STONHARD *Solutions*

Epoxy floor ends high maintenance

Painted floor required recoating and polishing
New epoxy floor has minimal maintenance needs

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Nypro Inc.'s Swisstech Room contains heavy equipment for injection molding. Continuous traffic from hand trucks, some with hard wheels, caused paint on the floor to chip and peel. Maintenance of the floor was expensive, including regular repainting, waxing and polishing. A multi-layer epoxy floor system was applied that has an estimated life of 10 to 15 years under prevailing conditions, and maintenance has been reduced to just regular moping.

Improvement Needed

Nypro, Inc., with headquarters in Clinton, Mass., is the world's largest custom injection molder, with numerous plants all over the world. Swisstech is a subsidiary of Nypro and a joint venture with a Swiss company. The Swisstech Room at the Nypro facility in Clinton covers about 14,000 square feet and contains heavy equipment, generally ranging between 2 and 10 tons. A considerable amount of work is done for the medical field, so a clean and dust free environment has to be maintained, although the room is not classified as a clean room. Also, customers are invited to see the equipment and the products, so aesthetics, in general, is important.

Originally, the concrete floor was painted. Traffic, other than foot traffic, consists mostly of hand trucks used to move pallets with heavy tools (dies). Forklift

In the new facility, the aisle color is different from that of the machining area.
The machines will be set on color-coded pads.

trucks are used occasionally. Some of the hand trucks used to move heavy loads have hard wheels, and the painted floor suffered from continual chipping and peeling. Dust would then be raised from the exposed concrete.

According to Dick Staples, Facilities Manager at the plant, the floor had to be painted periodically, generally on an annual basis. The complete cost of repainting, including floor preparation, amounted to $12,000 to $15,000 annually. Other expensive maintenance included regular waxing and polishing on a semi-annual basis.

To avoid this on-going expensive and time-consuming maintenance, and to improve the appearance of the room, it was decided

to investigate other types of floor coatings.

Multi-layer Epoxy Chosen

After investigating all types of flooring and obtaining bids from several companies, it was decided to install a flooring system consisting of five parts:

Primer: a two-component, penetrating, moisture-tolerant, epoxy primer

Basecoat: a three-component, troweled mortar base consisting of epoxy resin, curing agent and finely graded silica aggregate

Undercoat: a two-component thixotropic epoxy undercoat sealer

Aggregate: brightly colored quartz aggregate broadcast onto the surface

Sealer: a high performance, two-component, clear epoxy sealer

A blue and white tweed color was chosen for the aggregate.

As noted by Dick Staples, the plant closes down for a period in July and over the Christmas holidays in December. It was decided to have the manufacturer install the flooring system in December during the regular shutdown.

The floor first was shotblasted with angular shot to remove all existing paint layers. Hand scrapers were used in corners. Then, the floor was directly shotblasted to create a good surface profile, allowing for a permanent bond of the new flooring system. After application of the primer, installation of the flooring system followed.

The base was mixed and screed-applied, then troweled to a tightly closed finish. At least 5 hours were allowed for a cure, after which all surface imperfections were removed by grinding, as necessary. The undercoat was mixed and poured onto the floor in the form of a bead. The material was spread over the floor surface using a notched rubber squeegee, followed by rolling with a looped roller.

The aggregate was broadcast immediately, using a spraycaster, into the freshly applied undercoat. At least 6 hours were allowed for a cure. The floor was then swept to remove any loose aggregate particles. All excess particles were vacuumed from the floor.

Finally, the sealer was mixed and applied according to standard directions to complete the system. This flooring system was applied to approximately 12,000 square feet. About 2,000 square feet under heavy machines will be recoated when the machines are moved.

Same System – New Room

According to Staples, the new flooring system provided an immediate payback due to the drastic reduction in maintenance.

The same flooring system has since been installed in a new construction project at the Nypro facility. This included 45,000 square feet in a new molding room and 20,000 square feet in a warehouse that will experience constant forklift traffic with heavy loads.

The new room is a Class 100 clean room and has an intricate color pattern. The aisles are one color and the machines sit on different, color-coded pads. This increases safety as well as providing a more pleasing and aesthetic environment.

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