Report for Periodic Monitoring of Emissions to Atmosphere

Part 1:	**Executive Summary**
Permit Number:	**N/A**
Operator:	**Covpress Ltd**
Installation:	**Coventry**
Emission Point:	**Burn Off Oven Exhaust**
Monitoring Date:	**26th September 2012**

UKAS TESTING
1709

mCERTS

Contract Reference:	FTBS 22507
Operator:	Covpress Ltd
Address:	Burnsall Road Canley Coventry CV5 6RT
Monitoring Organisation:	RPS Consultants
Address:	Noble House, Capital Drive, Linford Wood, Milton Keynes, MK14 6QP
Report Date:	26th October 2012
Report Approved By:	Carl Redgrove
Position:	Senior Consultant
MCERTS Registration Number:	MM 03 173
MCERTS Certification Level:	2
Technical Endorsements:	TE1, TE2, TE3, TE4
Signature:	[redacted]

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Monitoring Objectives

At the request of Steve Cottom of Covpress Ltd, RPS Consultants conducted stack emission monitoring at the Coventry site in September 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
	Burn Off Oven Exhaust
Total Particulate Matter	✓
Volatile Organic Compounds	✓
Oxides of Nitrogen	✓
Carbon Monoxide	✓
Specific Requirements	Normal

Notes:
✓ *Represents pollutants sampled*

Monitoring Results

Table 2.1 Monitoring results for the Burn Off Oven Exhaust, Carried out on 26/09/2012

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
Carbon Monoxide	N/A	85	mg/m^3	+/- 4.2	273K, 101.3kPa, Dry, 11% Oxygen	26/09/2012	09:45 - 11:50	EN 15058:2006	MCERTS	Normal
	Mass Emission Rate	0.024	kg/hr	-						
Oxides of Nitrogen	N/A	90	mg/m^3	+/- 3.2	273K, 101.3kPa, Dry, 11% Oxygen	26/09/2012	09:45 - 11:50	EN 14792:2005	MCERTS	Normal
	Mass Emission Rate	0.025	kg/hr	-						
Total Particulate Matter	N/A	< 0.66	mg/m^3	+/- 0.31	273K, 101.3kPa, Dry, 11% Oxygen	26/09/2012	09:30 - 11:50	BS EN 13284-1:2002	MCERTS	Normal
	Mass Emission Rate	< 0.00038	kg/hr	-						
Volatile Organic Compounds (as Carbon)	N/A	6.8	mg/m^3	+/- 1.9	273K, 101.3kPa, Dry, 11% Oxygen	26/09/2012	09:45 - 11:50	BS EN 13526	MCERTS	Normal
	Mass Emission Rate	0.047	kg/hr	-						

Operating Information

Table 3.1 Operating conditions during the monitoring of the Burn Off Oven Exhaust emission point, carried out on 26/09/2012

Parameter	Result
Sample Date	26/09/2012
Process Type	Batch
Process Duration	150 Minutes
If 'Batch', was monitoring carried out over the whole batch?	No
Abatement/Operational?	Not Installed
Load	Oven half loaded with small "sky" bars.

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 Burn Off Oven Exhaust Emission Point

Pollutant	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Carbon Monoxide, Oxides of Nitrogen & Volatile Organic Compounds	None	None	None
Total Particulate Matter	None	Monitoring conducted from a single traverse line as only one sample port was cut into the stack. This was due to the health and safety concerns of cutting an additional open hole into a stack with a duct temperature of 750 deg C.	None

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Part 2:	**Supporting Information**
Permit Number:	**N/A**
Operator:	**Covpress Ltd**
Installation:	**Coventry**
Emission Point:	**Burn Off Oven Exhaust**
Monitoring Date:	**26th September 2012**

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Address:	Burnsall Road Canley Coventry CV5 6RT
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Report Date:	26th October 2012
Report Approved By:	Carl Redgrove
Position:	Senior Consultant
MCERTS Registration Number:	MM 03 228
MCERTS Certification Level:	2
Technical Endorsements:	TE1, TE2, TE3, TE4
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APPENDIX 1: General Information

Monitoring Organisation Staff Details

Table 5.1 Sampling Personnel

Sampling Personnel	Position	MCERTS Level	Technical Endorsements	MCERTS Registration Number
Luke Sparrow	Trainee Technician	Trainee	None	MM12 189
Richard Carter	Consultant	Level 2	TE1, TE2, TE3, TE4	MM 07 861

Table 5.2 Report Author

Report Author	Position	MCERTS Level	Technical Endorsements	MCERTS Registration Number
Richard Carter	Consultant	Level 2	TE1, TE2, TE3, TE4	MM 07 861

Table 5.3 Report Reviewer

Report Reviewer	Position	MCERTS Level	Technical Endorsements	MCERTS Registration Number
Glyn Harrison	Operations Manager (Stack Emissions)	Level 2	TE1, TE2, TE3, TE4	MM 03 228

