A Low-Cost Spray Booth

Spend your dollars on an explosion-proof fan motor

BY JEFF JEWITT

Spraying a finish in a basement or a garage 20 years ago was risky business. High-pressure sprayers and flammable finishing materials were your only choices, and spraying these without proper ventilation was begging for a disaster. Not only did the risk of a fire or explosion loom large, but overspray was bound to settle on every horizontal surface in the immediate area.

With new high-volume, low-pressure (HVLP) spray equipment that drastically reduces overspray and with new water-based finishes, spraying finishes at home or in a small shop has become a viable option. One problem remains: how to ventilate the overspray. While water-based finishes are less problematic as fire hazards, the buildup of atomized finish and solvent can still be a health hazard. Spraying in an enclosed space without proper ventilation is unacceptable, so that leaves you with only a few options:

- *You can spray outdoors.* The problem with this alternative is that dust, bugs and other airborne debris will often ruin your wet finish. Also, strong breezes may prevent the atomized spray from landing where you want it.
- *You can spray within a well-ventilated area, such as a screened porch.* This is better because you minimize the possibili-

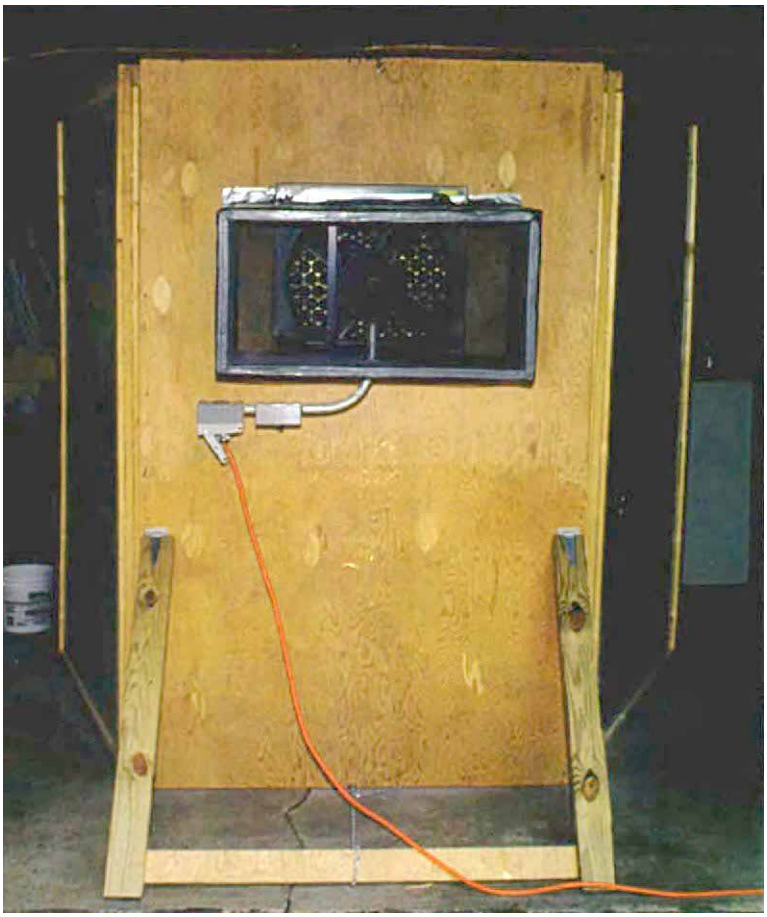
ty of debris landing on your wet finish, and the force of sudden breezes is reduced; but you still have overspray to worry about.

• *You can spray in an enclosed area, such as a basement or a garage, and exhaust the fumes with a fan.* However, basement windows are usually too small to fit a fan that will move enough air, and many garages don't even have windows. A small, portable spray booth solves these problems.

A knockdown booth may be the answer

Professional refinishers use specially designed spray booths to exhaust fumes in their shops, but these are quite costly, with prices starting at about $10,000 and moving upward, depending on all of the bells and whistles. These booths can also take up a large amount of floor space. The knockdown version I made can be built for much less (about $550). It can be set up easily in a garage or a basement with a large window and stored out of the way when not in use.

You don't need to spend $25,000 on a spray booth. *That's what it costs for the industrial-grade unit shown at right, with air exchangers and installation included in that price. A small knockdown booth (below and facing page) is better suited for a shop in the basement or garage.*



The heart of the ventilation system is an explosion-proof motor driving a nonsparking aluminum fan. (I bought one from a local W.W. Grainger distributor. It's rated at ¼ hp, 1,725 rpm, and it moves 2,000 cfm of air at 0 static pressure.) I recommend using at least a 16-in. fan and an explosion-proof motor, even with nonflammable water-based finishes. The fumes may not be flammable, but the fine dust that accumulates around the intake area and the discharge opening is a potential source of ignition. Check local electrical codes for making the proper electrical connections for the fan.

I mounted the fan in a torsion-box style assembly, which is fairly lightweight and plenty strong. I placed furnace filters in a slotted frame over the intake side of the fan to catch overspray. To the main center panel I added two lightweight wings, attached with removable loose-pin hinges, that direct the airflow toward the fan. They also help keep the assembly portable and more stable. A piece of cardboard or rigid insulation placed over the top significantly improves the efficiency of the airflow.

Small details make finishing easier. *A turntable (top) allows you to rotate a workpiece as you spray, which makes the job go faster and the results look neater. This technique is especially effective for spraying pieces that have many sides or odd shapes. A large, vinyl-coated hook to hang the spray gun (bottom) offers a safer, no-sparks alternative to metal-to-metal contact, and bright colors make it easy to locate.*

A hinged bracket on the outside of the middle panel keeps the assembly from tipping over while putting it together or taking it apart (see the bottom photo at left). I also added a foil-faced foam shroud to direct the exhaust a little better. The booth should be placed so that the back of the fan exhausts into a large opening—either an open window in a basement or through the garage-door opening. To work efficiently, the amount of air the fan consumes through exhaust needs to be replenished. This make-up air is critical, and it can come from another open window or door to the room.

Small accessories add big conveniences

I use a simple 12-in. turntable that lets me rotate a workpiece as I spray. The turntable is made with steel bearings, and it's mounted between two scraps of plywood. By being able to spin a workpiece as I'm spraying, I can work faster and neater. For heavy objects, I can also mount the turntable on a cart with wheels, to move freshly sprayed pieces out of the booth easily.

I screwed vinyl-coated hooks on the sides of the panels to hang my spray guns. Vinyl is nonsparking, and it tends to hold metal parts a little better. Because of the weight of the hose, guns have a nasty habit of falling over if not hung up. □

Jeff Jewitt writes frequently for Fine Woodworking *on finishing topics. His new Taunton Press book,* Great Wood Finishes, *is scheduled to appear in February 2000.*

Photos: William Duckworth