

US EPA ARCHIVE DOCUMENT



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What Is EPA's Design for the Environment (DfE) Automotive Refinishing Partnership?

EPA's Design for the Environment (DfE) Program forms partnerships to reduce risk to people and the environment through pollution prevention. DfE has been working with the automotive refinishing industry since 1997 to identify and promote safer, cleaner, and more efficient practices and technologies. The DfE team conducts best practices workshops and site visits for collision repair businesses and schools. A Best Practices Outreach Kit with checklists, fact sheets, case studies, health and safety information, and links to numerous resources can be downloaded from the DfE website at <http://www.epa.gov/dfepubs/projects/auto>.



Why Use Vacuum Sanders?

Dust created during the sanding process may contain toxic materials such as isocyanates, lead, chromium, and silica that are harmful to the lungs and nervous system. Use of a High Velocity Low Volume (HVLV) vacuum sanding system can protect workers and others nearby from harmful dust.



Photo provided courtesy of the Rhode Island Department of Environmental Management.

When used and maintained properly, vacuum sanders can control 93-98% of the dust generated from the disc sanding operation and may minimize the need to use a respirator during sanding operations. Vacuum sanders can pay for themselves over time by eliminating expensive repaints, shortening clean up time, and extending sandpaper life.

What Are the Different Types of Vacuum Sanders/Systems Available?

Commercially available vacuum sanding systems fall into two main categories – central vacuum systems and portable vacuum units. Both systems use orbital as well as straight line sanders.

- Central vacuum systems consist of multiple vacuum sanding drops connected to a central vacuum system by means of retractable, flexible hoses. Such systems produce sufficient suction to handle up to four to twenty technicians sanding at the same time.



Photo provided courtesy of Eurovac

- Self-contained (portable) units are designed for operation by one to three technicians at the same time. The unit comes with attached wheels and can be easily moved from one location to another in the shop, depending on where the sanding has to be performed (much like a shop-vac).



Photo provided courtesy of Eurovac

Vacuum Sanders Reduce Harmful Dust and Provide Other Benefits

- **Reduced cleanup costs:** reduced time to clean dust off the floor and off cars. One shop that installed a vacuum sanding system for \$9,000 saved over \$7,000 a year because of reductions in cleanup costs <http://nsdi.epa.gov/oar/toxicair/community/guide/autobody_oo_sheet.pdf>
- **Reduced respirator/filter costs:** minimize or eliminate need to use a respirator during sanding operations.
- **Extended sandpaper life:** approximately 30%-40% lower sandpaper replacement costs (according to one vacuum system manufacturer). *One Minnesota shop that installed a vacuum sander not only decreased the amount of sandpaper used but also reduced the frequency of air filter changes. (See EPA reference above.)*
- **Reduced buffing and reworking:** reduced settling of dust on freshly painted cars and reduced swirl marks because of minimal grit build-up on sanding disc.
- **Reduced dust emissions to the surrounding community:** significant reduction in the amount of dust released to the environment outside the shop.

How Do I Select a System That Is Right for My Shop?

Equipment manufacturers or dealer representatives can assist you in selecting and installing a vacuum sanding system that meets your shop needs and fits your budget. Vacuum systems can be custom-engineered to fit tools being used, the number of technicians using the system at the same time, the number and type of hoses, and other shop-specific criteria. Portable units can be more affordable and practical for smaller refinish shops. Before investing in a system, talk to other shop owners that have installed and successfully use vacuum sanding systems and ask the manufacturer or dealer representative for references.

What Does It Cost to Install a Vacuum Sanding System?

The cost of a central vacuum system depends on factors like the size of the shop and the number of hoses required. Typical costs for a 5,000 square foot shop can range from \$5,000 to \$8,000 (including freight and installation). Prices for portable units can range from \$1,600 to several thousand dollars, depending on the capacity, the number of hose attachments, and other features of the units.

Note on conversion kits versus new tools:

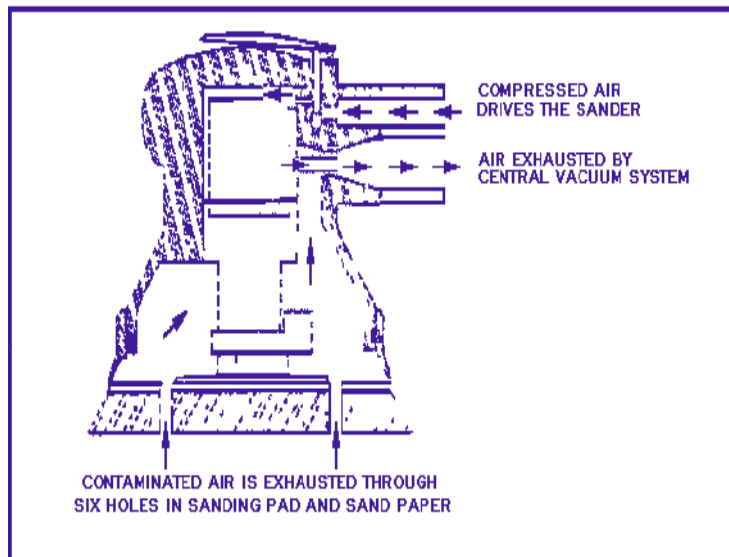
Conversion kits for most popular sanders are available at about \$80 for orbital sanders and \$110 for straight line sanders. New tools can cost anywhere from \$27 to more than \$400, depending upon the make, size, and type of tool. Equipment manufacturers or dealer representatives can help you determine whether your existing sanders can be retrofitted to perform as well as new vacuum sanders.

How Does a Vacuum Sander Work?

Vacuum sanders with HVLV ventilation use industrial vacuum cleaners to trap sanding dust before it becomes airborne and feature a compressed air driven sanding disc that is perforated with a series of holes. As the sander removes paint/filler, the dust is drawn into the holes and moves through a hose that is attached to the vacuum unit. The dust then travels to a collection canister where it is stored until it can be disposed. Because dust is collected as the paint/filler is removed, the amount of dust that can escape into the shop is reduced considerably. As with all shop equipment, proper system maintenance

according to the manufacturer's instructions is essential to ensure continued effectiveness of vacuum sanding systems.

ILLUSTRATION OF AN ORBITAL SANDER WITH HVLV VENTILATION



<http://www.cdc.gov/niosh/sanding.html>

How Can I Get More Information on Dust Control During Sanding Operations and on Other Best Practices for Auto Refinish Operations?

- Talk to your vacuum sander system and tool manufacturers and their dealer representatives.
- Consult with the National Institute for Occupational Safety and Health (NIOSH) by either calling 1-800-35-NIOSH or by visiting their website at <http://www.cdc.gov/niosh/sanding.html>
- For information on other best practices, visit the EPA's Design for the Environment (DfE) Automotive Refinishing Partnership website at <http://www.epa.gov/dfe/pubs/projects/auto> or contact the DfE project team at <http://epa.gov/dfe/contacts.htm>



www.epa.gov/dfe/pubs/projects/auto/

Note: The mention or illustration of any product or company does not constitute an endorsement by the U.S. Environmental Protection Agency.