Monitoring Organisation Method Details

Table 6.1 Monitoring Methods

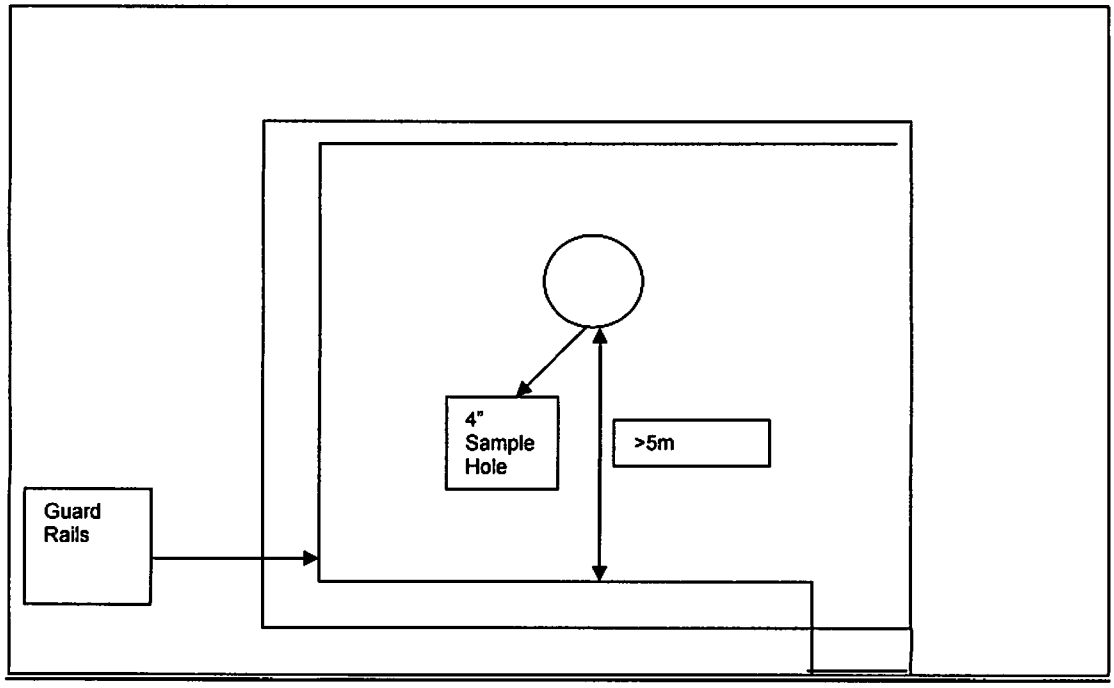
Emission Parameter	Standard Method	Monitoring Procedure No.	Monitoring Accreditation	Analysis	Analysis Procedure No.	Analytical Laboratory	Analysis Accreditaton
Practical Considerations Prior to Monitoring	N/A	RPSCE/1/1	UKAS	N/A	N/A	N/A	N/A
Gas Flows	BS-EN 13284-1:2001	RPSCE/1/2	MCERTS	N/A	N/A	N/A	N/A
Gas Temperatures	BS-EN 13284-1:2001	RPSCE/1/2	MCERTS	N/A	N/A	N/A	N/A
Carbon Monoxide	EN 15058:2006	RPSCE/1/21h	MCERTS	NDIR	N/A	N/A	N/A
Oxides of Nitrogen	EN 14792:2005	RPSCE/1/21f	MCERTS	Chemiluminescence	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
TOCs at high concentrations	BS EN 13526	RPSCE/1/4c	MCERTS	Flame Ionisation Detector	N/A	N/A	N/A

Table 7.1 – Checklist Used

Equipment Checklist Used	File Location Address
FTBS22507 Checklist	FTBS22507 Electronic & Work File

APPENDIX 2:
Burn Off Oven Exhaust Sampling, Analysis & Uncertainty Data

Burn Off Oven Exhaust – Stack Diagram



Company Name: Covpress Ltd
Site Ref: Coventry
Stack Ref: Burn Off Oven Exhaust

Date: 26/09/12
Run: Comb Gases

Static Press, mm H_2O:	1.2	Stack Diamter (m)	0.4
Barometric (mm Hg) Start	760	Pitot Tube Constant:	0.829

Traverse Point No.	Port A				Port B			
	Δ p, mmH2O	Conversion for pitot coefficient and to Pa	Root Δ p.	Stack Temp °C	Δ p, mmH2O	Conversion for coefficient and t	Root Δ p.	Stack Temp °C
1	0.8	5.5	2.345	700		0.0	0.000	
2	0.8	5.5	2.345	700		0.0	0.000	
3	0.8	5.5	2.345	700		0.0	0.000	
4	0.8	5.5	2.345	700		0.0	0.000	
5						0.0	0.000	
6						0.0	0.000	
7						0.0	0.000	
8						0.0	0.000	
9						0.0	0.000	
10						0.0	0.000	
Minimum	0.8	5.5	2.345	700.0	0.0	0.0	0.000	0.0
Maximum	0.8	5.5	2.345	700.0	0.0	0.0	0.000	0.0
Average	0.8	5.5	2.345	700.0	#DIV/0!	0.0	0.000	#DIV/0!
Sum	3.2	22.0	9.380	2800.0	0.0	0.0	0.000	0.0
Total Sum								
Max. pitot press. =			5.5			Max. Temp.=		700.0
Min. pitot press. =			5.5			Min. Temp.=		700.0
Ratio Max:Min =			0.0 :1			Mean Temp.=		700.0

