

29 October 2018

Portable Centres
Leydene House
Waterberry Drive
Waterlooville
Hampshire
PO7 7XX

For the attention of Mr P Ahearn (Project Co-ordinator)

Dear Mr. Ahearn

We now have pleasure in enclosing the results of the Local Exhaust Ventilation (LEV) thorough examination & tests recently carried out on your various extract ventilation systems.

We trust that the comments made on the individual LEV reports are self-explanatory, but we would be pleased to discuss any queries you may have.

The results should be compared with those of previous surveys and the reports should be retained for a minimum of 5 years.

Notes

These reports are designed to comply with the requirements of the Control of Substances Hazardous to Health (CoSHH) Regulations as explained in the Approved Code of Practice. A separate record is provided for each system.

The Record

These records include the LEV identification and location, details of the fan, filters, conditions at the time of the tests and details of the routine measurements taken of airflow performance. The measurements are taken at intervals determined by the regulations, but in any event not exceeding fourteen months.

Scientific Units Used

The ventilation results are measured in SI (Système international) units, ie, pressure in Pascals (Pa), velocity in metres per second (m/sec^{-1}) and volume flow in cubic metres per second ($\text{m}^3/\text{sec}^{-1}$), (except where otherwise requested). The units of measurement are indicated among the column headings. All dimensions are in metres or millimetres.

CoSHH Regulations

The CoSHH Regulations state (ACOP Regulation 9, Paragraph 164) that *“all control measures in use should be visually checked, where possible, at appropriate intervals and without undue risk to maintenance staff. In the case of LEV and work enclosures, such checks should be carried out at least once a week”*

Tony Smedley has the British Occupational Hygiene Society (BOHS) P604 "Performance Evaluation and Management of Local Exhaust Ventilation Systems", and W201 "Basic Principles in Occupational Hygiene" and also holds NEBOSH Certificate in Occupational Health & Safety, and City & Guilds Environmental Engineers Certificate.

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LEV Thorough Examination & Test – October 2018

Smart Fleet Solutions

Summary of Results

	LEV System Identification	Comments
1	<u>Portable Car Body Repair Booth - PAC-49</u> Model CB1-XT5J 2 x 2.2kw Axial Flow fans	Satisfactory Adequate face air velocities were measured Capture and containment of vapours demonstrated with smoke tests. Smoke Clearance Test: 3 mins 30 secs Booth Volume: 74.3 m ³ Air Volume: 10014 m ³ /hr Air Change: 134 per hour The booth has hot air inlets which speed up the clearance time and helps provide a good, laminar flow. It is recommended that the filters are changed at regular intervals to maintain extraction efficiency.
2	<u>Portable Car Body Repair Booth - PAC-48</u> Model CB1-XT5J 2 x 2.2kw Axial Flow fans	Satisfactory Adequate face air velocities were measured Capture and containment of vapours demonstrated with smoke tests. Smoke Clearance Test: 3 mins 30 secs Booth Volume: 74.3 m ³ Air Volume: 10049 m ³ /hr Air Change: 135 per hour The booth has hot air inlets which speed up the clearance time and helps provide a good, laminar flow. It is recommended that the filters are changed at regular intervals to maintain extraction efficiency.

**REGISTER OF THOROUGH EXAMINATION AND
TEST OF LOCAL EXHAUST VENTILATION PLANT**

Regulation 9: Control of Substances Hazardous to Health (COSHH) 2002

Company Name:	Portable Centres
Company Address:	Portable Centres Leydene House Waterberry Drive Waterlooville Hampshire PO7 7XX
Copies to:	Mr P Ahearn (Project Co-ordinator)
Date tested:	19 th October 2018
Date of next test:	October 2019
Test Equipment:	TSI VelociCalc; Model TA465-P Serial n°: TA 4651316004, Electric Manometer, Hot Wire Anemometer, 100mm Vane Anemometer, Pitot Tube, Dust Lamp and Smoke tubes
Name of competent person carrying out test:	Mr Tony Smedley, LEV Test Engineer. S.I. Environmental Ltd
Signature:	
Approved by:	Mr Carl Renshaw, Director S.I. Environmental Ltd
Signature:	

THIS REGISTER IS TO BE RETAINED FOR AT LEAST 5 YEARS, REG 9(4)

