Once a maker of Hysters (lift trucks), BOMAG, Kewanee, Ill., is a leading manufacturer of machines for the compaction of soils, asphalt and refuse as well as stabilizers and recyclers.

A lot goes into finishing parts of this size, and prior to April of this year, BOMAG utilized two finishing areas to do the job. The first was a downdraft paint booth that allowed for the manual application of liquid and powder coatings. This system used a power-and-free conveyor for bringing parts into the paint booth. The part would be manually painted with either liquid or powder coatings, depending on the part style and mass.

Another liquid finishing area is still used for certain components of the BOMAG product line, which currently are not candidates for powder coating, such as the inner hubs of the compaction wheels.

Rewind to February 2006. According to Julie Jackson, vice president of operations at BOMAG, the machine manufacturer was not happy with the amount of time spent on fixing post-assembly finishing. With 120 operations employees running two shifts, “One major issue was that we were spending a significant amount of time sanding down and re-
painting our units after assembly because of damage to the paint during the assembly process," Jackson says. So in an effort to find a time-saving solution, BOMAG began to research the possibility of installing a dedicated powder coating line.

According to Jackson, BOMAG’s sister company in Boppard, Germany, had been using a power-and-free powder coating system for some time, so the company was aware of powder’s benefits. She also says that they had been using powder on their power-and-free system in Kewanee, so they knew that powder was the way they wanted to go.

**BOMAG is able to accomplish in a few hours what used to take a whole week.**

“We also wanted to improve the quality of our finish overall,” Jackson says. So the search for just the right system began.

“After a lot of R&D on our part,” Jackson reveals, “we sent frames and parts to [several] players [for evaluation]. Then we put a team together, which probably visited over 20 sites.” From there, Jackson says that BOMAG was able to narrow down the technology that they wanted to partner with.

Ultimately, BOMAG chose a powder coating system from Midwest Finishing Systems Inc., Mishawaka, Ind., that runs at a line speed of 4 to 6 fpm, applying two primary colors: dark gray and yellow, supplied by Diamond Vogel and matched to BOMAG’s strict specifications.

**Powder Coated Tough**

Parts that weigh as much 4,400 pounds and are as thick as 8’ can be cured in BOMAG’s IR/convection curing oven. The part opening is 72” wide x 108” high to accommodate a part 66” x 102” with a length up to 168”.

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When a manufacturer of heavy road construction products for compaction needed to reduce its post-assembly finishing, it turned to a powder solution.
Midwest provided the overhead 6” I-beam conveyor, washer, dry-off oven, 22’ tall environmental room, combination IR/convection curing oven and cooling tunnel as well as controls for data logging and energy savings. The part opening is 72” wide x 108” high to accommodate a part 66” x 102” with a length up to 168”. Maximum part weight is up to 4,400 pounds with a maximum thickness of up to 8”.

Wagner Systems Inc., Carol Stream, Ill., provided the powder coating application equipment. This part of the system consists of two powder booths, the first of which is a cartridge booth with a single-walled plastic upper structure and stainless steel floor and vestibules. It is designed to allow for the application and recovery of the two colors. Each dedicated cartridge collector has a rotary sieve for conditioning the virgin and reclaim powder. There are 19 automatic powder guns in this booth that automatically coat approximately 85% to 90% of the part. Three fixed pit guns are used for coating the bottom of the parts. Two top profiling guns (one per side) are for coating the top of the parts by maintaining a predetermined gun-to-part distance, which is accomplished through coordination by vertical light bars and long-stroke reciprocators.

Fourteen side guns (seven per side) on reciprocators also maintain gun-to-part distance through horizontal light bars and positioners. The specific gun configuration was determined during testing that took place over several days at the Wagner powder lab in Carol Stream, Ill.

All 19 PEA-C4 automatic powder guns, EBA reciprocators and ZW positioners are controlled by Wagner’s...
DigiTech controls. Additional controls capabilities include recipe selection/editing, events recorder (tracking of all changes to operating parameters) and general system operation are jointly operated via the PC Tech touch-screen controller.

As parts exit the automatic powder booth, they remain at the same height as they enter the manual touch-up booth. This booth is a large walk-in powder booth made of Wagner’s single-walled plastic with a dedicated cartridge collector for spray-to-waste operation. All necessary touch-up is accomplished with one operator using a Bravo manual powder coating unit, which is equipped with two hoppers, each dedicated to BOMAG’s gray and yellow colors. As the part enters the manual booth, the operator has the ability to provide touch-up to the lower areas of the parts. As the part travels through the 24' long booth it is lowered in elevation by approximately 3' to allow the operator access to the upper portion of the part in order to complete the required manual touch-up.

Upon completion of the powder coating process, the parts are conveyed to the curing oven. Depending on the mass of the parts, IR emitters may be engaged to assist the cure of extremely thick sections of metal.

Since the system has been operating, Jackson says that there is a major difference in the amount of time it takes to complete a project. “We went from taking a week to finish a project to less than three hours. It is a huge difference,” she says.

Jackson points out that BOMAG is able to powder coat an entire chassis, up to a 30 ton machine. “We are not

There are 19 automatic powder guns in this booth that automatically coat approximately 85% to 90% of the part. Three fixed pit guns are used for coating the bottom of the parts. Two top profiling guns (one per side) are for coating the top of the parts. Fourteen side guns (seven per side) on reciprocators maintain gun-to-part distance through horizontal light bars and positioners.
only doing the chassis frame, but we also are doing all of the small parts that go along with it,” she says.

The company’s ultimate goal is to virtually eliminate any post assembly painting. “We have a very flexible system that will afford a wide range of products...We are really just starting and we have been very pleased with the performance and the progress that we have made,” Jackson says.

What is the next production obstacle that BOMAG would like to tackle? “The tasks of hanging, masking and handling materials are our next huge challenges,” Jackson says. She came to the right place. See page 30 for Let’s Hang, an article about how to specify hooks and racks; and as for masking, see Making the Most of Your Mask in our Spring 2007 edition, which can be found online at www.powdercoating.org.

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Fun Fact
BOMAG is a German acronym which stands for Boppard’s Operations and Machine Manufacturers.

Compacting Time with Powder