Mean Root D p	1.173
Mean Stack Temperature, °C	700.00
Traverse Stack Velocity, m/s	2.743
Stack Area, m^2	0.126
Stack Gas Volume Flow Rate, m^3/s (acms)	0.345
Stack Gas Volume Flow Rate, m^3/s (scms wet)	0.097
Stack Gas Volume Flow Rate, m3/s (scms DRY) O2 Corrected	0.078
Moisture	7.3
Stack Pressure, mm Hg	760.09

Gas Data

Oxygen %	12.30849365
CO_2 %	#DIV/0!

Oxygen Correction

Required Correction Value (%)	11
Oxygen Factor	1.152
Enter 0 if correction is not required	

Barometric Pressure (mmHg)	
Min	760
Max	760

Ambient Temperature (C)	
Min	18
Max	18

Company Name: Covpress Ltd
Site Ref: Coventry
Stack Ref: Burn Off Oven Exhaust

Date: 26/09/12
Run: Comb Gases

	O2 %	CO2 %	CO mg/m³	CO kg/hr	NOx mg/m³	NOx kg/hr
Average	12.31	#DIV/0!	84.67	0.02	90.09	0.03
Max	14.57	0.00	249.64	0.07	361.59	0.10
Min	9.02	0.00	0.00	0.00	45.14	0.01
Emission Limit	N/A	N/A	N/A		N/A	
Moisture, %	0.0		Baromteric (mmHg) Start			760
Oxygen Reference, %	11.0		Baromteric (mmHg) End			765

Stack Gas Volume Flow Rate, m3/s (scms DRY) O2 Corrected	0.077768

Calibrations	O_2 %	CO_2 %	CO ppm	NO ppm	
Analyser - Start Zero	0.28		0.4	0.2	
Analyser - Start Span	15.00		105.0	210.0	
Analyser - Zero Check	0.30		0.3	0.1	
System - Zero Check	0.26		0.1	0.0	
System - Span Check	15.02		105.2	209.8	
System - End Zero Check	0.11		0.6	0.0	
System - End Span Check	15.21		104.3	208.6	
Cylinder Number					
Span Value	15		105	210	
Analyser Range (0 - X)	25		500	100	

Uncertainty calculation for Gaseous Measurement of Oxygen EN14789

Measured concentration	12.31	%vol
Range (Max Value)	25	%vol

Analyser Make/Model	Horiba PG250
ID Number	0955

Performance Characteristics		**Value**			**specification**
Response time			seconds		< 200 s
Logger sampling interval		30	seconds		
Measurement period		125	minutes		
Number of readings in measurement		250	Assuming 30 Second Readings over 2.08333333333333 hour period		
Repeatability at zero		0.02	% by volume	stdev	<0.2 % range
Repeatability at span level		0.02	% by volume	stdev	<0.4 % range
Deviation from linearity		0.14	% vol	+/-	<0.3 % volume
Zero drift (during measurement period)		-1	% vol at zero level	+/-	<2% of volume / 24hr
Span drift (during measurement period)		1.266667	% vol at span level	+/-	<2% volume/24hr
volume or pressure flow dependence		0	% of fs / 10l/h	+- 5 l/h	<1% range
atmospheric pressure dependence		0	% of fs/kPa	+- 2kPa	< 1.5 % range
ambient temperature dependence		-0.07	% by volume /10K	+- 15K	<0.3% volume 10 K
CO_2 (% vol)	10		% by volume per	10	
NO (mg/m3)	300		% by volume per	300	
NO_2 (mg/m3)	30		% by volume per	30	
Combined interference			% range		<2% range
Dependence on voltage		0.1	% by volume /10V	+- 5%	< 0.1%vol /10 volt
Losses in the line (leak)		2	% of value		< 2% of value
Uncertainty of calibration gas		2	% of value		

Performance characteristic			**Uncertainty**		**Value of uncertainty quantity**		**% vol**
Standard deviation of repeatability at zero			u_{rz}		for mean		Only use rep at span
Standard deviation of repeatability at span level			u_{rs}		for mean		0.001
Lack of fit			u_{lof}				0.081
Drift			u_{dzs}				0.023
volume or pressure flow dependence			u_{spres}				0.000
atmospheric pressure dependence			u_{apres}				0.000
ambient temperature dependence			u_{temp}				0.000
CO_2							0.000
NO							0.000
NO_2							0.000
dependence on voltage			u_{volt}				0.000
losses in the line (leak)			u_{leak}				0.14
Uncertainty of calibration gas			u_{calib}				0.14

Measurement Concentration	**12.31**	**%vol**	
Combined uncertainty	0.22	%vol	
% of value	1.77	%	
Coverage factor k = 2			
Expanded uncertainty	3.54	% of value	(expressed with a level of confidence of 95%)
Expanded uncertainty	**0.44 % vol**		

Uncertainty calculation for Gaseous Measurement of Oxides of Nitrogen BS EN 14792

