

# UV Powder Provides Environmental Solution for Office Furniture

By Susan Mitchell

**F**ounded by Hans G. Knoll in 1938, as the H.G. Knoll Furniture Company, Knoll, Inc. (East Greenville, Penn.), is recognized internationally for creating workplace furnishings that inspire, evolve and endure. The company has received hundreds of design awards since its founding, and has objects on display in major art museums around the world.

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More than 30 Knoll products are included in the permanent Design Collection of The Museum of Modern Art in New York City. Knoll has locations around the world, including North America, Europe, Asia and Latin America, and operates four manufacturing sites in North America and two plants in Italy.

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## **Environmental Focus Leads to UV Powder**

It was this environmental focus that first drove Knoll’s interest in powder coating on medium density fiberboard (MDF). Lou Newett, Knoll manager of environmental health and safety, says that the company knew from its use of powder on metal that powder coating was good for the environment due to its high transfer efficiency and reduced waste. Knoll began experimenting with powder on MDF in the early 1990s, first with thermoset and later with UV powders.

In 1999, Knoll East Greenville installed a thermoset powder coating line to coat the vertical MDF components. However, the thermoset powders did not meet the requirements for the horizontal writing surfaces, so space was built into the production line for a future UV-curing chamber. Knoll East Greenville manager of advanced technology, Jay Fegely notes, “In 1999 the powders just weren’t where we needed them to be, but we were confident that eventually they would be. We also knew from our testing that UV powder formulators would produce resins that would provide the hardness and chemical resistance needed for horizontal surfaces. The challenge for

—continued on page 33



*The A3 office system is designed to enhance comfort and create a dynamic and responsive workplace.*

—continued from page 31

the UV formulators was not only the hardness but also the aesthetic values needed—smoothness and low gloss.”

### Perfect Timing

As luck would have it, in 2001 the Knoll designers wanted to introduce a new office system with a very modern, curvilinear shape for work surfaces. This system, called A3™, originally called for a plastic molded work surface, but this was found to be too expensive. “It was perfect timing really, because we were able to show the designers how it could be done economically with UV powder instead,” Newett comments. A UV-curing system was installed in the powder coating line in 2001 and the A3 system was made commercial.

A3 is a unique alternative to conventional open-plan office systems,

designed to enhance comfort and create dynamic and responsive workplaces. Workstations can be arranged and clustered without the typically rigid planning modules or fixed angles so common in open offices. The UV powder coated worksurfaces incorporate resilient palm rests.

### The Powder Coating Line

MDF parts, as large as 10' L X 42" H X 3" thick, hang from an overhead conveyor. Typical MDF thickness is 5/8-1 5/16", but the 3 inches allows for a curved part. The MDF board has a UV-cured filler to insure low mils during application and acts as a sealer coat. No special moisture content is specified other than the industry standard 5-8%. The parts first enter a combination infrared (IR)/convection preheat oven and then an automated

electrostatic spray booth, where parts receive 2-4 mils of UV powder (thermoset powders are applied at 3-5 mils). Their powder supplier provides two colors of polyester UV powder for the work surfaces—pale white and glider gray. Following powder application, the parts enter the melt/flow oven, again a combination IR/convection and then finally the UV-curing chamber.

Two different types of arc lamps are used for UV curing: gallium lamps for pigmented colors and mercury lamps for clears—to enhance the cure of the pigmented colors. Depending on the color (light or dark), the operators have the ability to adjust the intensity of the UV lamps via a computer. Line speeds are typically 10 feet/minute.

Prior to the use of UV powder, work surfaces were either laminated or veneered. The steps involved were much more labor intensive than powder on



*Knoll's Morrison office system is now being coated with UV powder.*

wood. "The estimated time to produce a laminated top is approximately 2.5 hours from start to shipping, whereas powder on wood is approximately 1.5 hours to ship," Fegely comments.

### **UV Powder Enables Designing for the Environment**

Within the last year, Knoll has begun coating the work surfaces of its Morrison office system with UV powder. The Morrison system is the ultimate panel system for the entire workplace—from open plan workstations to full privacy office enclosures in a more traditional aesthetic design than the A3 system. But UV powder has allowed some updating of the line including a new curvilinear work surface with a waterfall edge and no glue lines on edge.

Both Fegely and Newett assert that UV powder has met their expectations

and that it's a reliable technology. In addition, Fegely says, "UV powder allows our designers to design for the environment, which is always a goal at Knoll, and still meet the needs of the market. We want to be known for high performance as well as distinctive and enduring designs. UV powder enables us to achieve both." ▶

*—Susan Mitchell is a business development manager for Fusion UV Systems, Gaithersburg, Md.*

## **Canadian UV Powder Coater Sees Growing Future**

an McPhail, manufacturers representative for RadEx Powder in Ontario, Canada, says he's optimistic about the market for UV-powder coated wood components. A carpenter by trade with experience in the wood office furniture industry, McPhail represents several other firms in the wood industry and has represented RadEx for more than two years. RadEx installed their UV-powder coating line in August 2001 to provide custom powder coating services.

Though it has been a rough two years following the fall of the "dot coms" and the subsequent glut of office furniture on the market, he says the office furniture business is starting to turn the corner and the store fixtures/display market has been strong. His sales efforts cover both North and South America and have resulted in some significant projects. Some of RadEx Powder's recent work includes store fixture components for automotive dealership kiosks, retail watch displays, medical cart components and coffee dispensing centers for offices.

In general, McPhail says the manufacturers of furniture and store fixture displays are aware of UV-powder coating technology, but typically they are building according to the designers specifications of colors and finishes. "The designers of office furniture and store fixtures are not aware of the design flexibility UV powder offers and the performance that is possible. RadEx will be doing more, including a new brochure and a Web site [www.radex.ca](http://www.radex.ca) to increase awareness among designers," McPhail commented.

*—Susan Mitchell*