

PILOT LINE PROFILE

Protech Provides Full-Scale UV Powder Demonstration Facility

Protech Powder Coatings, Toronto, Canada, came to realize that having the capability to run full-size, 3-D parts was critical to developing their line of powders for challenging applications. Without their own full-scale line, they were limited to running small test plaques and relying on their customers

new powder formulations and develop our technology without relying on borrowed time from our customers or industry partners. In fact, we can develop new processes for our customers here and accelerate our customers learning curve in the field.”

The line incorporates a conveyorized pre-heat oven, powder booth, gel oven and UV-curing chamber to make UV-powder coated parts. The process is entirely monitored and electronically controlled to provide repeatable test results.

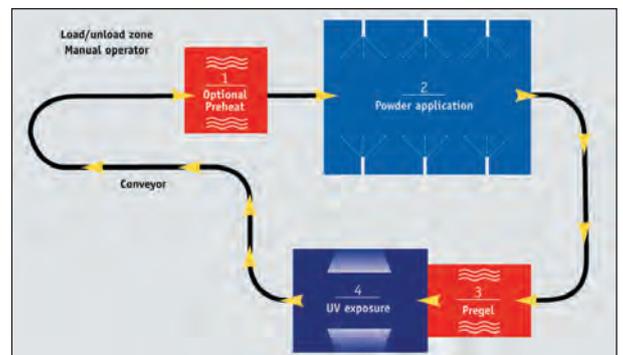
The preheat and gel ovens use a combination of infrared and gas-convection heating to provide both rapid heating of the substrate and better control over uniformity than could be achieved with either infrared or convection heating alone. Another advantage of the combination oven is that the rapid heating occurs with little air movement—causing less

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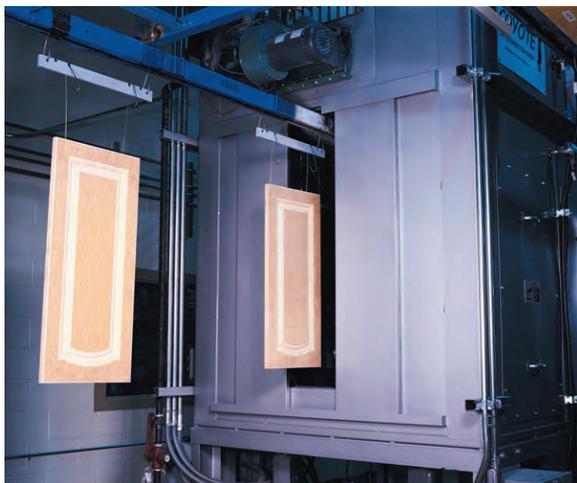
—Richard Robidoux, Protech’s product manager

and other industry suppliers for running actual customer parts. The time required to turn around new powder formulations was unnecessarily long and didn’t allow for experimenting to find the best process.

“If we wanted to achieve rapid progress in developing UV powder for our customers, we had to make a serious commitment to our lab capabilities,” explains David Ades, Protech Chemical’s managing director. “The pilot line allows us to turn around



Pilot line configuration.



Preheat and gel ovens use a combination of infrared and gas-convection heating to provide both rapid heating and better control over uniformity.

opportunity for airborne contaminants to spoil the paint finish. Typically, the dwell time in each of these ovens is between 1-1.5 minutes.

“The pilot line is a great place to show off how impressively fast UV technology is to prospective users,” says Richard Robidoux, Protech’s product manager. “When customers come from a trial on a thermoset line and then come here, they just smile and shake their heads. There’s just no comparison with how rapid UV can process a part.”

Boards processed on the line usually do not experience temperatures much above 180°F. This compares favorably to the higher temperatures (300-350°F) normally used in thermoset powder coating lines for wood. This lower temperature processing produces no cracking of the boards, warping or damage to the internal structure of engineered wood such as medium density fiberboard (MDF).

Powder coatings are applied either automatically or manually in a spray booth.

The spray booth provides uniform airflow, controlling the film thickness of the applied powder. Controlling the film (typically in the 2-3 mil range) allows customers to save money by

preventing too much powder from building up on the part.

Finally, after being melted and flowed the powder is cured by passing the product between banks of microwave-generated UV light. The lamps can be easily reoriented for different part geometries. This gives the line maximum flexibility to accommodate a wide range of customer needs.

Lamps can be changed to provide a variety of spectral output characteristics tailored to coating formulations.

“The opportunity to see a part processed as it would in their own plant is an important step in advancing the acceptance of UV powder coatings with customers,” says Paul Mills, Protech’s UV powder specialist. “Many of those in the wood and plastics industry aren’t familiar with UV or with



Powder coating being applied in a spray booth, which provides uniform airflow controlling the thickness of the applied powder.

powder coatings—so it’s a double leap in technology for them. It can be daunting and a ‘seeing is believing’ experience is critical in bridging the confidence gap.” ▸



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