Measured concentration - NOx	78.2	**mg/m³ (O_2 & H_2O uncorrected)**	**Analyser Make/Model**	Horiba PG250
Range (Max Value)	205.4	**mg/m³**	**ID Number**	0955

Performance Characteristics		**Value**			**specification**
Response time		14	seconds		< 180 s
Logger sampling interval		30	seconds		
Measurement period		125	minutes		
Number of readings in measurement		250	Assuming 30 Second Readings over 2.08333333333333 hour period		
Repeatability at zero		0.02	% full range		0.2
Repeatability at span level		0.02	% full range		2.0
Deviation from linearity		0.14	% of Value		2
Zero drift (during measurement period)		0	% full range		2
Span drift (during measurement period)		-0.571429	% full range		2
volume or pressure flow dependence		0	% of fs / kPa		0.033
atmospheric pressure dependence		0	% of fs/kPa		0.75
ambient temperature dependence		-0.07	% by volume /10K		0.3
CO_2 (% vol)	15	0	% by volume per		
CH_4 (mg/m³)	57	0.1	mg/m³		
NH_3 (mg/m³)	20	0	mg/m³		
Converter Efficiency		0	%		95%
Dependence on voltage		0.1	% by volume /10V		2% Full Scale /10 volt
Losses in the line (leak)		2	% of value		2% of value
Uncertainty of calibration gas		2	% of value		2% of value

Performance characteristic			**Uncertainty**		**Value of uncertainty quantity**		**% vol**
Standard deviation of repeatability at zero			u_{r0}		for mean		Only use rep at span
Standard deviation of repeatability at span level			u_{rs}		for mean		0.001
Lack of fit			u_{fit}				0.166
Drift			u_{0dr}				-0.258
volume or pressure flow dependence			u_{spres}				0.000
atmospheric pressure dependence			u_{apres}				0.000
ambient temperature dependence			u_{temp}				0.000
CO_2							0.000
NO							0.391
NO_2							0.000
Converter Efficiency			u_{cnv}				45.14
dependence on voltage			u_{volt}				0.000
losses in the line (leak)			u_{leak}				0.90
Uncertainty of calibration gas			u_{calib}				0.90

Measurement Concentration (as measured)	**78.18**	**mg/m³**	
Combined uncertainty	1.37	mg/m³	
Coverage factor k = 2			
Expanded uncertainty (as measured)	2.74	mg/m³	**(expressed with a level of confidence of 95%)**
Expanded uncertainty (Corrected to Ref Conditions)	**3.16**	**mg/m³**	

Uncertainty calculation for Gaseous Measurement of Carbon Monoxide EN 15058

Measured concentration - CO	73.5	mg/m^3 (O_2 & H_2O uncorrected)	**Analyser Make/Model**	Horiba PG250
Range (Max Value)	625.0	mg/m^3	**ID Number**	0955

