

SAFETY NET AUTO SHOP QUARTET CONCRETE CASE

JANUARY 2017

CoatingsProTM

M A G A Z I N E

PAY TO PARK

15 YEARS
Celebrating
Anniversary Issue!



2017 COMPANY PROFILES

TOP COATINGS INDUSTRY COMPANIES
PG.56

TICK TOCK FOR SPF ROOF «

STEEL FLUE CLIMBERS «

ONLINE REVIEWS «

CONCRETE

FLOOR

EPOXY

New ESD Floor Drives Down Static at Auto Parts Plant

BY BEN DUBOSE

PHOTOS COURTESY MICHIGAN SPECIALTY COATINGS

When the worldwide headquarters and technical center of Dura Automotive Systems in Auburn Hills, Michigan, needed a new floor as part of its renovation project, an electrostatic discharge (ESD) epoxy coating system was a must. Dura is an independent designer and manufacturer of automotive components such as control systems, and the technology involved makes static control essential.

"This customer does electronics manufacturing," said Jonathan Winters, president of Michigan Specialty Coatings, which was chosen as the contractor to install the ESD floor at Dura. "They're not just assembling the parts. They're actually making them. So that's why the static control is so crucial."

Since static electricity results from friction between two materials, walking across a floor is a key source of static buildup. For humans to feel it, the discharge must be at least 3,000 V. But many electronic parts are sensitive to electrical interference and can be damaged by a discharge as low as 20 V.

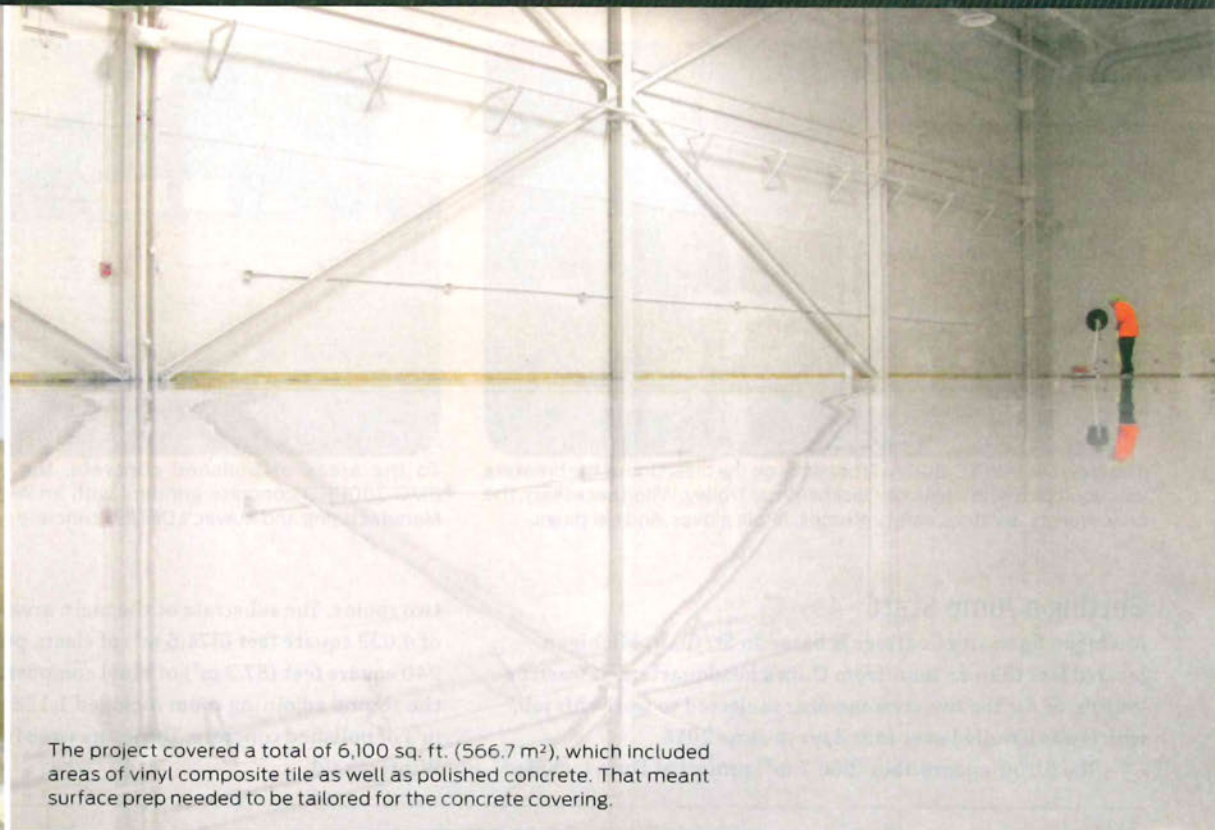
"You've got all this electronic equipment that is very sensitive, and what we're trying to do is reduce the amount of voltage generated by a person or a piece of equipment that is moving across the floor," said Jason DeYoung, business development manager with Protective Industrial Polymers, which manufactured the ESD coating system used at Dura. "The auto industry is a big emphasis for us. For years and years, they've made transmissions. Now all of a sudden, they have computers attached to these transmissions."

