



*Consultants in Occupational  
Health and Safety*

**Emissions Monitoring  
Midland Steel Structures Ltd,  
Coventry  
April 2006**

Your Ref: 70005  
Our Ref: HMSS441

For:  
Mr. Tony Atkins  
Midland Steel Structures Ltd.  
Golden Acres Lane  
Binley  
Coventry  
CV3 2RT

Author:

A handwritten signature in black ink, appearing to read "K. Simcox". The signature is fluid and cursive, with a large loop at the end.

K Simcox  
B.Sc. (Hons) CertOccHyg  
CMIOSH RSP LFOH ROH

Date: 27<sup>th</sup> April 2006

Occhnet Ltd.  
Elm Grove  
Meidrim  
Carmarthenshire  
SA33 5PB  
Tel 01994 232977  
Fax 01994 232976

Email [katy@occhnet.co.uk](mailto:katy@occhnet.co.uk)  
Web site [www.occhnet.co.uk](http://www.occhnet.co.uk)

## **Introduction**

An emissions monitoring survey was requested by Mr Tony Atkins of Midland Steel Structures Ltd. The purpose of the survey was to measure airborne emissions of particulate from two emission points. The survey was carried out on 11<sup>th</sup> April 2006.

## **Process Descriptions**

Midland Steel Structures Ltd is a fabricator of steel structures for the construction industry. The manufacturing processes, whose emissions are released to atmosphere, are paint spray operations.

Emissions monitoring for total particulate were carried out in two emission stacks leading from the two paint spray operations.

## **Sampling Methodology**

Using the sampling holes provided in each case, the stack gas temperature was measured with a K-type temperature probe, and the velocity profile of the stack gas using a pitot tube traverse.

Particulate were measured isokinetically in accordance with the main procedural requirements of BS9096:2003 using a stainless steel sampling probe with a pre-weighed glass fibre filter mounted in-stack. Sample flow rate and inlet nozzle sizes were adjusted to match the stack gas velocity at each sampling position throughout the sampling period. The filters were subsequently be reweighed in the laboratory, after conditioning to remove moisture, using an electronic microbalance.

## **Instrumentation:**

TT Series RS232 Micro manometer – Calibration 26.5.05  
TES 1311 Digital Thermometer – Calibration 8.2.06  
K Type Thermocouple  
BMS High Flow Sampling Pump  
Kimmon MFG Co Ltd SK Gas meter – Calibration 3.10.05  
0-26 l/min Borosilicate flow meter – Calibration 3.10.05  
Sharp Edge Nozzles to ISO 9096 4mm – 10mm  
25mm Union sample holder  
25mm GFA filters

## Results

### Test Report Main Factory Paint Spray

<b>Sampling Position</b>	Stack 1 of 4 Main factory spray booth corresponding to spray position	
<b>Sampling Date</b>	11.4.06	
<b>Conditions of Sampling</b>	Ambient temperature Typical operating conditions	
<b>Duct Dimensions</b>	Post-filter 200mm x 1500mm	
<b>Number of sampling positions</b>	1 Post-filter	
<b>Stack Temperature</b>	9.9 °C	
<b>Atmospheric pressure</b>	101.1 kPa	
<b>Average Velocity 6 points</b>	11.1 m/s	
<b>Sampling Time</b>	11:14 – 11:44	10:43 – 11:13
<b>Gas Volume measured</b>	26.8 litres	26.8 litres
<b>Measured Concentration of Particulate</b>	1.8 mg/m <sup>3</sup>	1.2 mg/m <sup>3</sup>
<b>Measured Concentration of Particulate</b>	21.5 g/hr	14.4 g/hr
<b>Emissions Corrected to 273.15 K and 101.3 kPa</b>	1.9mg/m <sup>3</sup>	1.2 mg/m <sup>3</sup>
<b>Emissions Corrected to 273.15 K and 101.3 kPa</b>	22.1 g/hr	14.8 g/hr