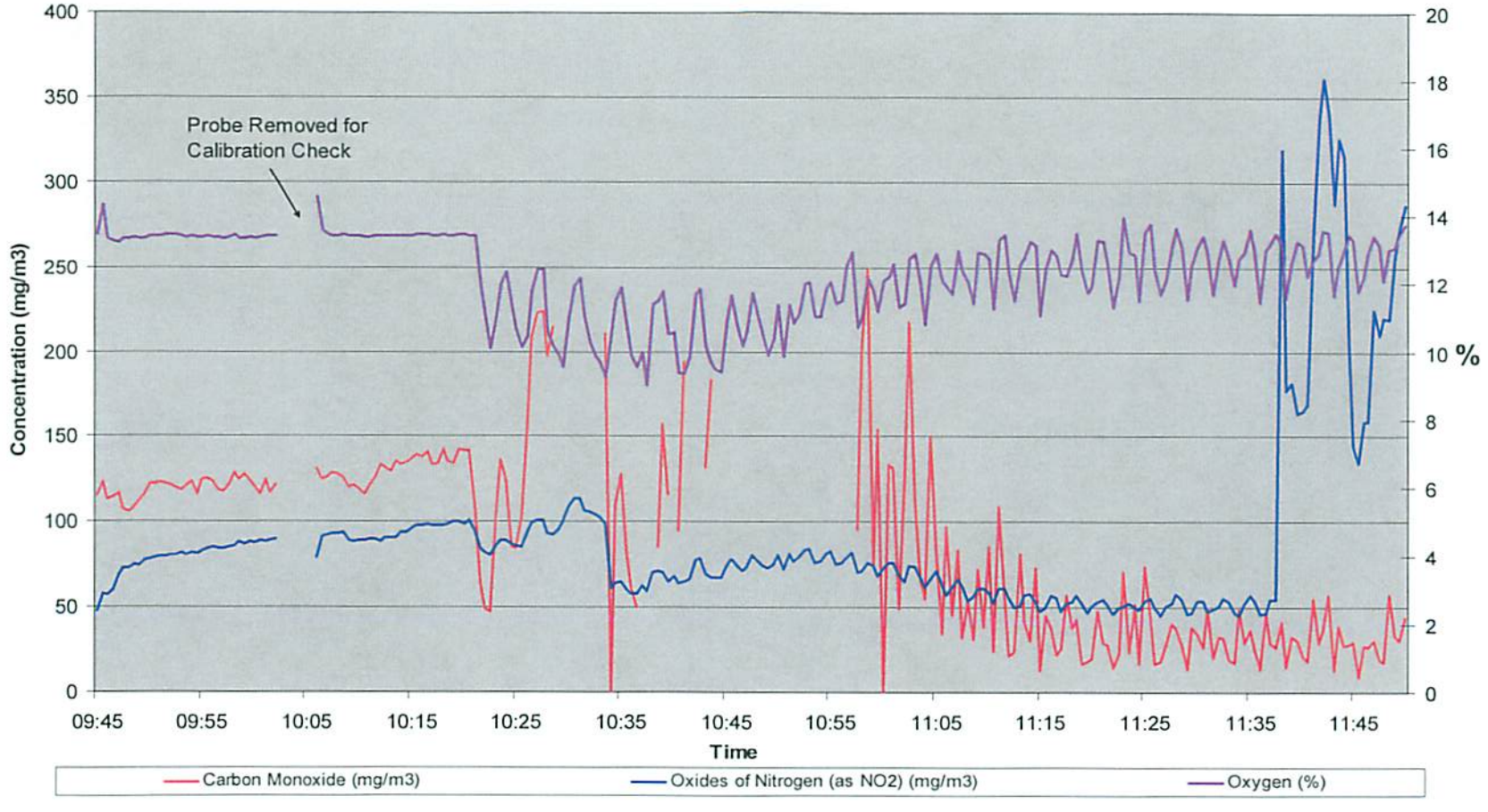
Performance Characteristics		**Value**			**specification**
Response time		12	seconds		< 200 s
Logger sampling interval		30	seconds		
Measurement period		125	minutes		
Number of readings in measurement		250	Assuming 30 Second Readings over 2.08333333333333 hour period		
Repeatability at zero		-0.0016	% of Range		< 1% Range
Repeatability at span level		0.0032	% of Range		< 2% of Range
Deviation from linearity		0.0064	% of Range		< 2% of Range
Zero drift (during measurement period)		0.4761905	% of Range		< 2% of Range
Span drift (during measurement period)		-0.857143	% of Range		< 2% of Range
volume or pressure flow dependence		0	% of fs / 10l/h		< 1% range
atmospheric pressure dependence		0.0078424	% of Range/kPa		< 1.5 % range
ambient temperature dependence		-0.07	% of Range /K		<0.3 % range /K
CO_2 (% vol)	15	0.1	% by volume per		
CH4 (mg/m^3)	57	0	mg/m^3		
N_2O (mg/m^3)	42	0	mg/m^3		
	Total	0.016	% of Range		< 4% of Range (Total)
Dependence on voltage		0.1	% by volume /10V	+- 5%	< 2% of Range/10 volt
Losses in the line (leak)		2	% of value		< 2% of value
Uncertainty of calibration gas		2	% of value		

Performance characteristic			**Uncertainty**	**Value of uncertainty quantity**			**% vol**
Standard deviation of repeatability at zero			u_{r0}		for mean		Only use rep at span
Standard deviation of repeatability at span level			u_{rs}		for mean		0.000
Lack of fit			u_{fit}				0.023
Drift			u_{pdr}				1.355
volume or pressure flow dependence			u_{spres}				0.000
atmospheric pressure dependence			u_{apres}				0.000
ambient temperature dependence			u_{temp}				0.000
CO_2							0.000
NO							0.000
NO_2							0.000
dependence on voltage			u_{volt}				0.000
losses in the line (leak)			u_{leak}				0.65
Uncertainty of calibration gas			u_{calib}				0.65

Measurement Concentration	**73.48**	**mg/m^3**	
Combined uncertainty Coverage factor k = 2	1.81	**mg/m^3**	
Expanded uncertainty (as measured)	3.62	mg/m^3	**(expressed with a level of confidence of 95%)**
Expanded uncertainty (Corrected to Ref Conditions)	**4.17**	mg/m^3	

Combustion Gas Emissions from the Burn Off Oven Exhaust at Covpress, Coventry on 26th September 2012

reference conditions expressed as 273K, 101.3 kPa,3 % O2 and dry gas



Company Name: Covpress Ltd	In-stack Filter?	N	Bar. Press.mm Hg	760	K Factor	9.149	Ambient Temp.		Leak Rate (fin / %)	0
Site Ref: Coventry										
Sampling Point Ref: Burn Off Oven Exhau	Outstack Filter?	Y	Cp	0.829	Dn used	10.8	Start Time	09:30	Leak Rate (start / %)	0
Date: 26/09/12										
Run: TPM	Operators	RC LS	Bws%	7.3	Nozzle No.		Stop Time	11:50	Box/Probe setting	160 +/- 5 oC
Project Ref: FTBS22507										
					Meter Correction Yd	0.983				

Sample Filter Weights

	Reference	Laboratory	Increase, mg
Filter	89947	RPS	0.1
Probe Washings	30001610	RPS	0.5