"Basically, they have these circuit boards that are sitting on well-grounded ESD tables, but then they have these moving bodies of static, and the piece they're trying to protect is the most grounded thing in the area," DeYoung added. "It's almost a lightning-rod effect. The boards are essentially lightning rods, and we are essentially moving balls of static. The last thing we want is an ESD event to a sensitive component."



At an automotive center, a five-person crew at Michigan Specialty Coatings applied an electrostatic discharge (ESD) floor coating system to the concrete floor in its home state. It took four days to complete the project.





The project covered a total of 6,100 sq. ft. (566.7 m²), which included areas of vinyl composite tile as well as polished concrete. That meant surface prep needed to be tailored for the concrete covering.





The crew use Hilti TE-800 AVR breakers on the tiles. One of the breakers was equipped with a Makinex Jackhammer Trolley. When necessary, the crew wore respirators, safety glasses, nitrile gloves, and ear plugs.



To the areas of polished concrete, the crew used Diamatic's BMG-780PRO concrete grinders with an A-101 Pulse Vac from BW Manufacturing and Ruwac's DS1750 concrete vacuums.

Getting a Jump Start

Michigan Specialty Coatings is based in St. Clair, Michigan — located less than an hour from Dura's headquarters. It wasn't a long drive for the five crew members selected to work this job, which was handled over four days in June 2016.

The 6,100-square-foot (566.7 m²) project at Dura included

two rooms. The substrate of the main area to be coated consisted of 4,032 square feet (374.6 m²) of clean, polished concrete, and 940 square feet (87.3 m²) of vinyl composite tile. Meanwhile, the second adjoining room included 1,128 square feet (104.8 m²) of polished concrete. The joints were in excellent shape, Winters said.

An active certification equals an active career!

Keep your career active by keeping your certification current.

By making sure that your certification does not lapse, you will maintain your hard-earned credentials and continue to set yourself apart from the competition.

You can also avoid a re-instatement fee or possible suspension of your certification, which could affect your current and future jobs. Upon renewal your certification will bear the same value and will continue to represent your professional achievement of certification with NACE.

Certifications are eligible for renewal beginning 90 days prior to the expiration date.

Visit naceinstitute.org/renewal to
renewal your certification today!



Write in Reader Inquiry #374



Despite a leaky roof, the crew next had to patch any necessary areas with Protective Industrial Polymers' 1000 FS. That was mixed with CAB-O-SIL TS-720 and then reground to help with the transitions.

The crew was off to the races with surface preparation. Wearing full-face piece disposable respirators with N95 and 3M's organic vapor filters, safety glasses, ear plugs, and nitrile gloves, the crew began by profiling the substrate to a Concrete Surface Profile (CSP) of 3. They used Diamatic's BMG-780PRO concrete grinders in conjunction with an A-101 Pulse Vac from BW Manufacturing and Ruwac's three-phase DS1750 concrete vacuum (Winters' "Little Red").

"You need the big boys [vacuums] to stay with the big grinders," Winters said.

To remove the tile portion, the crew used TE 800-AVR breakers from Hilti. One of the breakers was equipped with a Makinex Jackhammer Trolley.

After preparation, the crew drove home to rest on a rainy night before beginning the ESD system application on day two.

When the crew returned the next morning, they encountered an unforeseen problem: Heavy overnight rain had caused major pooling on top of the facility, and rain water had begun leaking through the heating, venting, and cooling system and onto the project floor.