## Results

### Test Report V2 Paint Spray Extraction

<b>Sampling Position</b>	V2 Stack 1 External wall.	
<b>Sampling Date</b>	11.4.06	
<b>Conditions of Sampling</b>	Ambient temperature Typical operating conditions	
<b>Duct Dimensions</b>	Post-filter 600 mm Ø	
<b>Number of sampling positions</b>	1 Post-filter	
<b>Stack Temperature</b>	16.8 °C	
<b>Atmospheric pressure</b>	101.1 kPa	
<b>Average Velocity 6 points</b>	9.0 m/s	
<b>Sampling Time</b>	13:42 – 14:02	14:04 – 14:24
<b>Gas Volume measured</b>	14.3 litres	18.4 litres
<b>Measured Concentration of Particulate</b>	8.2 mg/m <sup>3</sup>	10.5 mg/m <sup>3</sup>
<b>Measured Concentration of Particulate</b>	73.8 g/hr	94.5 g/hr
<b>Emissions Corrected to 273.15 K and 101.3 kPa</b>	8.7 mg/m <sup>3</sup>	11.1 mg/m <sup>3</sup>
<b>Emissions Corrected to 273.15 K and 101.3 kPa</b>	78.2 g/hr	100.2 g/hr

## **Discussion & Conclusions**

The above results indicate that all emissions of total particulate were within the permitted limits.

All emissions have been calculated at the reference conditions 0 °C, 101.3 kPa.

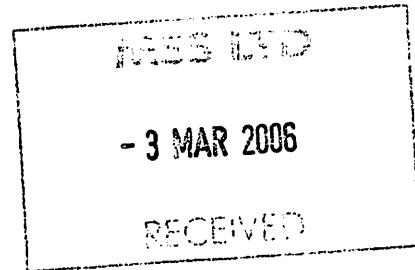


*Consultants in Occupational  
Health and Safety*

Date 28<sup>th</sup> February 2006

Our Ref. HMSS431

Mr. Tony Atkins  
Midland Steel Structures Ltd  
Golden Acres Lane  
Binley  
Coventry  
CV3 2RT



Dear Tony,

Please find enclosed a report for the Part I & II LEV testing of systems present at the Coventry sites, carried out on the 6<sup>th</sup> & 7<sup>th</sup> February 2006.

Observations and recommendations are included in this report.

If you have any queries please contact me and I will be happy to discuss them with you.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'K. Simcox'.

Katy Simcox  
B.Sc. (Hons)., Cert. Occ. Hyg., CMIOSH., RSP., LFOH., ROH

Occhnet Ltd.  
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*Consultants in Occupational  
Health and Safety*

**Part I & II Thorough Examination  
And Testing of LEV Systems  
Midland Steel Structures Ltd,  
Telford  
February 2006**

Your Ref: 70004  
Our Ref: HMSS43 1lev

For:  
Mr. Tony Atkins  
Midland Steel Structures Ltd  
Golden Acres Lane  
Binley  
Coventry  
CV3 2RT

Author:

A handwritten signature in black ink, appearing to read "K. Simcox". The signature is stylized and written over a large, light-colored oval shape.

K Simcox  
B.Sc. (Hons)  
CertOccHyg CMIOSH  
RSP LFOH ROH

Date: 28<sup>th</sup> February 2006

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## **Introduction**

Part I & II Thorough Examination and Testing of LEV systems was requested by Mr. Tony Atkins of Midland Steel Structures Ltd, Coventry Site. The testing was carried out on 6<sup>th</sup> & 7<sup>th</sup> February 2006.

## **Local Exhaust Ventilation Testing**

Regulation 9(2) of COSHH requires a thorough examination and test of all local exhaust ventilation (LEV) systems, normally every 14 months.

To fully comply with Regulation 9 may require the following for each LEV system: -

- a) capture velocity measurements at each extraction point
- b) air flow measurements in each duct
- c) determination of which branches in a multi-branch system can be used at the same time
- d) static pressures at key positions
- e) fan speed and rotation
- f) the adequacy of make-up air
- g) whether the contaminant was returned to the workplace.