Sample Filter Blank Weighings

	Reference	Laboratory	Increase, mg
Filter	89946	RPS	0.1
Probe Wash	30001609	RPS	0.5

Impinger Weights

Weights	Initial	Final	Increase, g
Impinger 1	729.8	765.1	35.3
Impinger 2	721.2	738.7	17.5
Impinger 3	607.4	613.3	5.9
Impinger 4	835	843	8.0
Impinger 5			0.0
Silica Gel			0.0
		Total	66.7

Sample Point	Clock Time min	Pitot Δ p, mm H_2O	Stack Temp. °C	Orifice Δ H, mm H_2O		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	0.8	515	7.3	7.3	2037057.9	8		120	120	0	12	0.894
	15	0.8	597	7.3	7.3		8		120	120	0	9	0.894
	30	0.8	633	7.3	7.3		10		120	120	0	8	0.894
	45	0.8	671	7.3	7.3		11		120	120	0	11	0.894
	60	0.8	710	7.3	7.3		12		120	120	0	12	0.894
	75	0.8	676	7.3	7.3		12		120	120	0	13	0.894
	90	0.8	665	7.3	7.3		12		120	120	0	13	0.894
	105	0.8	693	7.3	7.3		12		120	120	0	15	0.894
	120	0.8	693	7.3	7.3		12		120	120	0	15	0.894
Endpoint						2038181							
	135.00	0.8	650.3	7.3	7.3	1.123	10.8	#DIV/0!	120.0	120.0	0.0	12.0	0.9

Company Name: Covpress Ltd
Site Ref: Coventry
Project Ref: FTBS22507

Date: 26/09/12

Sampling Point Ref: Burn Off Oven Exhaust	Run: TPM
Meter Volume Sampled, acm	**1.123**
Sample Run Start Time	**9:30**
Sample Run End Time	**11:50**
Total Actual Sampling Time, min	**135.0**
Barometric Pressure, mm Hg	**760.00**
Stack Pressure, mm Hg	**760.09**
Average Stack Temp, °C	**650.3**
Meter Volume at STP, scm	**1.062**
Stack Moisture Content, %	**7.3**
Average Stack Velocity, m/sec	**5.425**
Stack Flow Rate, scms dry,STP	**0.162**
Nozzle Diameter, mm	10.80
% Isokinetic Variation	**96.1**
Mass of Particulate Collected on Filter, mg	0.1
Mass of Particulate collected in Probe, mg	0.5
Total Mass of Particulate, mg	0.60000
Percentage of Total Particulate Collected on Filter	16.7
Stack Particulate Concentration, mg/m^3	**0.65024791**
Particulate Mass rate, kg/hour	0.00038
Emission Limit value	**N/A**

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m^3	0.6
Total Weight Gain, mg (Sample Train Blank)	0.6
Blank Result Less than 10% of Limit Value	#VALUE!

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

Determined Concentration	0.7	mg/m3 (at Reference Cond)

Measured Values

Sampled Volume	1.1231	m^3
Sampled gas Temperature	283.7777778	k
Sampled gas Pressure	101.34	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	12.3	% by volume
Mass	0.6	mg

Leak	0.00	%
Uncollected Mass	0	mg

Standard Uncertainties for Measured Values

Sampled Volume	0.001	m3
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

Volume Correction Factor	0.962		
	Sensitivity Coefficient		Uncertainty, Uv
Sampled gas Temperature	0.0034		0.0068
Sampled gas Pressure	0.0095		0.0095
Sampled gas Humidity	0.0096		0.0096
		Sqrt (Uv)^2	0.0151
		Total Uv	0.017

Uncertainty Calculation for Oxygen Correction

Oxygen Correction Factor	1.1512		
	Sensitivity Coefficient		Uncertainty, Uo
Oxygen Measurement	0.1329		0.0133
		Total Uo	0.0133

Uncertainty Contributions (Itemised)

	Value		Sensitivity coefficient	Uncertainty Contribution			
				Concentration		%	
Volume Correction	1.062	m3	0.61	0.01	$mg.m^{-3}$	1.60	%
Mass (weighing)	0.60	mg	1.08	0.15	$mg.m^{-3}$	23.59	%
Oxygen Correction	1.1512		0.56	0.01	$mg.m^{-3}$	1.15	%
System Leak	0.00	$mg.m^{-3}$	1.00	0.00	$mg.m^{-3}$	0.00	%
Uncollected Mass	0.00	mg	1.06	0.00	$mg.m^{-3}$	0.00	%
			Total Uncertainty	0.15	$mg.m^{-3}$		

Uncertainty Result (Uncertainty has been expanded with a coveragefactor of 2 (K=2))

Expanded Uncertainty =	0.31	$mg.m^{-3}$
=>	47.34	% of Result
=>	N/A	% of ELV

Company Name: Covpress
Site Ref.: Coventry
Stack Ref: Burn Off Oven E

Date: 26/00/12
Run: VOC

	VOC (as Carbon) ppm	VOC (as Carbon) mg/m3	VOC (as Carbon) kg/h	VOC (as Toluene) mg/m3	VOC (as Toluene) kg/h	Oxygen %
Average	#DIV/0!	6.92	0.05	7.47	0.05	12.31
Max	0.00	72.34	0.50	78.23	0.54	14.57
Min	0.00	0.43	0.00	0.47	0.00	9.02
Emission Limit						
Moisture, %	7.3					
Oxygen Reference, %	11.0					

