

Case Study

PPG protects telecommunication poles from graffiti



Customer

Valmont Industries, Inc.
Omaha, Nebraska

Project Location

Southwest U.S.

Segment

General Industrial
(Telecommunications)

Coating Technology

Powder

PPG Coating

PPG PCU Anti-Graffiti (AG) Powder



Graffiti is bad for business

Unwanted graffiti can plague municipalities, businesses and communities that can hamper commerce, lower property values, encourage blight and can drain public resources that could be better spent on more meaningful and impactful ways.

This public nuisance costs U.S. taxpayers an estimated \$12 billion annually, but the real cost may be much higher since it's an under-reported problem.

Manufacturers of utility poles typically rely on an industry-standard two-coat anti-graffiti (AG) system that limits production capacity and presents challenges in the field after installation with cleaning and touchups.

Organizations that study graffiti have found that removing it within 24-48 hours has a profound impact on preventing reoccurrence since graffiti tends to have a cumulative effect.

But rapid removal isn't always so simple. It takes manpower and often harsh chemicals that require protection like goggles and gloves. Sandblasting and repainting may also

be necessary depending on the scale of the graffiti.

Coatings companies are developing safer, more sustainable solutions that are specially formulated to protect substrates from the effect of the graffiti paint itself and the chemicals often required to remove it.

The challenges with standard two-coat graffiti prevention process

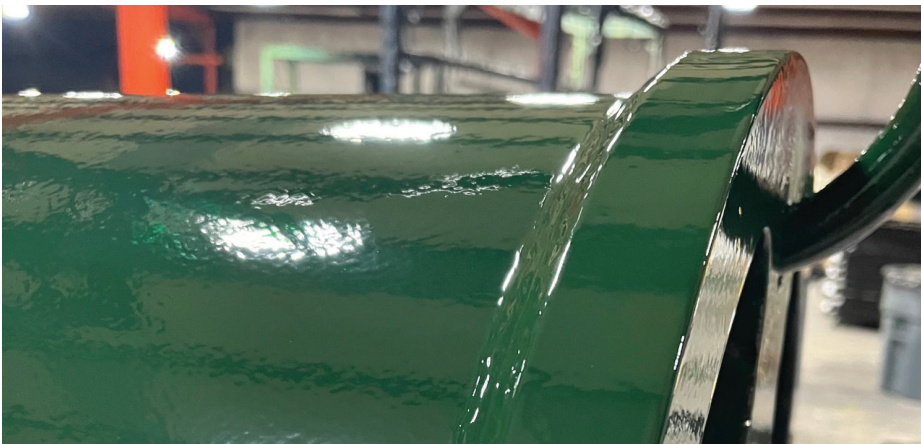
Until recently, manufacturers used an anti-graffiti protection system that consisted of a polyester powder basecoat for color and corrosion protection, followed by a clear anti-graffiti powder topcoat.

This standard system creates difficulties in certain areas of the coating industry primarily when assembled products have a variety of metal thicknesses. Ensuring the full cure of the basecoat and the anti-graffiti top can also be problematic.





Spider veining/bubbling in past two-coat polyester-based powder system



Results from the new PPG PCU one-coat anti-graffiti powder system

Rework is time-consuming

Analysis of the industry standard paint system was undertaken using a real-world case-study in partnership with Valmont Industries. Founded in 1946, Valmont is a leading global manufacturer of all types of pole products, including lighting and traffic poles, utility poles, and even cutting-edge telecommunication structures that support the future of wireless networks.

The case study included 65 complex pole products that were ideal candidates to test. They were painted using a standard two-coat process with an oven set point at 360° F (182° C) for curing.

Nine poles had to be reworked for blistering which required 26 total hours of labor (estimate per pole: 45 minutes sand and prep, 20 minutes to reheat, and 110 minutes re-coat and cure).

The other challenge is that this is a time-consuming and labor-intensive process itself, which was clear from the studies that Valmont Industries provided PPG. Each batch took about 60 minutes for preheat, basecoat application, curing, cooling, anti-graffiti topcoat application, final cure and cooling.

When reviewing parts of varying thicknesses for the study, Valmont Industries reported about 10% of the finished parts had defects that required reworking, including:

- Spider veining and bubbling in the clear coat after cure
- Brittle basecoat possibly from under or over curing
- Bubbling in the anti-graffiti coat

The study revealed that managing for uniform quality was challenging using the standard system on parts with varying degrees of thickness. Valmont recognized that this was not sustainable as they require the highest quality finishes for their products.