Performance criteria should be set for each system and the actual performance compared with those criteria. This report should clearly state whether employee exposure was adequately controlled by the system, and if not what remedial action should be taken.

The comprehensive set of base-line data listed above is called a Part I examination or "fingerprinting". Subsequent tests in future years (Part II examinations) ensure that the systems have not deteriorated since the previous examination.

OCCHNET LTD undertook Part I & II thorough examination and testing of the LEV systems at Maxell Europe Ltd, Telford Site. Recommendations were made on the existing LEV systems, their suitability and performance.



**Client:**  
**Midland Steel Structures Ltd, Binley, Coventry, CV3 2RT**

<b>System Reference:</b> V2 Spray Booth	<b>Area:</b> V2
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**System Description:**  
 Paint Spray Booth

Hazardous Substances	Liquid	Mist	Dust	Fume	Vapour	Gas	Temp °C
Solvent Vapour					✓		20

<b>System Operating Status</b>	<b>Redundant</b>		<b>Normal</b>	✓
<b>Discharge of Air</b>	<b>Internal</b>	✓	<b>External</b>	

**Any air being returned to the workplace requires a contamination assessment.**

Measurable Performance Criteria (to be met by the system)	Face Velocity (m/s)	Capture Velocity (m/s)	Duct Velocity (m/s)
	0.5	-	6.0

<b>Were Criteria Met?</b>	Yes
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<b>Methods Used To Assess System</b>	
Visual assessment of capture	✓
Capture velocity measurement using a thermal anemometer	✓
Duct velocity measurements using a pitot tube and micromanometer	✓

**Recommendations:**

- System performance was adequate

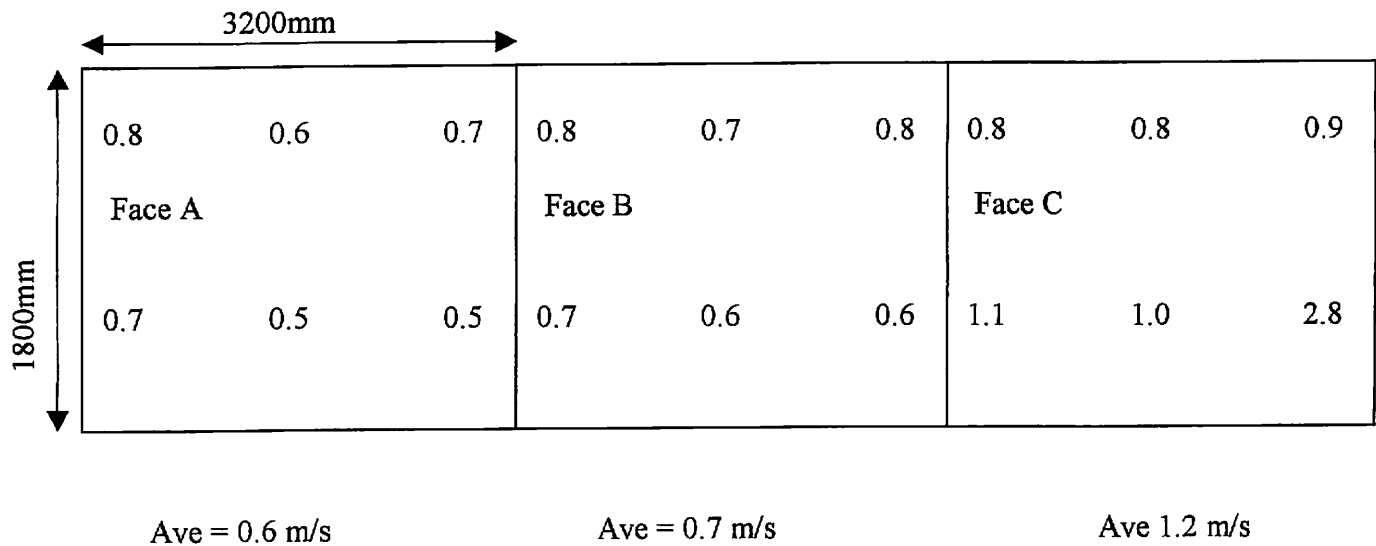
<b>Tested By:</b> K Simcox BSc (Hons) CertOccHyg CMIOSH RSP LFOH ROH	<b>Date of Test</b>	<b>Date for Next Test</b>
	8.2.06	7.4.07