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH
(COSHH) REGULATIONS 2002

REPORT OF THOROUGH EXAMINATION AND TEST BY A COMPETENT
PERSON OF EXHAUST VENTILATION EQUIPMENT TO MEET THE
REQUIREMENTS OF REGULATION 9.(2)

- | | |
|---|---|
| 1. Name of employer responsible for the plant: | Smart Fleet Solutions |
| 2. Address of Employer: | Smart Fleet Solutions
Swynnerton Road
Cold Meece
Stone
Staffordshire
ST15 0GR |
| 3. Period covered by test: | 19.10.2018 – 19.12.2019 |
| 4. Date of last thorough Examination and test: | Initial Test |
| 5. Location of local exhaust ventilation (LEV) plant: | Portable Car Body Smart Repair Centre
(Paint Spray Booth) |
| 6. Process and hazardous substances concerned: | Paint spraying, handling & storing of chemicals (paints/lacquers) giving off solvent vapours. |
| 7. Identification of LEV plant: | Portable Car Body Repair Booth - PAC-49
Model CB1-XT5J
2 x 2.2kw fans |
| 8. Manufacturer: | Portable Centres |
| 9. Description of plant (See Schematic): | See Schematic 1 (LEV 1) |
| 10. Has there been any change to the system since last test? | Initial / Commissioning Test |
| 10.1 If yes, give details: | N/A |

11. Condition of LEV plant at time of test - normal production or special conditions?	Normal production.
12. Is the LEV plant continuing to operate at its designed performance?	Yes Adequate face air velocities were measured
12.1. If no, give reasons:	N/A
12.2. Any repairs required to maintain the intended operating performance?	No
13. Is the LEV plant, when working at its designed performance, sufficient to control the hazardous substances?	Yes, Capture and containment of vapours demonstrated with smoke tests. No design specification available to compare the measured air velocities against.
14. Does this system return exhaust air to the workplace?	No
15 Any other observations:	Smoke Clearance Test: 3 mins 30 secs Booth Volume: 74.3 m³ Air Volume: 10014 m³/hr Air Change: 134 per hour The booth has hot air inlets which speed up the clearance time and helps provide a good, laminar flow. It is recommended that the filters are changed at regular intervals to maintain extraction efficiency. Filter condition: New The operator wears an air-fed mask whilst carrying out spraying activities. The extractor is continuously running on the low setting and must be switched on to the high setting for the compressed air available to the spray gun. The extractor then remains on the high setting until spraying has stopped and the clearance time has passed. During this time, all doors remain locked and electrical components out of use.

LOCAL EXHAUST VENTILATION EXAMINATION & TEST (SCHEMATIC 1)
CB1 Portable Car Body Smart Repair Centre / Paint Spray Booth Extraction PAC-49



Extraction Filters



Air Inlet Filters

Smart Fleet Solutions

LEV 1

Portable Car Body Repair Booth - PAC-49. Model CB1-XT5J

LOCAL EXHAUST VENTILATION PERFORMANCE VALUES								Table 1
Test Point (TP)	Duct (Filtration) Dimensions (mm)	Static Pressure (-Pa)	Velocity Pressure (Pa)	Machine Ref	Filter Area (m ²)	Face Velocity (m/s)	Volume Flow (m ³ /hr)	Comments
FV 1	1400 x 450			Left-Hand Fan - Extraction Filter	0.63	2.24	5071	New filters
FV 3	2500 x 420			Left-Hand Side - Air Inlet Filters	1.05	1.29	4880	New filters
		225		Left-Hand Fan Clean Chamber				
		40		Left-Hand Fan Dirty Chamber				
		185		Differential Pressure				
FV 2	1400 x 450			Right-Hand Fan - Extraction Filter	0.63	2.18	4943	New filters
FV 4	2500 x 420			Right-Hand Side - Air Inlet Filters	1.05	1.35	5118	New filters
		220		Right-Hand Fan Clean Chamber				
		35		Left-Hand Fan Dirty Chamber				
		185		Differential Pressure				

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH
(COSHH) REGULATIONS 2002

REPORT OF THOROUGH EXAMINATION AND TEST BY A COMPETENT
PERSON OF EXHAUST VENTILATION EQUIPMENT TO MEET THE
REQUIREMENTS OF REGULATION 9.(2)

