

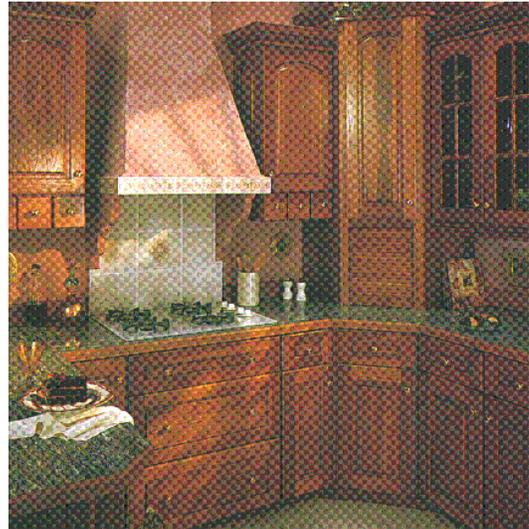
**Case Study No. 25 High-Solids Coatings
Westwood Custom Cabinetry
Salem, OR**

Background

Westwood Custom Cabinetry began coating cabinets in 1971 and was bought in February 1998 by Elkay. Their new sister plant in Minnesota, Medallion Cabinets, manufactures the same products. There are 83 manufacturing employees at the Salem facility, including 12 to 13 finishing employees, who work Monday through Friday on an 8-hour shift. Westwood converted to high-solids, low-HAP coatings to comply with the Wood Furniture NESHAP.

Manufacturing and Coating Operations

Westwood receives most of their components premilled. A few cabinet components, such as box and drawer parts, are received prefinished. The types of wood coated are oak, maple, hickory, and cherry. They will eventually coat pine as well.



Product sample

The manufacturing section of the facility is divided into two areas. One area is used for assembling prefinished box and drawer parts manufactured of particleboard and paper laminate or maple veneer. The second area includes the finish room, where cabinet doors and molding are finished and assembled. At the time of the visit to the facility, Westwood was beginning to switch to a new product line and had implemented a plan to minimize leftover coatings and components from the old product line. The new product line is finished with the low-HAP coating system.

The facility has one coating line that moves at approximately 26 feet per minute. The parts move on a conveyor system that has 100 trays with paper honeycomb-type disposable liners. These liners are replaced every 3 to 4 months, depending on the facility's production volume. The parts are coated in three steps. The first step in the coating process is a spray booth used to apply stain to the parts. Some stains are wiped after they are sprayed on the piece, and some are not. The parts then pass through a flashoff oven, which uses heat from the other ovens in the line. The parts may then be touched up by hand using thinning solvent or additional stain if the color is uneven, particularly for darker stain colors. A catalyzed sealer is then applied, the parts pass through another oven for drying, and the parts are sanded by hand. Finally, a catalyzed topcoat is applied, and the parts pass through the final drying oven. All coatings are applied using HVLP guns manufactured by Kremlin.

One finishing cycle takes approximately 45 minutes to complete; cabinet doors pass through the line twice so both the front and back are finished. When the facility begins coating the new product line, some of the colors will require a dye before the stain is applied.

The stains are received in 55-gallon drums; the sealer and topcoat are received in large stainless steel totes. The stains are pumped from the drums directly to color-dedicated spray guns at the coating line. Therefore, a color change does not require the lines and guns to be flushed with solvent. The sealer and coating are catalyzed 5 gallons at a time and taken in buckets to the finishing line. At the end of the shift, any unused coating is put back into the tote. The totes are returned to the coating supplier and reused. The empty stain barrels are given away or crushed as scrap.

Cleaning Operations

The facility uses thinner purchased from their coating supplier, Akzo, to clean the spray guns that apply the catalyzed sealer and topcoat. The guns used to apply the stains are cleaned less often, since each color has a dedicated line and gun. The thinner contains less than 10 percent HAPs, per the Wood Furniture NESHAP requirements. They spray the thinner directly into the spray booths, and estimate approximately 3 gallons of cleaning solvent is used per day. The spray booth filters are changed every one to two days. Both the spray booth filters and tray liners are landfilled. The facility produces no hazardous waste.

Conversion to High-Solids/Low-HAP Coatings

Westwood has transitioned from a toluene- and xylene-based catalyzed conversion varnish system to low-HAP, catalyzed sealers and topcoats and low-HAP stains. Westwood experimented with some waterborne coatings, but experienced problems with dry time, clarity, and grain raise. Cost also was an issue in choosing not to switch to waterborne coatings (equipment changes would have been necessary). They tested a total of about 150 gallons of waterborne sealer and topcoat, as well as a small amount of waterborne stain.

The switch to low-HAP coatings required no changes to the configuration of the coating line and no additional operator training. The new HVLP guns did require some operator training. The operators received instruction in the technical aspects of the new product line's colors and the additional dye that some pieces will receive prior to the stain. Some training will be provided by the coating supplier's local representative, who visits the facility weekly.



Product sample

Costs

All coatings are applied using HVLP guns manufactured by Kremlin. These guns were purchased to replace older HVLP guns and air-assisted airless guns. New guns and lines were purchased and installed at a cost of approximately \$80,000. The old HVLP guns had been adjusted to use a higher pressure and larger tips so they could apply sufficient coating for the speed of the line. Therefore, they were not achieving the high transfer efficiency typical of HVLP guns. They also were heavy and cumbersome for the operators to use. The newer guns are lighter and supply a sufficient amount of coating to accommodate the speed of the line. The new sealer and topcoat cost about \$1.30 more per gallon, but with the new HVLP guns and the higher solids content, Westwood will be applying less coating per piece. Therefore, they are likely to experience a cost savings.

Emissions

Westwood's permit limits them to 276 tons of VOCs per year. They also are subject to the Wood Furniture NESHAP. All their new coatings have HAP contents below the NESHAP limits. According to data supplied by the facility, in 1997, the average emissions were 2.51 pounds of VOCs and 1.28 pounds of HAPs per cabinet. The facility began spraying the new low-VOC/HAP coatings in 1998, and expected a decrease in emissions as well as increased transfer efficiency due to the new HVLP guns. For the first half of 1998, facility data indicated that VOC emissions were 1.74 pounds per cabinet and HAP emissions were 0.86 pound per cabinet.