

VOC Emissions Results

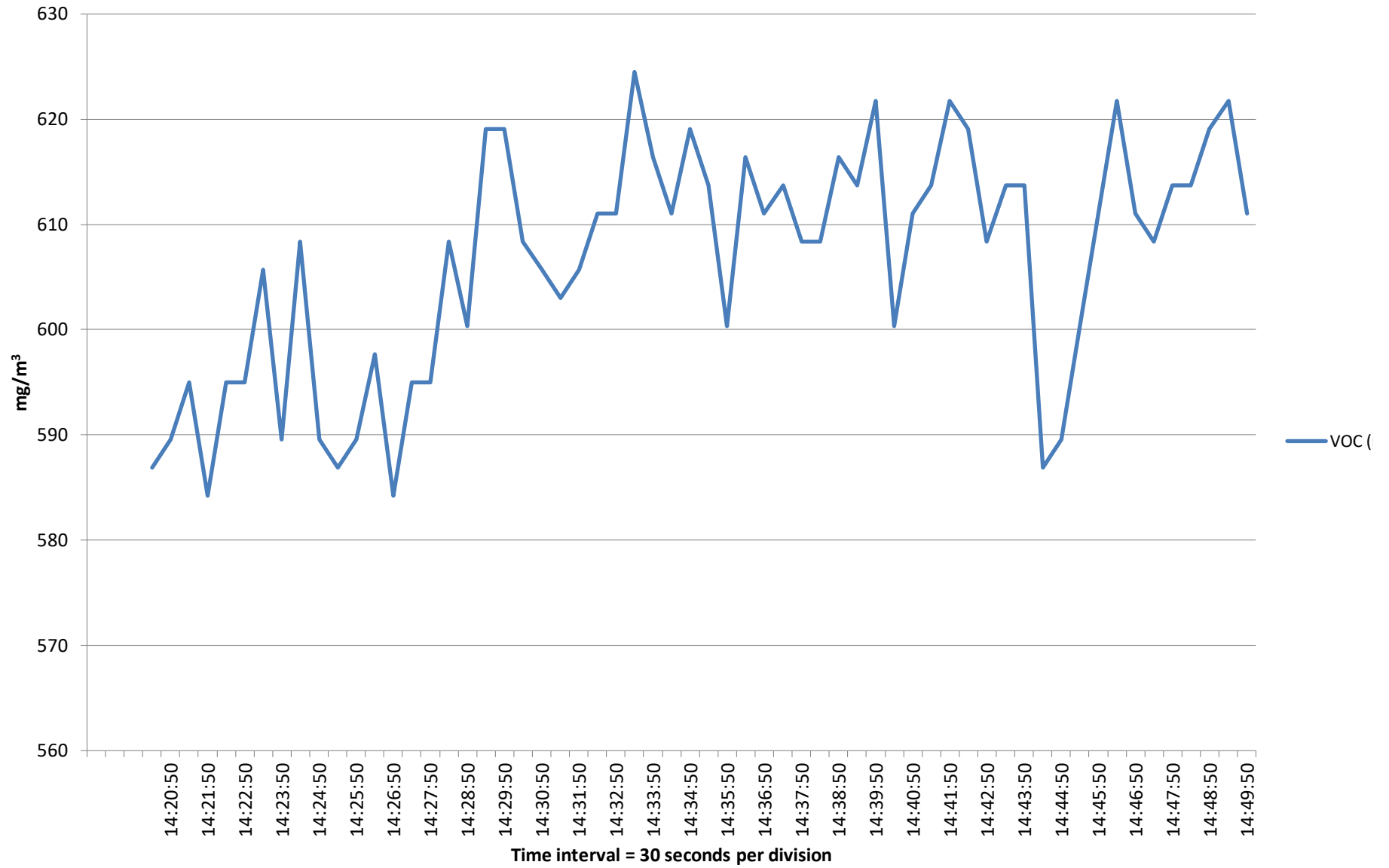
Client WZ Packaging Job No 183352
Location Telford
Date 29 November 2018
Emission Point Reference Cerutti 337
Press/Coating Line Machine 337
Analyser make and model Signal 3030PM 3904
Engineer M Dudek / J Pagett
Test run One
No. of readings 60
Start time 14:20:20
Test period duration 01:00:00
Time Interval 30sec
Calibration Gas ppm 500 Methane
Methane test ppm N/A
Conversion Factor 0.536