- | | |
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| 1. Name of employer responsible for the plant: | Smart Fleet Solutions |
| 2. Address of Employer: | Smart Fleet Solutions
Swynnerton Road
Cold Meece
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Staffordshire
ST15 0GR |
| 3. Period covered by test: | 19.10.2018 – 19.12.2019 |
| 4. Date of last thorough Examination and test: | Initial Test |
| 5. Location of local exhaust ventilation (LEV) plant: | Portable Car Body Smart Repair Centre
(Paint Spray Booth) |
| 6. Process and hazardous substances concerned: | Paint spraying, handling & storing of chemicals (paints/lacquers) giving off solvent vapours. |
| 7. Identification of LEV plant: | Portable Car Body Repair Booth - PAC-48
Model CB1-XT5J
2 x 2.2kw fans |
| 8. Manufacturer: | Portable Centres |
| 9. Description of plant (See Schematic): | See Schematic 2 (LEV 2) |
| 10. Has there been any change to the system since last test? | Initial / Commissioning Test |
| 10.1 If yes, give details: | N/A |

11. Condition of LEV plant at time of test - normal production or special conditions?	Normal production.
12. Is the LEV plant continuing to operate at its designed performance?	Yes Adequate face air velocities were measured
12.1. If no, give reasons:	N/A
12.2. Any repairs required to maintain the intended operating performance?	No
13. Is the LEV plant, when working at its designed performance, sufficient to control the hazardous substances?	Yes. Capture and containment of vapours demonstrated with smoke tests. No design specification available to compare the measured air velocities against.
14. Does this system return exhaust air to the workplace?	No
15 Any other observations:	Smoke Clearance Test: 3 mins 30 secs Booth Volume: 74.3 m³ Air Volume: 10049 m³/hr Air Change: 135 per hour The booth has hot air inlets which speed up the clearance time and helps provide a good, laminar flow. It is recommended that the filters are changed at regular intervals to maintain extraction efficiency. Filter condition: New The operator wears an air-fed mask whilst carrying out spraying activities. The extractor is continuously running on the low setting and must be switched on to the high setting for the compressed air available to the spray gun. The extractor then remains on the high setting until spraying has stopped and the clearance time has passed. During this time, all doors remain locked and electrical components out of use.

LOCAL EXHAUST VENTILATION EXAMINATION & TEST (SCHEMATIC 2)
CB1 Portable Car Body Smart Repair Centre / Paint Spray Booth Extraction PAC-48



Extraction Filters



Air Inlet Filters

Smart Fleet Solutions

LEV 2

Portable Car Body Repair Booth - PAC-48. Model CB1-XT5J

LOCAL EXHAUST VENTILATION PERFORMANCE VALUES								Table 1
Test Point (TP)	Duct (Filtration) Dimensions (mm)	Static Pressure (-Pa)	Velocity Pressure (Pa)	Machine Ref	Filter Area (m ²)	Face Velocity (m/s)	Volume Flow (m ³ /hr)	Comments
FV 1	1400 x 450			Left-Hand Fan - Extraction Filter	0.63	2.22	5029	New filters
FV 3	2500 x 420			Left-Hand Side - Air Inlet Filters	1.05	1.33	5024	New filters
		225		Left-Hand Fan Clean Chamber				
		40		Left-Hand Fan Dirty Chamber				
		185		Differential Pressure				
FV 2	1400 x 450			Right-Hand Fan - Extraction Filter	0.63	2.21	5020	New filters
FV 4	2500 x 420			Right-Hand Side - Air Inlet Filters	1.05	1.26	4781	New filters
		225		Right-Hand Fan Clean Chamber				
		40		Left-Hand Fan Dirty Chamber				
		185		Differential Pressure				

3. General Recommendations

3.1 Regular Inspection and Checks

In addition to the thorough examination & testing described in this report it is required to conduct regular inspections and checks on the LEV systems. What form this inspection takes place and its frequency, will depend upon the nature of the plant. The COSHH Approved Code of Practice (ACOP) recommends that weekly visual checks should be carried out to identify any obvious defects. If the LEV controls a particularly hazardous substance then more frequent checks may be necessary. Plant operators need to know what to look for and how to report it.