Stack Gas Volume Flow Rate, m3/s (scms Dry) O2 Corrected	1.905315824

ISO 14956 Calculation Sheet - TOC (BS EN 13526)

Stated Concentration (mgm^{-3} as C)	6.824629085
Range of Instrument (mg m^{-3} as C)	120

Sampling Parameters to be met	Requirement Met?
Response Time < 60s	Yes
Operating temperature (5 – 45°C)	Yes
Atmospheric pressure (700 - 1245 mbar)	Yes
Relative Humidity (10 - 90%, non condensing)	Yes
Altitude (< 2000 m)	Yes
Zero Drift 2% of FS	Yes
Span Drift 4% of FS	Yes

Selected Performance Characteristic	Value of Performance Characteristic			Operating Conditions compared to calibration condition		
	%	Numerical	Units	Required	Variable due to sampling conditions	Units
Response Time	2	0.02	minutes	0.02	1	minutes
Deviation from Linearity	1	0.01	% FS	0.01	1	% FS
Repeatability Standard Deviation	1	0.01	% FS	0.01	1	% FS
8 Hour Drift	2	0.02	%	0.02	1	%
Atmospheric Pressure Dependence	0.1	0.001	% kPa	0.001	1	% kPa
Temperature Dependence	0.2	0.002	%K	0.002	1	%K
Sum Interference	2	0.02	%	0.02	2	%
Voltage Supply	0.1	0.001	%V	0.001	1	%V
Losses in sample line	2	0.02	%	0.02	2	%
Uncertainty of Calibration Gas	2	0.02	%	0.02	1	%
Calibration Error (Gas Dander)	0.5	0.005	%	0.005	1	%
Moisture Effect	1	0.01	%Vol H2O Error	0.01	2	%Vol H2O Error
Loss in sample line (Leaks)	2	0.02	%	0.02	2	%

Measurement Performance related to stationary conditions								
			Value of Uncertainty Quantity					
			At Calibration Conditions			At Sampling Conditions		
Performance Characteristic	Uncertainty Quantity		Units	U	U^2	Units	U	U^2
Response Time	$U_{response}$		minutes	1.389	1.929	minutes	1.389	1.929
Deviation form Linearity	U_{lin}		% FS	1.2	1.440	% FS	1.2	1.440
Repeatability Standard Deviation	U_d		% FS	0.039	0.002	% FS	0.039	0.002
8 Hour Drift	U_{8hr}		%	0.0788	0.006	%	0.079	0.006
Atmospheric Pressure Dependence	U_{atm}		% / kPa	0.004	0.000	% / kPa	0.004	0.000
Temperature Dependence	U_{temp}		% / K	0.008	0.000	% / K	0.008	0.000
Sum Interference	$U_{interference}$		%	0.079	0.006	%	0.004	0.000
Voltage Supply	$U_{voltage}$		% / V	0.004	0.000	% / V	0.004	0.000
Losses in sample line	$U_{sample\ line}$		%	0.079	0.006	%	0.158	0.025
Uncertainty of Calibration Gas	$U_{calibration\ gas}$		%	0.079	0.006	%	0.079	0.006
Calibration Error (Gas Dander)	$U_{gas\ error}$		%	0.020	0.000	%	0.020	0.000
Loss in sample line (Leaks)	$U_{sample\ line}$		%	0.079	0.000	%	0.158	0.025
			Sum	3.055	3.393	Sum	3.1973	3.424

Measurement Uncertainty at	6.824629085	mg m^{-3} C		
U_m	1.850	mg m^{-3} C		
U_m	27.114	%	U_{req}	30 %
Pass	Yes			

