High Volume, Low Pressure (HVLP) Spray

HVLP spray guns atomize materials with warm, dry air between 0.1 and 10 psi, while conventional spray guns usually atomize materials at 60 to 100 psi. The low pressure air of HVLP systems transfers the coating to the substrate with low velocity and prevents the rapid expansion of spray caused by higher pressure guns, resulting in less overspray, less bounce back, and better transfer efficiency (40 -70 percent).

Benefits

- increase transfer efficiency, reduced overspray
- reduce worker exposure from bounce back
- reduce VOC air emissions
- lower booth clean-up costs
- reduce filter replacement costs
- decrease booth wastewater treatment costs
- sprays well into cavities and recesses
- can be used for a variety of coatings (e.g., waterborne, high solids)
- finish as good as conventional spray guns with low to medium viscosity coatings

Cautions

- less complete atomization, atomization may not be sufficient for fine finishes
- slower application rate may affect high production rates
- worker training is a must for success

Airless Spray

Airless spray systems atomize the coating by increasing the coating's fluid pressure (ranges from 500 to 6500 psi) without introducing a pressurized air flow.

Benefits

- high transfer efficiency (35-65 percent)
- reduce coating usage
- reduce air emissions and wastes
- high rates of paint flow, can move gun faster
- greater productivity, less operator fatigue
- ability to apply highly viscous fluids
- no air hose providing increased gun handling versatility

Ethan Allen Inc. Case Study
Old Fort, North Carolina

Ethan Allen, who manufactures dining and bedroom furniture, replaced air assisted spray guns with HVLP equipment. Each operator is required to attend annual technical training provided by the spray gun manufacturer.

Spraying efficiency has increased and the quantity of material to be filtered has been reduced. The investment was $3000 (12 guns @ $250). Raw materials were reduced by $15,000 to $20,000 per year, and costs associated with waste management and disposal were reduced.

Source: Case Study: Ethan Allen, Inc., North Carolina Waste Reduction Resource Center, December 1993.

Tiz's Door Sales (TDS) Case Study
Everett, Washington

TDS manufactures interior and exterior doors and frames, window and base moldings, and stained railings. HVLP spray guns were purchased to replace 20 percent efficient conventional spray guns on manual spray lines. Along with the conversion to HVLP, TDS also installed automated flat line spray equipment which increased application efficiency, recycled overspray, switched from toluene-based coatings to less hazardous coatings, uses heat instead of solvents to thin coatings, uses dedicated pumps and lines for each type of coating, blocks gun nozzles and blows air back through guns and delivery systems to reduce waste during cleaning.

TDS has reduced coating use by one-half (1991 - 18,000 gallons saved ~ $180,000) and experienced significant savings in labor and waste disposal costs.