The regular inspections may include;

- Ensuring that the LEV is always switched on when hazardous substances are being emitted or are likely to be emitted,
- Observing the condition of the suction inlet, e.g. hood, booth etc to see whether it has moved or been damaged.
- Observing the condition of any visible ductwork and duct airflow dampers.
- Observing any evidence of control failures, for example noticing if there are unusual dust deposits or a stronger odour than normal immediately outside the LEV.
- Observing and checking any monitoring instrumentation or alarms that have been fitted to the LEV to indicate its performance, such as a differential pressure gauge on a filter or an airflow device on a fume cabinet.
- Undertaking any minor servicing such as emptying dust collection bins.

3.2 Maintenance

A programme of regular maintenance for all LEV systems should be instituted and suitable records should be kept. This should include checking, cleaning and replacing, where necessary, the following components; fans, motors, grilles, and duct work.

3.3 Workplace Inhalation Exposure Monitoring

Where the control and containment effectiveness of the individual LEV systems is uncertain consideration should be given to undertaking background air sampling and / or personal exposure monitoring.

3.4 Airflow Indicators

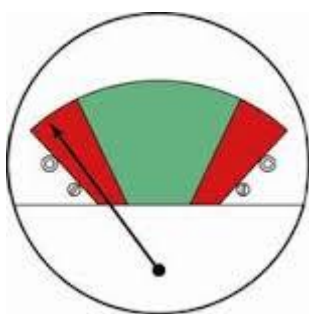
The Health & Safety Executive recommends that LEV systems are fitted with visual devices to provide LEV users with an indication that the hood is working and providing effective control of containment release.

HSE Guidance Note HSG258 “Controlling airborne contaminants at work” states ‘employers need an airflow indicator at every hood because the operator needs some simple indication that the hood is working properly. It becomes critical when an operator has to adjust an airflow damper to get adequate airflow. The airflow indicator must indicate simply and clearly when the airflow is adequate’.

The devices required will vary depending upon the complexity of the system; however, to assist both operators and supervisors it is recommended that airflow indicators clearly demonstrate when the airflow is adequate, for example, using a simple red and green colour coding scheme (e.g. Figure 1).

Figure 1 Examples of Colour-coded airflow indicators

1.



For additional information see www.hse.gov.uk/lev/faqs.htm

4. HSE Recommended Performance indicators

The system airflows are compared with the following recommended limits and ranges as published in HSE guidance note HSG258 “Controlling airborne contaminants at work”.

Table A1; Range of Hood / Capture Velocities

Contaminant Cloud Release	Process Examples	Capture Velocity ms ⁻¹
Into still air with little or no energy	Evaporation, mist from electroplating tanks.	0.25 to 0.5
Into fairly still air with low energy	Welding, soldering, liquid transfer	0.5 – 1.0
Into moving air with moderate energy	Crushing, spraying	1.0 – 2.5
Into turbulent air with high energy	Cutting, abrasive blasting, grinding	2.5 – 10.0

In each of the categories above a range of capture velocities is shown. The choice of values is dependent upon several factors:

Lower end of range

- Harmful and low toxicity materials;
- Low usages;
- Intermittent uses;
- Larger hoods;
- Some directional airflow towards hood;
- No draughts

Upper end of range

- ‘Toxic’ materials;
- High usages;
- Continuous uses;
- Smaller hoods;
- Airflows away from the hood;
- Draughts

Table A2; Recommended Duct Transport Velocities

Type of Contaminant	Indicative Duct Transport Velocity ms ⁻¹
Gases and non-condensing vapours	No Minimum Value
Condensing vapours, fume and smoke	Up to 10
Low or medium density dust, low moisture content dust (plastic dust, saw dust), fine dusts and mists.	Up to 15
Process dust (cement dust, brick dust, wood shavings, grinding dust)	Around 20
Large particles, aggregating and damp dusts (metal turning, moist cement dusts, compost)	Around 25

It should be noted that these are recommended airflows only and for individual systems achieving or exceeding these velocities will not necessarily guarantee effective control.

4.1 Static Pressure

Comparison of static pressure readings with past and future measurements will enable conclusions to be drawn regarding changes in system performance, and whether there are any problems in the system.