The Valmont team then engaged with PPG, a trusted partner, to see if the coatings company could help to improve quality and production efficiency by developing a new single-coat system that would address the issues identified in the root cause analysis Valmont completed.

Valmont tests the new PPG one-coat anti-graffiti coating

With valuable time, money and resources going towards reworking a large ongoing project, Valmont was eager to work with PPG to validate the new product in development.

“I happened to be visiting the Brenham plant for another project when John Hohn, Manufacturing Engineering Manager for Valmont, showed me their troublesome AG process that consisted of basecoat for color and a topcoat for graffiti protection,” said Todd Kiefer, PPG technical sales and service representative. “I was confident that our technical team could come up with a better solution.” He was right.

Within a few months, PPG had a new product ready to evaluate and Valmont began to trial the new one-coat system, PPG PCU Anti-Graffiti powder. The hope was to have the same or better AG performance while streamlining the production process, and dramatically reducing the amount of rework.

The PPG urethane powder, tinted in a specified color, cured in approximately

20 minutes at an oven set point of 435° F (224° C).

Not only did the PPG product cure in less time, but no additional steps were needed since the color and anti-graffiti protection is combined in a one-coat process.

Customer benefits for graffiti management and pole repair

Of course, no amount of time savings and process efficiencies would be acceptable if the coating didn't deliver on its graffiti resistant promise. Valmont conducted tests to determine the efficacy of the one-coat AG powder on this front.

Metal panels were defaced with sharpie markers and then set with a heat gun to simulate exterior conditions. The parts were then effectively cleaned with 90% isopropyl alcohol or TURTLE WAX® Scratch & Swirl Remover with no loss in gloss.

Additional panels were coated with a RUST-OLEUM® spray paint and then set outside for two weeks to cure. The same cleaning regimen was tested successfully, again with no loss in gloss.

Lineman will now be equipped to quickly clean graffiti without harsh chemical cleaners and the protective gear like gloves and goggles that they require.

Speeding up production

After getting an order for 37 5G light poles from a global

telecommunications company, Valmont plans to utilize the PPG one-coat PCU AG powder product. "Through this testing process and working closely with PPG commercial and technical teams, we expect to have little to no rework," says Bill Meyers, Senior Product Development Engineer for Valmont.

In fact, the previous 70-minute cycle per rack will drop to 25 minutes per cycle. By saving approximately 40 minutes – a significant savings in process time – Valmont can get more parts completed per shift, especially since the rework time will be virtually eliminated.

Single-source solution

The integrated poles that Valmont manufacturers feature a number of different parts – shrouds, fans, controllers – that are made from a variety of substrates like plastic, fiberglass and galvanized steel. Each of these substrates may be protected with a different coating formula in a liquid or powder technology, sometimes made by different vendors. Different chemistries and suppliers make it a challenge to create color matched aerosol paint for touchups.

Because PPG is a single-source supplier of liquid, powder and aerosol formulations for a wide-range of substrates, color matching is easier and more accurate

The PPG technical team spent months to develop a customized solution for the partnership with Valmont to

perfect application and color matching process, and test to ensure that the project was successful.

This partnership resulted in something that had never been done before – sending perfectly matched aerosol spray for touchups with every pole order.

"I can't say enough good things about PPG," said Bill. "Todd and the technical team were relentless in developing this system and were determined to find the best solutions. Beyond color-matching, PPG's lab and testing resources gave us the confidence to know that our poles are protected by a durable product that delivers on graffiti protection promises."

Better processes plus graffiti resistance

PPG's one-coat anti-graffiti system is a win for both Valmont's customers and the company itself.

Despite a simpler, more streamlined coating process, the poles are protected by durable coating that help to keep them beautiful, well-protected and easier for municipalities to maintain.

To learn more about PPG PCU Anti-Graffiti powder, visit ppgindustrialcoatings.com or call 1-800-258-6398.

This document contains general information only and should not be construed as creating any warranties, express or implied. Please contact a PPG representative for additional information.

The PPG Logo and We protect and beautify the world are registered trademarks of PPG Industries Ohio, Inc. Turtle Wax is a registered trademark of Turtle Wax, Inc. Rust-Oleum is a registered trademark of Rust-Oleum Corp. The IN Logo is a registered trademark of LinkedIn Corporation. The YouTube Icon is a registered trademark of Google, LLC. ©2023 PPG Industries, Inc. All rights reserved. 02/23