The crew primed the concrete with Protective Industrial Polymers' 1000 HB-FS. That was applied at 2–4 mils (50.8–101.6 microns) dry film thickness (DFT) and left to cure overnight.



JOB AT A GLANCE

PROJECT:

Apply an electrostatic discharge (ESD) epoxy floor coating system to an automotive center

COATINGS CONTRACTOR:

Michigan Specialty Coatings
5407 Gratiot Ave.
St. Clair, MI 48079
(866) 453-7699
www.mscfloors.com

SIZE OF CONTRACTOR:

~45 employees

SIZE OF CREW:

5 crew members

PRIME CLIENT:

Dura Automotive Systems
1780 Pond Run
Auburn Hills, MI 48326
(248) 299-7500
www.duraauto.com

SUBSTRATE:

Concrete

CONDITION OF SUBSTRATE:

Good

SIZE OF JOB:

6,100 sq. ft. (566.7 m²) total

DURATION:

4 days

UNUSUAL FACTORS/CHALLENGES:

- » Heavy rain after the first day caused major pooling on top of the facility, and water began leaking through the system and onto the floor.
- » This type of floor required training the client on how to "use" it.

MATERIALS/PROCESSES:

- » Profiled the substrate with Diamatic's BMG-780PRO concrete grinders and BW's A-101 Pulse Vac and Ruwac's DS1750 concrete vacuums
- » Removed tiles with Hilti TE-800 AVR breakers; one breaker equipped with a Makinex Jackhammer Trolley
- » Patched with Protective Industrial Polymers' 1000 FS mixed with CAB-O-SIL TS-720
- » Applied Protective Industrial Polymers' 1000 HB-FS at 2–4 mils (50.8–101.6 microns) with a flat metal blade
- » Applied Protective Industrial Polymers' 1000 HB at 14–16 mils (355.6–406.4 microns) with a squeegee
- » Installed copper tape strips every 1,000 sq. ft. (92.9 m²)
- » Dip and rolled Protective Industrial Polymers' Protect 200 ESD (with Diamond Wear) at an average of 4 mils (101.6 microns)

SAFETY CONSIDERATIONS:

- » Wore disposable respirators with N95 filters, 3M organic vapor filters, safety glasses, nitrile gloves, and ear plugs



Using a ¼-inch (6.4 mm) notched squeegee, the crew applied Protective Industrial Polymers' 1000 HB at 14–16 mils (355.6–406.4 microns) DFT. They again left that layer to cure overnight.

"We had to stop the leaking before we were able to put any liquids down," Winters said.

Fortunately for the contractor, one of Dura's maintenance workers was on hand to head up to the roof and stop the leaks before the delay became too extensive.

Nonetheless, the project was halted for at least two hours, Winters said — adding that his team had to work even harder to make up that time before the close of business that day.

Three-Part System

The crew began their second day by patching the floor as needed, using the coatings manufacturer's 1000FS mix in tandem with the CAB-O-SIL TS-720 — a hydrophobic fumed silica — from Cabot Corp.

"All of the patching is done prior to putting the primer down," Winters said. "After we profile the floor and patch, then we'll come back and regrind all of our patches to make sure that it transitions perfectly."

Once patching was complete, Winters' crew started on the Protective Industrial Polymers' InhibiStat HB-Xtreme system. The nominal system thickness is 20 to 25 mils (508.0–635.0 microns), and when complete, it exhibits a satin finish and can be pigmented in many colors. Most importantly for an electronics site like Dura, it can dissipate a charge of up to 5,000 V to 0 V in under a tenth of a second.

"This extreme wearing system is best suited for areas exposed to heavy wheel and foot traffic, such as aisle ways and warehouse areas requiring ESD protection," DeYoung said.

The first step of the system was for the crew to apply Protect 1000 FS high-build, fast-curing primer. They applied it to the prepared substrate, putting it down with a flat metal blade to achieve a desired dry film thickness (DFT) of 2 to 4 mils (50.8–101.6 microns) before allowing it to cure overnight.

When they returned on day three — fortunately with no new rainfall — it was time to apply the body coat. Using a ¼-inch (6.4 mm) notched squeegee, the Protect 1000 HB coat was applied over several hours by the crew at a DFT of 14 to 16



Using an 80-grit sanding screen, the next step was to sand down the 1000 HB. They vacuumed up the fine dust before installing a copper strip every 1,000 square feet (92.9 m²).

mils (355.6–406.4 microns). Like the primer, the body coat was allowed to cure overnight.