5. Frequency of Statutory thorough Examination & Test of LEV Plant

Frequency of thorough Examination & Test of local exhaust ventilation plant in certain processes;

Regulation 9(2) (a)

Schedule 4	Column 1 Process	Column 2 Minimum Frequency
	Processes in which blasting is carried out in or incidental to the cleaning of metal castings, in connection with their manufacture.	1 Month
	Processes, other than wet processes, in which metal articles (other than gold, platinum or iridium) are ground, abraded or polished using mechanical power, in any room for more than 12 hours in any week.	6 Months
	Processes giving off dust or fume in which non-ferrous metal castings are produced.	6 Months
	Jute cloth manufacture	1 Month
	All other LEV systems	14 Months

Information derived from Control of Substances Hazardous to Health Regulations 2002 (as amended) Approved Code of Practice and Guidance L5.

6. Guidance on LEV Documentation

6.1 Information on Essential Documentation for LEV

Upon installation of a LEV system all owners (employers) should with three pieces of documentation, supplied by the LEV provider;

- a commissioning report
- a user manual; and
- a logbook.

A brief outline of what should be in this documentation is detailed below. More detailed information can be found in section 8 & 9 of HSE Guidance Note HSG258 “Controlling airborne contaminants at work”.

6.1.1 Commissioning Report

Commissioning is a process which is designed to prove that a lev system is capable of providing effective control and containment.

The LEV Commissioning process comprises of four key stages;

- 1) Installation and verification
- 2) Undertaking technical performance readings to confirm the design specification
- 3) Demonstrating control effectiveness
- 4) Reporting benchmark readings for future examination and tests

Upon completion of the process a report should be produced by the LEV commissioner. This should confirm that the LEV system performs as it was designed and that it provides effective control of airborne contaminants from entering the workplace.

This sets a benchmark for subsequent examination & testing. Comparison of pressure and velocity readings with benchmark measurements will enable conclusions to be drawn regarding changes in system performance, and whether there are any problems in the system.

6.1.2 User Manual

The user manual should be presented with the lev system following commissioning. This should detail how to use the system, maintenance information, available spare parts and details of things that may go wrong. The manual should also have a schematic diagram of the system, indicating the key components, and relevant performance data from the commissioning report such as pressure and velocity readings.

The user manual should also provide information on the required procedures and practices where the control effectiveness of the system is dependent upon correct usage e.g. where personnel manually position hoods to the point of containment release.

6.1.3 LEV System Logbook

Each LEV system should have its own individual logbook which will have details of regular inspection, maintenance and repairs. Ideally it should include;

- Benchmark findings of the commissioning report
- Inspection and maintenance schedules
- Records of checks, maintenance, any replacements or modifications and repairs
- Compliance checks on the correct operation of the system
- Name of person who undertakes the checks

Appendix 1

Maintenance of LEV and Inspection Checklists (Log Book)

Maintenance Checklist

Item	Maintenance Work Required	Frequency
Extract Hoods	Inspect for signs of damage, check positioning – adjust if necessary. Inspect cleanliness of hoods, canopies and duct interiors	D/W W
Dampers	Inspect for damage, renew as necessary. Check connecting clips and seals. Check damper is in correct position while machine is operating. At fixed point if the LEV is balanced. Check that the damper is free to move (if not on a balanced system)	D/W W W W
Branch Duct	Check joints for tightness. Check supports and brackets for damage. Check interior for any build-up of particles/ residue.	Q Q M
Main Duct	Check joints for tightness. Check supports and brackets for damage due to mechanical impact, vibration etc. Check interior for any build-up of particles/ residue.	Q Q M
Filtration Unit (where applicable)	Check pressure drop across the filtration media. Check for any visual emission from the exhaust. Inspect filter bags for damage and wear. Replace as necessary. Check operation of shaking mechanism (including motors), reverse jet system etc. Lubricate motor bearings. Major Service.	D W D/W M As recommended by supplier A
Fan / air mover	Lubricate bearings. Inspect blades for wear damage. Inspect motor for excessive vibration or noise or high temperature. Check soundness of electrical connections. Check earthing. Check mountings. Check brushes if fitted. Check tightness of duct connections.	As recommended by supplier ½ A ½ A ½ A ½ A ½ A ½ A A
Monitors	Check airflow monitors and gauges. Check alarm sounds (if fitted).	D W
Water Quality (on wet scrubber units)	Check Level and condition.	M
Illumination	Check levels in booths and at working positions.	M

D-Daily

W-Weekly

M-Monthly

A-Annually

Inspection Checklist

[illegible]