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It doesn't take long for corrosion to damage an electrical connection

Corrosion prevention tips

Ever since road departments began using harsher products to de-ice highways, corrosion damage to commercial vehicles has escalated. Yet, in spite of numerous product developments and enhanced maintenance practices, fleets still report corrosion as a major issue they contend with for which they are relentlessly seeking solutions.

Recently, the State of Colorado Department of Transportation announced that it is adding a bio-based corrosion inhibitor to the salt brines they use, figuring it will save them money in road repairs and their own vehicle maintenance.

That's a good start, and maybe other state DOTs will follow suit. But even if they do, simple moisture and other debris – of any kind – create corrosion damage. This can result in added downtime and additional maintenance expenses, much of which are unplanned, on-the-road repairs that always cost more.

Key Problem Area

Corrosion affects nearly every area on a tractor trailer, but there is no area more susceptible to damage than the electrical system that runs throughout it. When connections are not properly sealed, there is opportunity for corrosion to get into the electrical system, and once it gets in, havoc reigns.

It does not take long for corrosion to damage an electrical connection. In a test study conducted by Phillips Industries on corrosion at the 7-way connection, standard industry product samples were placed in a controlled environment and constantly sprayed with a brine solution through an irrigation system. At the same time, an electrical current was passed through the product.

This test reproduced field results at 120 hours of a traditional 7-way connection. The results were shocking, as corrosion had already begun to completely overwhelm the connection.

In the field, corrosion can lead to poor electrical contact prior to total loss of function. Flickering lights are sometimes a good visual indicator that there is a problem, but once there is a visible indicator, it's often too late to easily remedy the situation.

Product Solutions

Currently, there are product solutions available that can solve a lot of the electrical corrosion problems, but some fleets are reluctant to move away from the standard supplied on new equipment. For instance, there are sealed connectors on the market, including our STA-DRY products, but fleets still seem to prefer metal at the J560 connection.



After just 120 hours of testing, corrosion had already begun to completely overwhelm a traditional 7-way connection.

Photo courtesy of Phillips Industries

SIMPLE MOISTURE and other debris create corrosion.

Certainly, there is cost involved in upgrading the connections, in the range of 10 percent above the standard products. However, since the connections are frequently exposed to the elements, trapping moisture and contaminants, they are very susceptible to corrosion.

The time it takes to recover the cost to upgrade to sealed connections would be brief, especially for fleets operating in fluctuating temperature environments. Metal plugs and sockets would have to be maintained and/or replaced more frequently, requiring time and new product, which equates to a larger investment over time.

Upfront specifications of anti-corrosive products can reduce corrosion damage in electrical systems, ultimately reducing costs. However, enhanced inspections and maintenance practices should not be disregarded and can help as well.

Plug PM

Phillips Industries recommends that the 7-way plug and socket be cleaned and greased at every

preventive maintenance (PM) interval, on both the tractor and trailer sides. Often, there is more corrosion at the tractor side because it is disconnected much less frequently than the trailer side.

Additionally, a 7-way plug and socket brush should be used with water only. Also, dielectric grease should be re-applied after every cleaning. Plugs and sockets should be completely dry before applying dielectric grease, preventing the moisture deposited during the cleaning process from collecting and eventually causing corrosion.

Phillips Industries offers a corrosion prevention tips wall poster listing other suggestions that can be kept in the shop for quick reference during routine PM. Request a complimentary poster at http://www.phillipsind.com/literature_request/literature/literature_request.

It's also a good idea to outfit tractors and trailers with repair kits so drivers can take care of corrosion-inducing problems before they can cause real harm.

The bottom line: Fleets can reduce the overall cost associated with electrical system corrosion-induced damage, but it either takes time – with enhanced inspections – or money invested upfront specifying anti-corrosive products. Most likely it will involve both.

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