	Peak	Average
VOC mg/m ³	624.44	606.39

Sample Time	FID Reading (ppm)	Methane Content (ppm)	VOC Less Methane (ppm)	Mean Stack Temp. (°C)	VOC (mg/m ³)	Exhaust Rate Nm ³ /Hr	Comments	30 minute mean
14:20:20	1095.00		1095.00	32.00	586.92	36,014.56		
14:20:50	1100.00		1100.00		589.60			
14:21:20	1110.00		1110.00		594.96			
14:21:50	1090.00		1090.00		584.24			
14:22:20	1110.00		1110.00		594.96			
14:22:50	1110.00		1110.00		594.96			
14:23:20	1130.00		1130.00		605.68			
14:23:50	1100.00		1100.00		589.60			
14:24:20	1135.00		1135.00		608.36			
14:24:50	1100.00		1100.00		589.60			
14:25:20	1095.00		1095.00		586.92			
14:25:50	1100.00		1100.00		589.60			
14:26:20	1115.00		1115.00		597.64			
14:26:50	1090.00		1090.00		584.24			
14:27:20	1110.00		1110.00		594.96			
14:27:50	1110.00		1110.00		594.96			
14:28:20	1135.00		1135.00		608.36			
14:28:50	1120.00		1120.00		600.32			
14:29:20	1155.00		1155.00		619.08			
14:29:50	1155.00		1155.00		619.08			
14:30:20	1135.00		1135.00		608.36			
14:30:50	1130.00		1130.00		605.68			
14:31:20	1125.00		1125.00		603.00			
14:31:50	1130.00		1130.00		605.68			
14:32:20	1140.00		1140.00		611.04			
14:32:50	1140.00		1140.00		611.04			
14:33:20	1165.00		1165.00		624.44			
14:33:50	1150.00		1150.00		616.40			
14:34:20	1140.00		1140.00		611.04			
14:34:50	1155.00		1155.00		619.08			
14:35:20	1145.00		1145.00		613.72			
14:35:50	1120.00		1120.00		600.32			
14:36:20	1150.00		1150.00		616.40			
14:36:50	1140.00		1140.00		611.04			
14:37:20	1145.00		1145.00		613.72			

Sample Time	FID Reading (ppm)	Methane Content (ppm)	VOC Less Methane (ppm)	Mean Stack Temp. (°C)	VOC (ma/m³)	Exhaust Rate Nm³/Hr	Comments	30 minute mean
14:37:50	1135.00		1135.00		608.36			
14:38:20	1135.00		1135.00		608.36			
14:38:50	1150.00		1150.00		616.40			
14:39:20	1145.00		1145.00		613.72			
14:39:50	1160.00		1160.00		621.76			
14:40:20	1120.00		1120.00		600.32			
14:40:50	1140.00		1140.00		611.04			
14:41:20	1145.00		1145.00		613.72			
14:41:50	1160.00		1160.00		621.76			
14:42:20	1155.00		1155.00		619.08			
14:42:50	1135.00		1135.00		608.36			
14:43:20	1145.00		1145.00		613.72			
14:43:50	1145.00		1145.00		613.72			
14:44:20	1095.00		1095.00		586.92			
14:44:50	1100.00		1100.00		589.60			
14:45:20	1120.00		1120.00		600.32			
14:45:50	1140.00		1140.00		611.04			
14:46:20	1160.00		1160.00		621.76			
14:46:50	1140.00		1140.00		611.04			
14:47:20	1135.00		1135.00		608.36			
14:47:50	1145.00		1145.00		613.72			
14:48:20	1145.00		1145.00		613.72			
14:48:50	1155.00		1155.00		619.08			
14:49:20	1160.00		1160.00		621.76			
14:49:50	1140.00		1140.00		611.04			606.39
			0.00		0.00			
			0.00		0.00			
			0.00		0.00			
			0.00		0.00			
			0.00		0.00			
			0.00		0.00			
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			0.00		0.00			
			0.00		0.00			
			0.00		0.00			
			0.00		0.00			
			0.00		0.00			
			0.00		0.00			

Total VOC as mg/m³



WZ

Calculation of Duct Gas Velocity

337 Customer: Packaging

Date: 29 November 2018

Sample Number	Distance	Sample (A) VP + Temp		Sample (B) VP + Temp		Hh (A)	Hh (B)
		Pitot Reading	Gas Temp°C	Pitot reading	Gas Temp°C		
1	0.032D	97.00	32.00	90.00	32.00	9.85	9.49
2	0.135D	96.00	32.00	92.00	32.00	9.80	9.59
3	0.321D	92.00	32.00	92.00	32.00	9.59	9.59
4	0.679D	102.00	32.00	97.00	32.00	10.10	9.85
5	0.865D	101.00	32.00	97.00	32.00	10.05	9.85
6	0.968D	92.00	32.00	99.00	32.00	9.59	9.95

