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CARE GUIDANCE

RECOMMENDATIONS ON BEST PRACTICE

LEVEL 2

Finishing applications

FINISHING APPLICATIONS

INTRODUCTION

This is a level 2 document in the ECFIA CARE Guidance series and should be read in conjunction with the level 1 document "Working with HTIW – Effective Risk Management".

Control measures for finishing tasks are generally a combination of technology, engineered solutions and working practices to eliminate or reduce exposure. Selecting the right combination is very important and control measures will only work effectively if they are correctly used.

WHAT IS THE CARE PROGRAMME?

ECFIA´s Controlled And Reduced Exposure (CARE) Programme is an important part of the Product Stewardship Programme. It allows employers to proactively minimize fibrous dust exposure and thus protect workers' health.

WHAT ARE THE CARE GUIDANCE DOCUMENTS?

These documents form a comprehensive library of information on the safe handling and use of HTIW products. They have been written by industry experts and are designed to give customers of ECFIA members helpful information to put in place effective controls to minimise exposure to airborne fibres. This series of documents will progressively grow as new documents are produced.

Level 1 guidance document: "Working with HTIW - Effective risk management"
Level 2 guidance documents: Risk management measures applicable to HTIW
Level 3 guidance documents: Examples of specific applications

WHAT IS FINISHING?

Finishing is the preparation of HTIW products for installation or final use and can incorporate a number of activities, done both by hand (manual) and by machine (automated or semi-automated). These activities can involve high or low energy processes.

The potential to generate elevated dust concentrations during finishing tasks depends on several factors:

Nature of the process

- Finishing using a machine
  - Portable or fixed tools / machines
  - Semi automated / automated tools / machines
- Hand finishing
- Amount of energy applied

HTIW product form

- Boards or shapes
- Blankets
- Papers or felts
- Textiles

Working environment

- Open area
- Open area / well ventilated
- Confined or limited space

Control measures in place

- Use of prefabricated products
- Segregation
- Enclosure
- Use of local exhaust ventilation
- Minimised handling
  - Careful manipulation and stacking
  - Organised flow of materials and waste

Typically, high energy (for example high rotational speed) machine finishing processes have the potential to produce the highest dust concentrations. Such processes include:

Fixed machines / tools

- Saws
  - Band saw, circular saw, wire (bead) saw
- Linishers
  - Horizontal or vertical
  - Band or circular
- Surface planers / bevellers
- Routers, milling machines and CNC
- Drills

Portable tools

- Disc or belt sanders
- Grinders
- Routers
- Drills
- Jig saws
- Circular saws
- Hand saws

All of the above can generate high levels of dust if used in uncontrolled conditions. The size of the machine, the nature of the material to be machined, the level of dust control and the production rate will dictate the potential dust concentration in the workplace air.

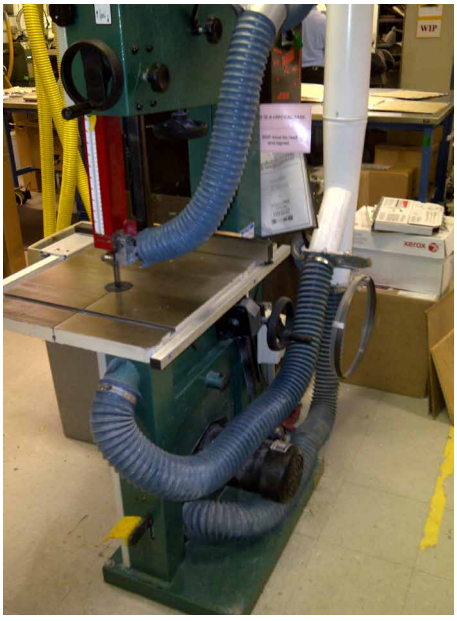
EXAMPLES OF FIXED TOOLS / MACHINES

SAWS

Band saw

A band saw is commonly used in secondary processing to trim modules and boards, for example, including cutting complicated shapes. They are generally stand-alone machines. Further information on control measures applicable to band saws can be found in level 3 guidance document "Saws".

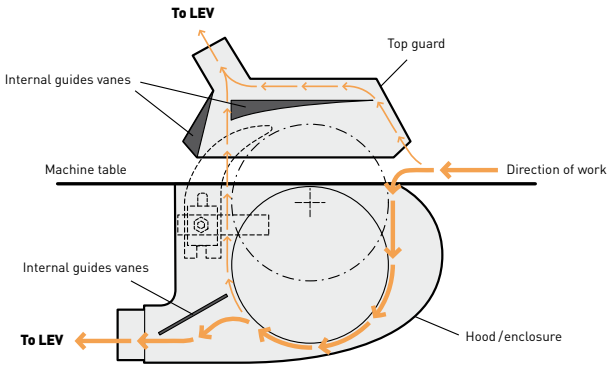
Examples of controls on band saws

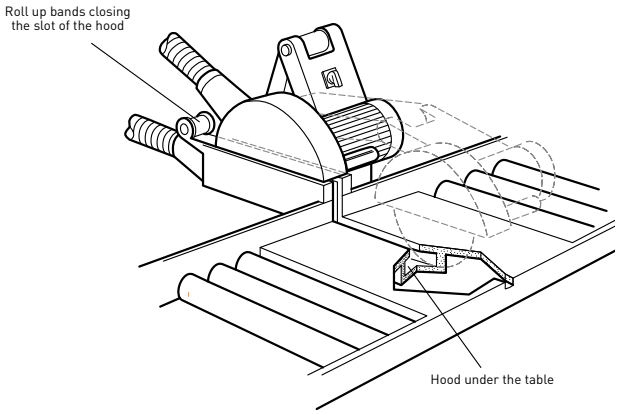


Circular saw

Circular saws are often used for straight cutting processes where accuracy is important. They can be hand tools, stand-alone machines or incorporated into a line in an automated process. Due to the nature of the emission source the control measures are different to those for a band saw.