**Client:**

**Midland Steel Structures Ltd, Binley, Coventry, CV3 2RT**

**System Reference:**  
V2 Spray Booth

**Area:**  
V2



**Comments:**

- Capture good.
- Spray distance 3500mm

**Client:**

**Midland Steel Structures Ltd, Binley, Coventry, CV3 2RT**

**System Reference:**

V2 Spray Booth

**Area:**

V2

<b>Test Position</b>	<b>Face/Capture Velocity (m/s)</b>	<b>Static Pressure (Pa)</b>	<b>Duct Velocity (m/s)</b>	<b>Volume Flow (m<sup>3</sup>/s)</b>	<b>Comments</b>
Face A	0.6				3200mm x 1800mm
Face B	0.7				3200mm x 1800mm
Face C	1.2				3200mm x 1800mm

**Fan Details**

<b>Type</b>	Axial x 2	<b>Make</b>	Not accessible
<b>Model Size</b>	Not accessible	<b>Serial Number</b>	Not accessible
<b>Motor Power</b>	Not accessible	<b>Fan Speed</b>	Not accessible
<b>Static Pressure Inlet</b>	Not measured	<b>Volume Flow (m<sup>3</sup>/s)</b>	

**Filter Details**

<b>Type/Medium</b>	Paper Cartridge	<b>Make</b>	Airflow
<b>Serial Number</b>	Not Known	<b>Volume Flow (m<sup>3</sup>/s)</b>	
<b>Static Pressure Inlet</b>	Not accessible	<b>Static Pressure Outlet</b>	Not accessible
<b>Static Pressure Across Filter</b>			

**Client:**

**Midland Steel Structures Ltd, Binley, Coventry, CV3 2RT**

**System Reference:**

Spray Booth

**Area:**

Main building

**System Description:**

Paint Spray Booth

Hazardous Substances	Liquid	Mist	Dust	Fume	Vapour	Gas	Temp °C
Solvent Vapour					✓		20