The fourth and final day meant applying the topcoat. But before advancing to the finishing touches, the crew made sure to sand down all the coated floors while using an 80-grit sanding screen. Next, they vacuumed the floor and used a floor scrubber, Winters said, just to make sure that they had gotten off all of the fine dust.

Before installing the topcoat, the crew also put down the copper stripping tape needed to ground the coating to the metal support beams of the building. The crew used one strip for each 1,000 square feet (92.9 m²).

"When you use the copper tape, you have to go into a grounding point that actually physically touches and reaches the earth," Winters said.

The crew then applied the Protect 200 ESD topcoat, which included DiamondWear (DW) — an additive used for abrasion and wear resistance. An 18-inch (45.7 cm) roller with a ⅝-inch (9.5 mm) cover was used to dip and roll to achieve the desired DFT of approximately 4 mils (101.6 microns). Winters noted

"When you use the copper tape, you have to go into a grounding point that actually physically touches and reaches the earth," said Jonathan Winters, president of Michigan Specialty Coatings.





The final layer of coating was Protective Industrial Polymers' Protect 200 ESD, which was dipped and rolled at an average of 4 mils (101.6 microns). The coating was applied with DiamondWear additive.

that the additive was of particular importance.

"What the additive does is help increase the coefficient of friction on the floor, thereby providing extra slip resistance," Winters said. "It's a very fine powder abrasive, and the beauty about it is that it actually increases the abrasion resistance of the overall system."

"First, you're protecting the static dissipative coating more," Winters added. "The concept is that the additive is so concentrated in the mix that you end up wearing on the tip of the additive, rather than wearing on the polymer itself. You're protecting the floor and giving the customer a surface to wear on that is much harder than the coating, which thereby boosts the performance of everything. The other nice thing is that it's a finish that can still be mopped. Often times with a textured floor, you can't mop it. But this is a texture that's so fine that it can still be mopped."

With the application of the topcoat and additive, the crew's work was mostly complete!

Once the topcoat is applied, Michigan Specialty Coatings typically advises customers to wait at least 72 hours before returning heavy traffic to the floor.

Partnerships Drive Success

Both Winters and DeYoung insist their partnership was crucial to keeping the client informed of all associated risks with the new floor. For instance, DeYoung was sure to educate the customer on how to "use" the floor. At Dura, each individual who walks into one of the newly coated rooms has to step onto a meter beforehand to ensure that they do not

INDUSTRIAL BRISTLE BLASTER SYSTEM

Innovative Power Tool Surface Preparation

Clean and Profile in a Single Step

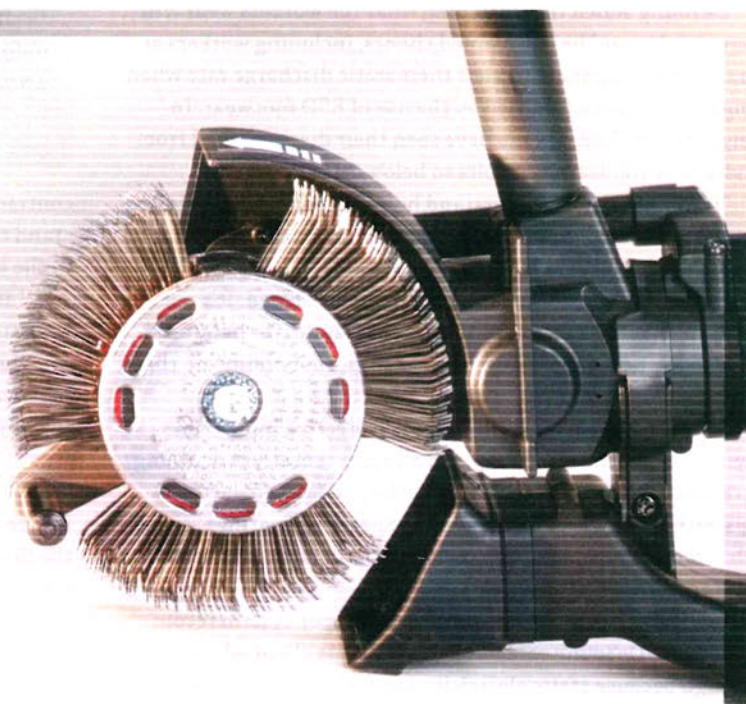
Near White/White Metal Clean

2.7 – 3.3 mil Profile

Pneumatic & Electric Tools



877 629-8777 • info@mbxit.com • www.mbxit.com



Scan or Visit www.mbxit.com/blaster
to see the Bristle Blaster in action!





