The Cost of Fighting School Bus Corrosion

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Any company with ties to the steel industry likely knows the overwhelming costs associated with corrosion. However, it is only in recent years that conversations about corrosion and the extensive costs associated with it have started to take a front seat in political and economic conversations.

William Capizzano, President of Eco-Green Coatings

The study "Corrosion Costs and Preventative Strategies in the United States," performed in 2001 for the U.S. Department of Transportation by NACE International, or the National Association of Corrosion Engineers, states that nearly $276 billion per year can be associated with the damages and prevention of corrosion. That is at least 3 percent of the National GDP—a staggering number.

When it comes to the transportation industry, the numbers are still massive. Nearly $14.6 billion per year can be attributed to corrosion depreciation, and another $6.45 billion per year is spent on corrosion-related repairs and maintenance[1]. It is numbers like these that inspired the metals industry to work towards finding new ways to slow down corrosion or stop it in its tracks, entirely.

From the early days of zinc galvanization to advancements in metallurgical alloys, the goal has always been the same—to reduce corrosion by any means possible, including via the development of chemical treatments. While all of these advancements have made incremental changes towards the reduction of corrosion, many have worked by the same methods of cathodic protection—allowing a sacrificial protection to occur. Due to this mechanism, unfortunately, many of these advancements have the same weaknesses in regards to poor protection near edges, cutouts or areas where scratches or damages occur.

It wasn't until recently that breakthrough advancements have begun to overcome these weaknesses, some of those advancements coming from an area of coatings referred to as High Performance Conversion Coatings (HPCC). When an HPCC is applied to zinc or zinc-alloy coated steel, it chemically integrates and bonds with the base substrate, creating an integrated and permanent layer that provides tremendous corrosion protection.

Unlike previous advancements, this new category of coatings overcomes previous flaws by carrying the immense corrosion inhibiting properties to cut edges, holes, cutouts and even scratches or damaged areas. Additionally, it has been shown that HPCC can be post-painted during secondary processing, offering additional benefits over bare zinc and traditional chemtreatments.

High Performance Conversion Coatings have been commonplace in the automotive industry, but only recently has the technology made its way to school buses with its adoption by one manufacturer so far. HPCC gives customers the ability to specify the technology on the entire bus floor when a severe climate package is needed, such as in areas with the heavy use of road salts or coastal regions. HPCC offers the advantage of having 10 to 15 times the corrosion protection than that of standard galvanized products, as tested in a certified ASTM B-117 salt spray chamber.

High Performance Conversion Coatings also offered ease to the processing procedures already in place, allowing for the excellent adhesion of adhesives, undercoats, and post-paints. Furthermore, it is RoHS Compliant, which means it contains no carcinogenic hexavalent chromium that is found in many anti-corrosive agents as well as in welding fume. This makes HPCC environmentally safe and a better candidate for a variety of applications.

It is the option of High Performance Conversion Coatings that now allows bus manufacturers reach new levels of corrosion protection and prevention at an affordable cost, enabling customers to be proactive towards addressing the steep costs associated with corrosion damage. ●

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1. Data showing the cost of corrosion was taken from the study conducted by CC Technologies Laboratories, Inc., with the support of the Federal Highway Administration and NACE International, (2002), www.nace.org/uploadedfiles/publications/ccsupp.pdf .

Find the full 2001 corrosion report to the federal government at https://www.nace.org/uploadedFiles/Publications/ccsupp.pdf
What is carcinogenic hexavalent chromium and why is it bad for you? Read more from the Occupational Safety & Health Administration at https://www.osha.gov/OshDoc/data_General_Facts/hexavalent_chromium.pdf.