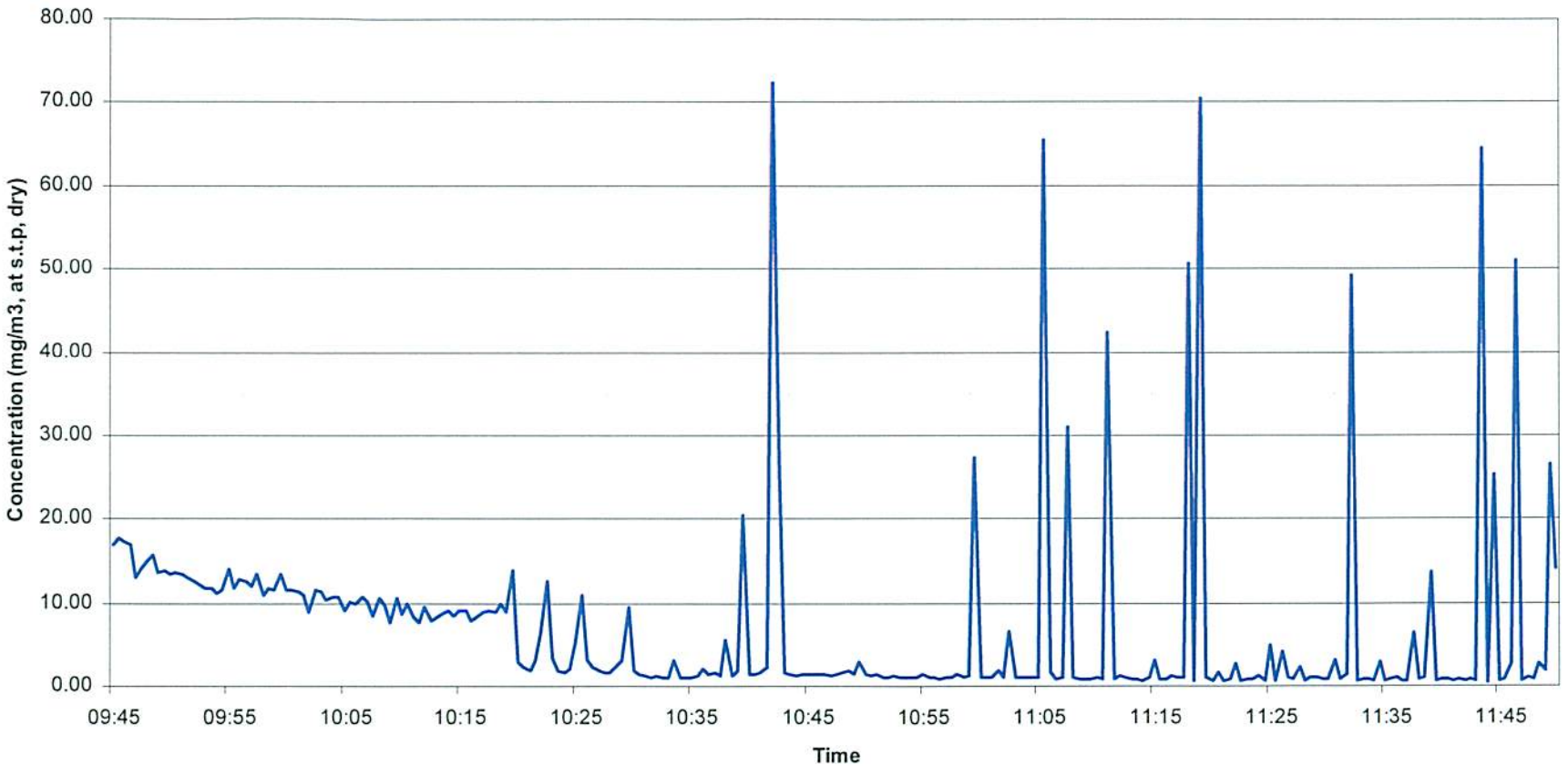
BS EN 13526 2001 Performance Requirements

Performance Characteristic	Minimum Performance Requirement
Detection Limit	5% of the emission limit value
Response Time	less than 1 minute
Linearity Deviation	permissible deviation 5% of emission limit
Response Factors	Permissible range
Methane	0.9 to 1.2
Aliphatic Hydrocarbons	0.9 to 1.1
Aromatic Hydrocarbons	0.8 to 1.1
Aliphatic Alcohols	0.7 to 1.0
Esters	0.7 to 1.0
Ketones	0.7 to 1.0
Organic Acids	0.5 to 1.0
Oxygen Effect	permissible deviation 5% of emission limit

For more details on the above figures see BS EN 13526 2001

TOC Emissions Profile from the Burn off Oven Exhaust on 26th Septemeber 2012 at Covpress, Coventry

reference conditions expressed as 273K, 101.3 kPa,3 % O2 and dry gas



Certificate of Analysis

RPS Laboratories

UKAS TESTING 0605

Test Certificate

Date 09/10/2012

Client	RPS Milton Keynes HSED Noble House Capital Drive Linford Wood Milton Keynes MK14 6QP	**Order No.**	FTBS22507
		Certificate No.	WK12-6280
		Issue No.	1
Contact	Richard Carter	**Date Received**	02/10/2012
Description	2 filters & 2 solutions for tpm	**Technique**	Gravimetric

Sample No.	**715931**	**089947**	**Method**
Total particulate matter	<0.1 mg		D9(U)
Sample No.	**715932**	**30001610**	**Method**
Total particulate matter	<0.5 mg		D9(U)
Sample No.	**715933**	**089946**	**Method**
Total particulate matter	<0.1 mg		D9(U)
Sample No.	**715934**	**30001609**	**Method**
Total particulate matter	<0.5 mg		D9(U)

Page 1 of 2

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0005

Date 09/10/2012

Test Certificate

Client	RPS Milton Keynes HSED	Certificate No.	WK12-6260
		Issue No.	1

Tested By	Kirstie Davenport	Date	05/10/2012
Approved By	[redacted]	Date	09/10/2012

Joanne Dewhurst
Laboratory Manager

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 provided to assist with interpretation only, they are not covered by the scope of UKAS accreditation.

Results stated as nd are referring to the sample volume.

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Analysis carried out on samples 'as received'

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