Examples of controls on circular saws:





Profiling / wire / bead saw

These saws allow accurate cutting of 3D shapes using an oscillating wire.

Extraction to the top and base of the saw with only limited guarding and dust controls; any handling of product should be done inside an enclosure and under LEV where reasonably practicable.

LINISHERS OR SANDERS

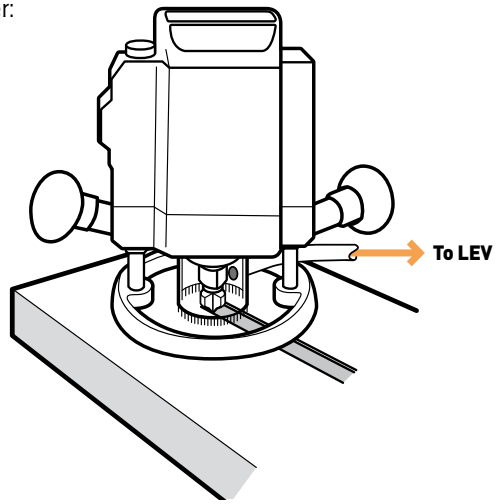
Linishers comprise an abrasive surface presented in a vertical or horizontal orientation to which a work piece is introduced, manually or automatically, to smooth the surface of the work piece. Practical examples of controls on linishers:

Sander with LEV/ horizontal linisher

ROUTERS (MILLING MASCHINES)

These are high speed cutting heads with differing configurations depending on the size and nature of the profile required.

Hand-held router:



Examples of controls for routers

LEV would typically be fitted to the cutter guard and would need to provide an air velocity of between 10 and 20 metres per second at the tool.

Consideration should also be given to using an enclosed computer numerical control cutter (CNC; see below), as this affords greater automation and presents less potential for operator interaction and exposure.

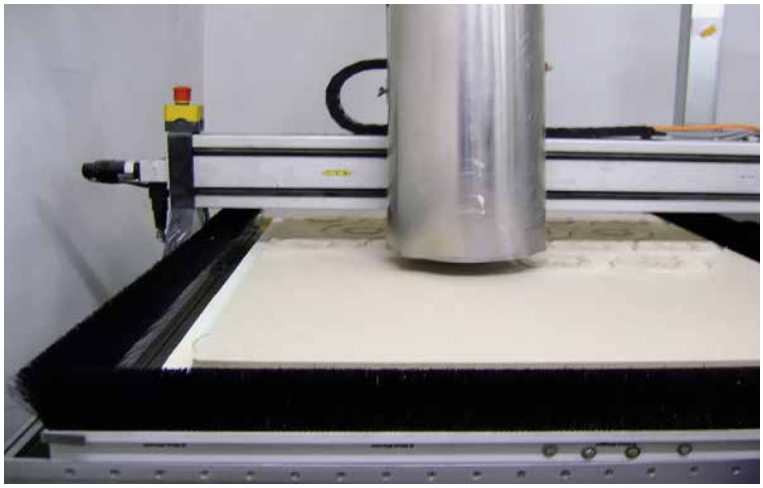
Router before improvement

Router fully enclosed

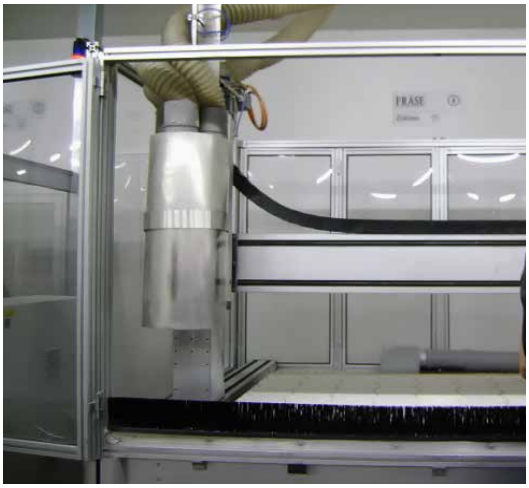
CNC

Computerised numerical cutters are precise cutting heads programmed to a particular template profile.

Practical examples of dust control for CNC machines:



CNC with LEV on tool



CNC with partial enclosure and LEV on tool

PEDESTAL DRILL

Examples of control measures for pedestal drills:

Drill

Drill with limited dust control

MANUAL FINISHING TASKS

Manual finishing tasks are mostly relatively low energy processes including

- Hand cutting of papers, felts or blankets using a safety blade
- Hand sanding rough edges from formed shapes
- Fettling – using abrasive paper or an abrasive glove
- Pillar / hand held drills
- Use of portable hand tools – e.g. hand saws

Even though these tasks may involve less energy they still do liberate dust to varying degrees depending on the nature of the product and the tool used. All manual finishing tasks must be done under controlled conditions to reduce potential worker exposure to fibrous dust.

EFFECTIVENESS OF LEV

The effectiveness of LEV on finishing equipment relies on:

- Correct selection and design of the enclosure/hood/system for the process
- Correct use of the controls.
- The activity level:
  - amount of product handling
  - extent of product-operator interaction

The dust concentration in air can best be reduced using a combination of control techniques. The control measures presented here are offered as examples of real situations and should be used only as a guide. Each individual task / situation needs to be fully assessed and evaluated by a competent person. The use of PPE may still be required even with LEV in place. Monitoring the process before and at each stage of the intervention will help to assess the level of control achieved.