

Examples of UV Curing Three-Dimensional Parts

Each of the following briefly explains how a three-dimensional (3D) part was coated and cured with UV. Perhaps these examples will spark ideas for how you can take advantage of UV curing for your 3D part coating process.

Plastic Cell Phone Cases

Coating Application: A clear top coat is robotically sprayed onto the plastic cell phone cases which are fixtured in a vertical position on a horizontally moving conveyor.

UV Curing Chamber: Four cell phone cases stacked vertically move past stationary UV lamps. As the conveyor moves horizontally, it also moves parts vertically at about a 45 degree angle. The UV lamps are angled such that leading and trailing edges and top and bottom edges are cured as well as the front surfaces as the parts move past. Since the customer runs many different types of parts on this line, the lamp orientation is adjustable.



SMC Automotive Body Panels

Coating Application: Hybrid UV/thermal cure liquid applied with robotic electrostatic atomized spray onto large SMC composite automotive body panels.

UV Curing Chamber: The large part travels in a horizontal position past stationary UV lamps placed in rows above and below. Additional lamps are angled to expose the leading and trailing edges of the part.

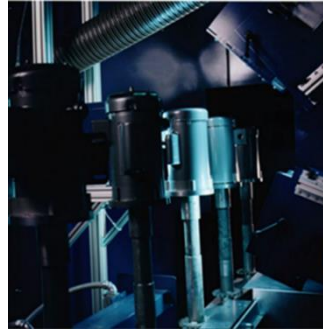


Baldor Electric Motor

Coating Application:

UV powder electrostatically sprayed onto electric motors.

UV Curing Chamber: A variety of motor sizes move through this 3D UV curing system. The fully assembled motors are mounted in a vertical position onto rotating spindles that move the parts past the UV lamps while rotating the part. A total of three UV lamps were used, one for the vertical surface and one each angled for the top and bottom surfaces. By increasing the part movement, the number of UV lamps required can be reduced.



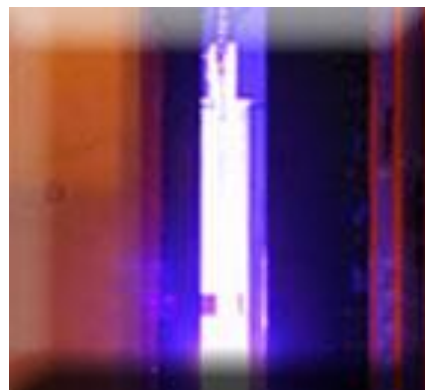
Decorative Veneer – Furniture Components

Coating Application:

UV powder electrostatically sprayed onto medium density fiberboard (MDF) furniture components.

UV Curing Chamber: This system was designed to handle a wide variety of sizes of primarily thin furniture component parts such as desktops, keyboard trays, desk side pieces, etc. Parts hang from an overhead conveyor and move past two banks of lamps. Each bank is angled slightly to expose the leading and trailing edges of the part. A single lamp is angled at the top and bottom edges. The bottom lamp is designed to move up to meet shorter parts. All of the lamps are supported by fittings to a pipe structure that allows each lamp to be tilted as needed for an individual part run.

Typically, different size parts are not run at the same time. Instead, parts of one size are run and the lamps then repositioned for the next run of different sized parts.



Golf Balls

Printing/Decorating Application: A pigmented ink is pad-printed onto the golf ball, which typically sits on a fixture that can rotate the ball for printing on each of four "sides" as needed.

UV Curing Chamber: Following the application of each color, the ball passes in front of a UV lamp. If that color was printed onto more than one side, the fixture rotates the ball for exposure on all sides, before indexing to the next print station and subsequent curing units.

Coating (top coat) Application: Golf ball is spray-coated as it sits on a rotating fixture that travels through the coating zone followed by the UV curing zone.



Plastic Cosmetic Bottles

Coating Application: Intricate, designer-shaped plastic cosmetic bottles are screen printed with highly designed multi-color (up to 4-color) graphics. The bottles spin, tilt or change direction to receive the ink on the complex surfaces.

UV Curing Chamber: This system can cure a variety of shapes and sizes of bottles in up to four colors. Following each screen-printing station, the bottle, which sits upright on a horizontal conveyor, passes by a fixed UV curing lamp.

Typically, these lines are indexing the bottles at a rate of up to 60 bottles per minute.



Wood Profiles/Moldings

Coating Application: A wide variety of highly contoured wood profiles and moldings are sprayed with a 100% solids urethane coating.



UV Curing Chamber: The wood moldings lie flat on a horizontal conveyor as they move past several UV lamps positioned at a variety of angles to adequately expose all top surfaces of the different shaped parts. One lamp cures the horizontal surfaces, one each placed vertically to cure the vertical "sides" of the moldings, and two more are placed at 45 degrees from horizontal to cure additional contours.



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