**System Operating Status**

Redundant

Normal

✓

**Discharge of Air**

Internal

✓

External

**Any air being returned to the workplace requires a contamination assessment.**

**Measurable Performance Criteria (to be met by the system)**

**Face Velocity (m/s)**

0.5

**Capture Velocity (m/s)**

-

**Duct Velocity (m/s)**

6.0

**Were Criteria Met?**

Yes

**Methods Used To Assess System**

Visual assessment of capture

✓

Capture velocity measurement using a thermal anemometer

✓

Duct velocity measurements using a pitot tube and micromanometer

✓

**Recommendations:**

- System performance was adequate

**Tested By:**

K Simcox BSc (Hons) CertOccHyg CMIOSH  
RSP LFOH ROH

**Date of Test**

8.2.06

**Date for Next Test**

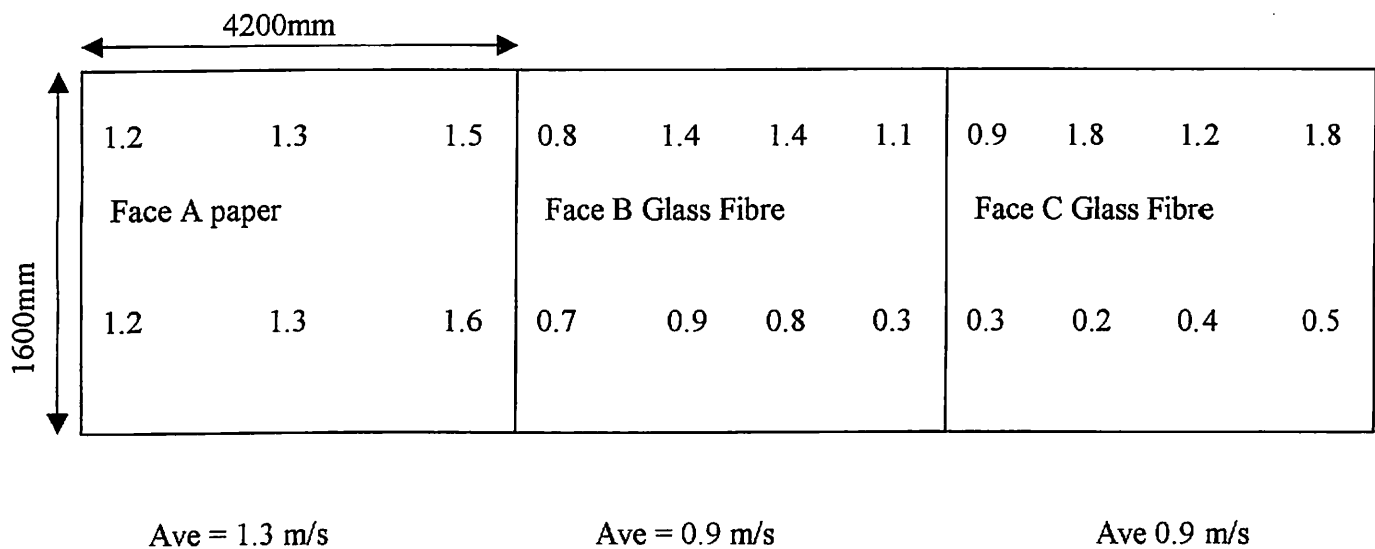
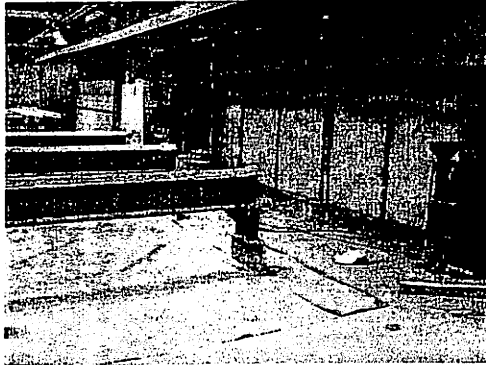
7.4.07

**Client:**

**Midland Steel Structures Ltd, Binley, Coventry, CV3 2RT**

**System Reference:**  
Spray Booth

**Area:**  
Main Factory



**Comments:**

- Capture adequate.
- Spray distance 3500mm

**Client:**

**Midland Steel Structures Ltd, Binley, Coventry, CV3 2RT**

**System Reference:**

Spray Booth

**Area:**

Main Factory

Test Position	Face/Capture Velocity (m/s)	Static Pressure (Pa)	Duct Velocity (m/s)	Volume Flow (m <sup>3</sup> /s)	Comments
Face A	1.3				4200mm x 1600mm
Face B	0.9				4200mm x 1600mm
Face C	0.9				4200mm x 1600mm

**Fan Details**

<b>Type</b>	Bifurcated x 2 Axial x 2	<b>Make</b>	Not accessible
<b>Model Size</b>	Not accessible	<b>Serial Number</b>	Not accessible
<b>Motor Power</b>	Not accessible	<b>Fan Speed</b>	Not accessible
<b>Static Pressure Inlet</b>	Not measured	<b>Volume Flow (m<sup>3</sup>/s)</b>	

**Filter Details**

<b>Type/Medium</b>	Paper Cartridge/ Glass Fibre	<b>Make</b>	Not Known
<b>Serial Number</b>	Not Known	<b>Volume Flow (m<sup>3</sup>/s)</b>	
<b>Static Pressure Inlet</b>	Not accessible	<b>Static Pressure Outlet</b>	Not accessible
<b>Static Pressure Across Filter</b>			