate, acms	5.676
Stack Flow Rate, scms wet, STP	5.100
Stack Flow Rate, scms dry,STP	5.024
Nozzle Diameter, mm	5.97
% Isokinetic Variation	100.9
Total Mass of Particulate, mg	17.1
Percentage of Total Particulate Collected on Filter	86.0
Stack Particulate Concentration, mg/m³	8.529
Particulate Mass rate, kg/hour	0.157
Emission Limit value	50

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m ³	0.52
Total Weight Gain, mg (Sample Train Blank)	1.04
Blank Result Less than 10% of Limit Value	Y

Uncertainty Calculation for Total Particulate Matter to BS EN 13284-1

Determined Concentration	8.529	mg/m ³ (at Reference Cond)
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Measured Values

Sampled Volume	2.252	m ³
Sampled gas Temperature	291.3333333	k
Sampled gas Pressure	97.54	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	20.9	% by volume
Mass	17.1	mg

Leak	0.00	%
Uncollected Mass	0	mg

Standard Uncertainties for Measured Values

Sampled Volume	0.001	m ³
Sampled gas Temperature	2	k
Sampled gas Pressure	1	kPa
Sampled gas Humidity	1	% by volume
Oxygen content	0.1	% by volume
Mass	0.14152385	mg

Uncertainty Calculation for Volume Correction				Uncertainty Calculation for Oxygen Correction			
Volume Correction Factor	0.902			Oxygen Correction Factor	1.0000		
	Sensitivity Coefficient		Uncertainty, U_v		Sensitivity Coefficient		Uncertainty, U_o
Sampled gas Temperature	0.0031		0.0062	Oxygen Measurement	N/A		N/A
Sampled gas Pressure	0.0093		0.0093				
Sampled gas Humidity	0.0090		0.0090				
	Sqrt (U_v)²		0.0143				
	Total U_v		0.032			Total U_o	N/A

Uncertainty Contributions (Itemised)						
	Value		Sensitivity coefficient	Uncertainty Contribution		
				Concentration	%	
Volume Correction	1.975	m ³	4.32	0.14 mg.m ⁻³	1.63	%
Mass (weighing)	17.10	mg	0.50	0.07 mg.m ⁻³	0.83	%
Oxygen Correction	N/A		0.00	0.00 mg.m ⁻³	0.00	%
System Leak	0.00	mg.m ⁻³	1.00	0.00 mg.m ⁻³	0.00	%
Uncollected Mass	0.00	mg	0.50	0.00 mg.m ⁻³	0.00	%
			Total Uncertainty	0.16 mg.m⁻³		

Uncertainty Result	
(Uncertainty has been expanded with a coveragefactor of 2 (K=2))	
Expanded Uncertainty =	0.3126 mg.m⁻³
=>	3.66 % of Result
=>	0.63 % of ELV



Test Certificate

Date 01/09/2014

Client RPS Milton Keynes HSED Noble House Capital Drive Linford Wood Milton Keynes MK14 6QP	Order No. FTBS 31624 Certificate No. WK14-6444 Issue No. 1
Contact Carl Redgrove	Date Received 21/08/2014
Description 2 filters and 2 washes for TPM	Technique Gravimetric Stack

Sample No.	806692	112989	Method
Total particulate matter	<0.04 mg		D9(U)
Sample No.	806693	20008336	Method
Total particulate matter	<1 mg		D9(U)
Sample No.	806694	108181	Method
Total particulate matter	14.7 mg		D9(U)
Sample No.	806696	20008336	Method
Total particulate matter	2.4 mg		D9(U)



Test Certificate

Date 01/09/2014

Client	RPS Milton Keynes HSED	Certificate No.	WK14-6444
		Issue No.	1

Tested By	Kirstie Davenport	Date	28/08/2014
			29/08/2014

Approved By		Date	01/09/2014
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Lora McKerracher
Chemist

For and on authority of RPS Laboratories Ltd.

Method Symbols (U) Analysis is UKAS Accredited
(N) Analysis is not UKAS Accredited

Concentration values (mg/m³ and ppm) are calculated on the basis of information provided by the customer.
Results stated as ml are referring to the sample volume.

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Analysis carried out on samples 'as received'

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