

New spray gun technology offers alternative

System uses improved air flow to achieve better material usage.

by George Lausch, Managing Editor
glausch@wattnet.net



The pressure-feed, gravity-feed and automatic guns from Dux are suited for a range of wood finishing applications.

Mullet Cabinet Inc. has experienced measurable improvements since it bought two pressure-feed spray guns from Dux Area Inc. earlier this year. The Millersburg, Ohio-based manufacturer uses them to spray stain on custom cabinets. "They are used all day long, every day," says Lamar Troyer, lab technician.

Troyer identifies three benefits of the new guns. "First, we figure we're saving about 25 percent product-wise when we use the Dux gun compared to the conventional spray gun that we had been using," he says, "because of how it atomizes the stain and how much less overspray we're getting."

Second, less overspray means less frequent filter maintenance. "We used to change our filters once a week," Troyer says. "Now when we're using the Dux gun, we're going at least two, two-and-a-half weeks in between changing filters."

Third, the reduced overspray also makes for a cleaner working environment for Mullet employees.

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"We've just been very happy with them," Troyer says about the guns.

Reinventing the wheel

Dux decided to reinvent the wheel when it developed the new finishing approach. "We completely ignored everything that had been done up to that point with spray gun technology," says Matt Carlson, director of marketing.

How to extend pump

Binks offers seven ways to maintain the piston pumps that pressure-feed spray guns used for air assisted airless spray finishing.

Never dry-run the pump.

Make sure the finishing material doesn't run out while the pump is operating. The coating acts as a coolant and protects against heat and erosion.

Keep adequate solvent in the solvent cup. The cup cleans and lubricates the piston rod. Allowing the cup to run dry will reduce the life of the pump's fluid section.

Periodically check the pump's stroke rate. The rise and fall rates of most pumps should remain even. An uneven stroke rate usually signals a problem.

Use clean, dry compressed air. Dirty/humid compressed air reduces the life of the air motor and increases maintenance costs.

Instead, the company sought the expertise of a car racing expert. "Our inventor actually came out of the Formula race car circuit," Carlson says. He had spent more than 20 years finding ways to optimize the way fuel is atomized and mixes with air inside a car engine. "He took a lot of the principles that he learned from the Formula circuit and put them into his original spray design."

Improved air flow

The result is what Dux calls laminar airflow technology. "Laminar air flow is basically moving air in a single column without creating any turbulence," says Carlson. The technology takes lower pressure air, moves it in a single direction and focuses it on the air cap, he says. Then the air moves through the cap in a clean, organized method that provides better atomization as it mixes with the coating material.

The results are better finish quality and lower material waste. The Dux products use only about half as much air as the most commonly used high-volume, low-pressure (HVLP) guns, but manage to atomize the material just as well. "The

benefit of that is that less air gets trapped in the coating as it's being applied to the surface," Carlson says.

The Dux guns also have high transfer efficiency — the ratio of the amount of material that the finisher sprays out of the gun versus the amount that actually hits and stays on the target. "Because the lower air pressure creates less overspray, we can improve transfer efficiencies 15 to 40 percent, depending on what coating it is the person is spraying," Carlson says.

Range of materials

Dux guns can be used with a range of materials, including primers, base coats, clear coats, sealers, epoxies, urethanes and latex paints.

The two hand-held guns feature an investment cast aluminum body, curved internal chambers and ergonomic handle, and are used for different applications. "The choice between gravity feed and pressure feed usually depends on what the operator is painting and how often he changes the color or type of coating," Carlson says.

The pressure-feed gun typically is used where a single coating is applied in large quantities for extended periods. The gun has two threaded fittings on the bottom, one for air and one for fluid. A pressurized source, such as a pump from a 55-gallon drum or a pressure pot, feeds the fluid. A

furniture manufacturer that applies the same topcoat to all its products could use the pressure-feed gun for that part of its finishing process.

Custom applications

The gravity-feed gun is used by manufacturers that apply small quantities of a coating or switch coatings frequently. "This is used primarily in the custom shops where you're not applying gallons of the same coating on a daily basis," Carlson says.

A small cup screwed to the top of the gun supplies the fluid. "You really just want to use a limited amount of material," Carlson says. "That's where those type of guns are beneficial because you can fill up just the small cup and use up that material completely. With the optional PPS cup system from 3M, you can even store the material in the cup, if you wanted to, until the next time you sprayed."

The Dux automatic gun is designed for robotic use or with reciprocators. "In high-volume furniture manufacturing, you often see automated machinery that coats products as they go by on a conveyor belt," Carlson says.

For more information, visit www.duxarea.com or call 206/248-0808. ▲

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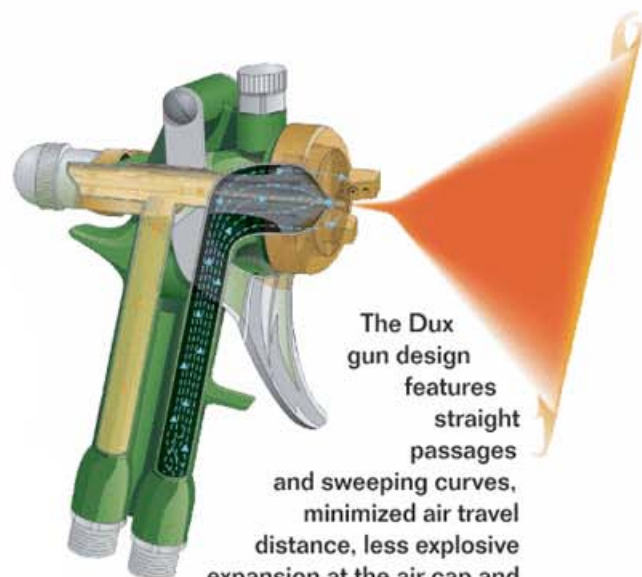
A simple filter/regulator is cost effective and extends pump life.

Select the pump that delivers material at less than its rated flow rate. Pumps should run no more than 25 percent of maximum flow, or less than 15 cycles per minute.

Select a pump that can run applications between 30 and 70 percent of its maximum delivery pressure and maintain it. Running the pump at too high a pressure subjects the air motor and seals to increased wear.

Use bigger, slower pumps for abrasive materials. A pump filled with an abrasive material may need to run more slowly to avoid wear and premature failure.

Source: Chris Poe, Binks' fluid delivery product manager. For more information, call 800/992-4657 or visit www.binks.com.



The Dux gun design features straight passages and sweeping curves, minimized air travel distance, less explosive expansion at the air cap and an organized spray column.