Before leaving the jobsite, the team had to train the client how to “use” the new floor. Wearing appropriate footwear would help ensure that the ESD floor worked as expected.

have static on their body.

“So many customers say they need an ESD floor, but they don’t fully understand why they need an ESD floor, and they don’t understand all the other components that are vital to helping that floor perform,” Winters said. “If I have an ESD floor but someone walks in off the street in sneakers, jeans, and a polo, that ESD floor is not going to do squat.”

DeYoung added that watching what the workers wear will be crucial. He said he has trained clients, including workers at Dura, by allowing them to view their static discharge rate when using normal shoes followed by the use of ESD footwear. In many cases, he said, clients have seen their discharge fall from hundreds or thousands of volts to below 20.

“It’s important to understand how everything in motion in the room needs to be grounded, and that includes people, racks, and carts,” Winters said. “A lot of people think that once they put an ESD floor down, the problem has been solved. It’s not. That’s why having a manufacturer’s representative that understands how the total package works and can communicate that to the client is so, so key.”

Based in North Ridgeville, Ohio, Protective Industrial Polymers is a niche company, with all representatives doubling as trained ESD auditors. As a result, they’ve formed partnerships with contractors like Michigan Specialty Coatings — and both sides insist that a close working relationship is essential to a job’s success.

“Only part of my job is to make the proper system recommendation,” DeYoung said. “The other part is client education. It’s tough because static electricity can feel invisible. A lot of times, we feel a static shock when we walk across carpet and touch a door handle, but at those voltage levels, that’s often way higher than what it would take to damage a component.”

If the client understands how the ESD floor works in tandem with internal changes such as using approved footwear, the projects — like the one at Dura — are often a hit.

“The biggest challenge is connecting the dots,” DeYoung said. “A lot of times, clients will spend a lot of money to have the

VENDOR TEAM

3M

Safety equipment manufacturer
3M Center
St. Paul, MN 55144
(888) 364-3577
www.3m.com

BW Manufacturing

Equipment manufacturer
3706 Mill Creek Ave. NE
Cornstock Park, MI 49321
(616) 447-9076
www.bwmanufacturing.com

Cabot Corp.

Material manufacturer
2 Seaport Lane #1300
Boston, MA 02210
(617) 345-0100
www.cabotcorp.com

Diamatic USA

Equipment manufacturer
5220 Gaines St.
San Diego, CA 92110
(619) 295-5505
www.diamaticusa.com

Hilti North America

Equipment manufacturer
3701 W Royal Lane
Irving, TX 75063
(800) 879-8000
www.us.hilti.com

Makinex Construction Products

Equipment supplier
811 N Catalina Ave., Suite 1310
Redondo Beach, CA 90277
(407) 446-1966
www.makinex.com

Protective Industrial Polymers

Coatings manufacturer
7875 Bliss Pkwy.
North Ridgeville, OH 44039
(440) 327-0015
www.protectpoly.com

Ruwac USA

Equipment manufacturer
54 Winter St.
Holyoke, MA 01040
(413) 532-4030
www.ruwac.com

contractor install this great floor, but then they don’t understand the other aspects. It’s kind of like having the best seat belt in the world in your car, but then not putting it on.”

“The hardest part is the culture change, and getting workers to understand that even with the ESD floor, they can’t just walk into that area without having the appropriate footwear on and being grounded. But when we get clients to fully buy in, the results are tremendous.”

Final Tests

Before leaving the jobsite, Winters’ team makes sure to certify the floor and ensure that it is hitting its required performance properties.

“We know the manufacturer of the material will have already run quality control on it before it’s sent out,” Winters said. “But since the customer is paying for these properties, we always want to certify before we leave that everything tests out appropriately.”

In this case, the client’s new plant manager was extremely pleased. “I had worked with [him] in the past and had done ESD work for him,” Winters said. “He brought me over to this new facility because he was so happy with our company and our service. His comment to me when we were done is that it turned out even better than expected!” **CP**