

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: **28th August 2012**



Contract Reference: FTBS 22210

Operator: Atritor Ltd

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

Monitoring Organisation: RPS Consultants

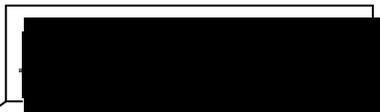
Address: Noble House,
Capital Drive,
Linford Wood,
Milton Keynes,
MK14 6QP

Report Date: 14th September 2012

Report Approved By: Richard Carter
Position: Consultant
MCERTS Registration Number: MM 07 861
MCERTS Certification Level: Level 2

Technical Endorsements: TE 1, TE2, TE3, TE4

Signature:



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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 2012.

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 28/08/2012

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	12	mg/m ³	+/- 0.40	273K, 101.3kPa, Wet	28/08/2012	11:18 - 13:28	BS EN 13284-1:2002	MCERTS	Normal

Operating Information

Table 3.1 Operating conditions during the monitoring of emission point PMA1 carried out on 28/08/2012

Parameter	Result
Sample Date	28/08/2012
Process Type	Batch Process 11:18 – 12:08 Knocking out 12:10 – 13:10 Melting 13:10 – 13:18 Casting and Moulding 13:18 – 13:28 Sandmill
Process Duration	~ 2 Hours
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: **28th August 2012**



Contract Reference: FTBS 22210

Operator: Atritor Ltd

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

Monitoring Organisation: RPS Consultants

Address: Noble House,
Capital Drive,
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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
Edwin Powell	Consultant	Level 2	TE1, TE2, TE3, TE4	10/12/12 10/12/12 10/12/12 10/12/12	MM 05 621
James Beechey	Technician	Level 1	-	-	MM 11 1144

Table 5.2 Report Author

Report Author	Position	MCERTS Level	Technical Endorsements	Expiry Dates	MCERTS Registration Number
James Beechey	Technician	Level 1	-	-	MM 11 1144

Table 5.3 Report Reviewer

Report Reviewer	Position	MCERTS Level	Technical Endorsements	Expiry Dates	MCERTS Registration Number
Richard Carter	Consultant	Level 2	TE1, TE2, TE3, TE4	12/06/13 09/09/13 03/12/14 18/03/15	MM 07 861

Monitoring Organisation Method Details

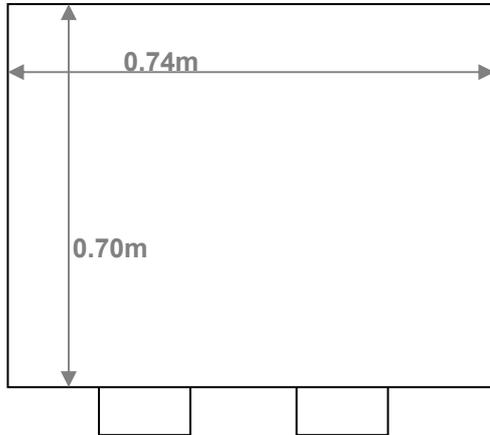
Table 6.1 Monitoring Methods

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
FTBS22210 Checklist	FTBS22210 Electronic & Work File

Stack Diagram – PMA1



- Working from ground level

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

Company Name: Atritor Ltd Date: 28/08/12
Site Ref: Coventry Run: TPM
Sampling Point Ref: PMA1
Project Ref: FTBS22210

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

Stack Static press mm H₂O: -236

Traverse Point No.	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	7.2	2.683	17	16	4.000	15
2	7.9	2.811	17	17.2	4.147	15
3						
4						
5						
6						
7						
8						
9						
10						
Minimum	7.2	2.683	17	16.0	4.000	15
Maximum	7.9	2.811	17	17.2	4.147	15
Mean	7.6	2.747	17.0	16.6	4.074	15.0
Sum	15.1	5.494	34	33.2	8.147	30
Total Sum						

Max. pitot press. = 17.2
Min. pitot press. = 7.2
Ratio Max:Min = 2.4 : 1

Gas Data

Oxygen %	21.0
CO ₂ %	0.04
CO %	

Oxygen Correction

Required Correction Value	0
Actual Oxygen Factor	1
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°?	
Duct Gas Flow Negative Velocity: Not Permitted	
Duct Gas Flow: Ratio of max to min velocity <3:1?	
Working Area > 5m ² ?	
Handrails with removable chains / self closing gates across the top of the ladder?	
Handrails (approx 0.5 and 1.0 m high) and vertical baseboards (approx 0.25m high)?	
Scaffold Built to 'Heavy Duty' Scafftag Rating or at least 2.5kN/m2 loading	
Handrails not restricting access to ports?	
Room opposite sampling port equal or greater than the length of the sampling probe plus 1 metre?	
Sufficient Power (Waterproof 110V BS4343 Standard) close or on the platform?	