Enter Stack readings in blue data areas, VP in Pa, Temp in Degrees C

Average Hh: 9.77
 Average Temp T: 32.00
 Enter Duct Dia (mm): 1150.00
 Q (duct area): $(P \cdot D^2) / 4000000$
 1.039 m²
 Gas Velocity: $0.075 \cdot H(h/K) \cdot H(273 + \text{Duct Temp})$
 10.76 m/s
 Total gas Flow: $Q \cdot V$
 11.18 m³/s
 40236.04 m³/hr
 Gas Flow correction to reference conditions
 Nm³/hr: $\text{Gas Flow} \cdot (273 / (273 + \text{Average duct Temp}))$
 36014.56 Nm³/hr

*Enter duct side A in mm:
 *Enter duct side B in mm:
 Q (duct area): $A \cdot B / 1000000$
 0.000 m²

Enter pitot tube Constant K : 1.190

For S type K = 1.190
 For L type K = 1

* NOTE! The program will only use the two sided duct area, if no round duct diameter measurement is entered.

Summary of Test Results

Job No 183352

WZ Packaging

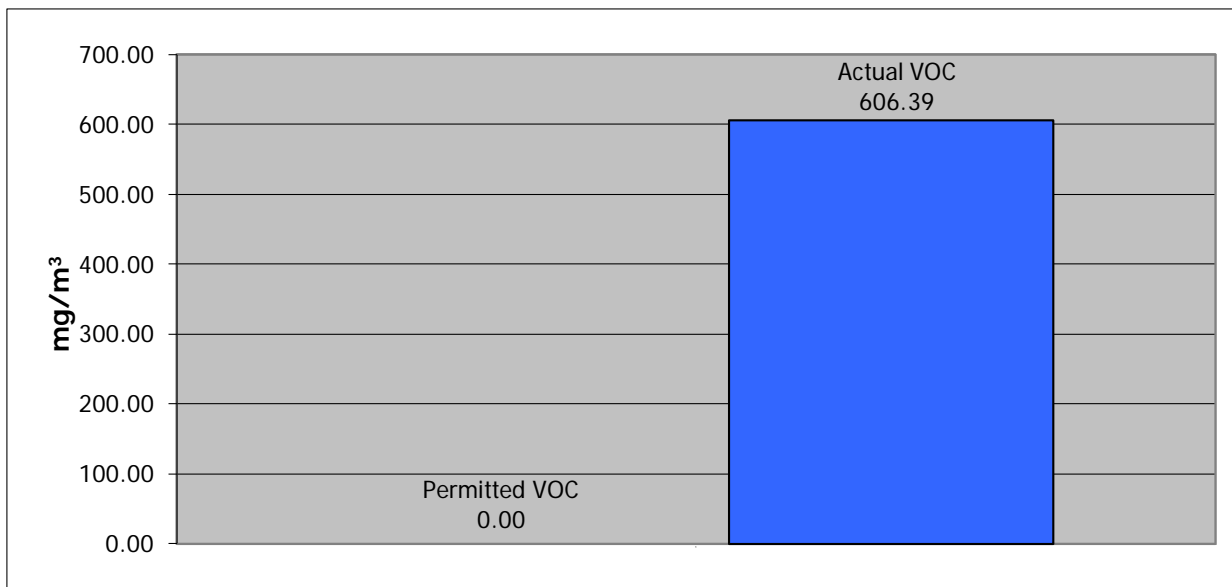
43433

Cerutti 337

Engineer: M Dudek / J Pagett

Species	Units		Permitted	Result	Uncertainty
Volatile Organic Compounds	mg/m ³	Peak	N/A	624.44	± 7.3%
		Mean	N/A	606.39	

Parameters			
	Unit	Result	Comments
Mean stack temperature	°C	32.00	
Mean volume flow rate	Nm ³ /hr	36,014.56	
Stack Diameter	mm	1,150.00	
Stack Velocity	m/sec	10.76	
Oxidiser Combustion Chamber Temperature	°C		
Fuel	N/A	Natural gas	
Plume appearance	N/A	None visable	





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CRAN
TELEP

Kgs
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