Company Name: Atritor Ltd In-stack Filter? Y Bar. Press.mm Hg 749 K Factor 5.784 Ambient Temp. 18 Leak Rate (fin / %) 0
 Site Ref: Coventry Outstack Filter? N Cp 0.643 Dr Used 6.95 Start Time 11:18 Leak Rate (start / %) 0
 Sampling Point Ref: PMA1 Date: 28/08/12 Operators EPK/IB Bws% Nozzle No. Stop Time 13:28 Bbox/Probe setting 160 +/- 5.0C
 Run: TPM Project Ref: FTBS22210 Meter Correction Yd 0.983

Sample Filter Weights

	Reference	Laboratory	Increase, mg
Filter	86810	RPS	31.7
Probe Washings	T30000606	RPS	1.2

Sample Filter Blank Weighings

	Reference	Laboratory	Increase, mg
Filter	83099	RPS	0.04
Probe Wash	T30000605	RPS	1

Impinger Weights

Weights	Initial	Final	Increase, g
Impinger 1	783	777.6	-5.4
Impinger 2	801.4	799.9	-1.5
Impinger 3	563.9	564.2	0.3
Impinger 4	758.9	790.5	31.6
Impinger 5			0.0
Silica Gel			0.0
Total			25.0

Sample Point	Clock Time min	Pitot 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	8.4	17	48.6	48.6	2015.165	12				0	12	2.898
	5	8.4	15	48.6	48.6		13				0	13	2.898
	10	9.8	15	56.7	56.7		13				0	18	3.130
	15	9.8	19	56.7	56.7		14				0	19	3.130
	20	9.8	19	56.7	56.7		14				0	20	3.130
	25	9.8	19	56.7	56.7		14				0	20	3.130
	30	9.0	19	52.1	52.1		14				0	20	3.000
	35	9.0	18	52.1	52.1		14				0	20	3.000
	40	9.0	18	52.1	52.1		14				0	19	3.000
	45	9.0	19	52.1	52.1		17				0	19	3.000
	50	9.0	19	52.1	52.1		18				0	19	3.000
	55	9.0	20	52.1	52.1		19				0	19	3.000
	60	9.0	19	52.1	52.1		19				0	19	3.000
Endpoint	65												

Sample Point	Clock Time min	Pitot 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	7.5	18	43.4	43.4		19				0	19	2.739
	5	7.5	18	43.4	43.4		19				0	19	2.739
	10	7.5	18	43.4	43.4		19				0	19	2.739
	15	7.5	18	43.4	43.4		19				0	19	2.739
	20	7.5	18	43.4	43.4		19				0	19	2.739
	25	7.5	18	43.4	43.4		19				0	19	2.739
	30	7.5	19	43.4	43.4		19				0	19	2.739
	35	7.5	19	43.4	43.4		19				0	19	2.739
	40	7.5	19	43.4	43.4		19				0	19	2.739
	45	7.5	19	43.4	43.4		19				0	19	2.739
	50	7.5	20	43.4	43.4		20				0	19	2.739
	55	7.5	20	43.4	43.4		20				0	19	2.739
	60	10.0	20	57.8	57.8		20				0	19	3.162
Endpoint	65					2018036.5							
	130.00	8.4	18.5	48.7	48.7	2.872	17.1	#DIV/0!	#DIV/0!	#DIV/0!	0.0	18.6	2.9

Company Name: Atritor Ltd
Site Ref: Coventry
Project Ref: FTBS22210

Date: 28/08/12

Sampling Point Ref: PMA1	Run: TPM
Meter Volume Sampled, acm	2.872
Sample Run Start Time	11:18
Sample Run End Time	13:28
Total Actual Sampling Time, min	130.0
Barometric Pressure, mm Hg	749.00
Stack Pressure, mm Hg	731.63
Average Stack Temp, °C	18.5
Meter Volume at Wet STP, scm	2.660
Stack Moisture Content, %	1.2
Average Stack Velocity, m/sec	10.058
Stack Flow Rate, scms wet, STP	4.695
Nozzle Diameter, mm	6.95
% Isokinetic Variation	99.0
Total Mass of Particulate, mg	32.9
Percentage of Total Particulate Collected on Filter	96.4
Stack Particulate Concentration, mg/m³	12.4
Particulate Mass rate, kg/hour	0.209
Emission Limit value	50

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m ³	0.4
Total Weight Gain, mg (Sample Train Blank)	1.0
Blank Result Less than 10% of Limit Value	Y

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

Determined Concentration	12.4	mg/m ³ (at Reference Cond)
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Measured Values

Sampled Volume	2.8715	m ³
Sampled gas Temperature	290.1153846	K
Sampled gas Pressure	97.55	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	21	% by volume
Mass	32.9	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	0.14152395	mg

Uncertainty Calculation for Volume Correction				Uncertainty Calculation for Oxygen Correction			
Volume Correction Factor	0.906			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	0.0091		0.0091				
	Sqrt (U_v)²		0.0144				
	Total U_v		0.041			Total U_o	N/A

Uncertainty Contributions (Itemised)			Uncertainty Contribution		
	Value	Sensitivity coefficient	Concentration	%	
Volume Correction	2.629 m ³	4.71	0.18 mg.m ⁻³	1.57%	
Mass (weighing)	32.90 mg	0.38	0.05 mg.m ⁻³	0.43%	
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	0.38	0.00 mg.m ⁻³	0.00%	
		Total Uncertainty	0.20 mg.m⁻³		

Uncertainty Result:	(Uncertainty has been expanded with a coverage factor of 2 (k=2))
Expanded Uncertainty =	0.40 mg.m⁻³
=>	3.26 % of Result
=>	0.00 % of ELV



Test Certificate

Date 11/09/2012

Client	RPS Milton Keynes HSED Noble House Capital Drive Linford Wood Milton Keynes MK14 6QP	Order No.	FTBS 22210
		Certificate No.	WK12-5597
		Issue No.	1
Contact	Edwin Powell	Date Received	05/09/2012
Description	2 filters and 2 washes for TPM	Technique	Gravimetric

Sample No.	712438	086810	Method
Total particulate matter	31.70 mg		D9(U)
Sample No.	712439	T30000606	Method
Total particulate matter	1.2 mg		D9(U)
Sample No.	712440	083099	Method
Total particulate matter	<0.04 mg		D9(U)
Sample No.	712441	T30000605	Method
Total particulate matter	1.0 mg		D9(U)

