

TANK LINERS COMBAT CORROSION, SAVE FINISHERS MONEY

By

HAL HALLADAY

Corrosion, the naturally occurring phenomenon that deteriorates a substance (usually metal) or its properties, is constantly at work and dramatically affects industry and infrastructure. A recent study conducted by CC Technologies estimated annual direct costs of metallic corrosion to be \$276 billion, or 3.1 percent of the U.S. Gross Domestic Product. However, this cost was substantially less than the indirect costs of corrosion that resulted from lost productivity due to outages, delays, failures and litigation. The study concluded that perhaps 25 percent to 30 percent of annual corrosion costs could be saved through corrosion management and prevention methods.

There are few industries that understand the power of corrosion better than metal finishers. Metal finishers benefit from the effects of corrosion as they take metal and treat it to prevent future corrosion. However, these same shops also must take care to contain corrosive materials used in metal finishing that may deteriorate their assets and disrupt their operations.

Every metal finisher has certainly seen and perhaps had his or her business harmed by a leaking tank caused by corrosion. The expense associated with a leaking tank or chemical spill can be significant due to the cost of the chemicals lost; loss of production because of shut down; cost of cleanup; potential injury to employees; and the costs of safety and environmental compliance.

Lining tanks that contain corrosive chemicals (and even water) is one of the most cost-effective methods for a metal finisher to prolong and maximize asset life, ensure continuous operation of the line, and protect employees from harm. Tank liners should be a critical part of any corrosion management and prevention program. Quality tank linings are made from a number of chemically engineered polymer formulations. The most common tank linings are fabricated from polyvinyl chloride (PVC) and polyurethane and come in material thicknesses ranging from 0.02 inches to three-eighths of an inch. These materials are capable of successfully containing numerous inorganic acids, salt and alkaline solutions and certain organic chemicals. Most commonly contained chemicals include chromic, hydrochloric, nitric and sulfuric acids.

Like any product, the effectiveness of tank liners will depend on the experience and expertise of the liner manufacturer. A manufacturer of tank liners must be qualified to match the appropriate liner material and thickness to the customer need; properly manufacture the liner to be liquid-tight; and provide timely response to urgent or emergency requests. The ability to effectively meet these requirements comes from years of experience in a variety of situations. The few manufacturers that have sustained their businesses over several decades understand that these requirements cannot be compromised.

The Right Material

There are a number of factors that must be considered in determining the appropriate material and thickness for a tank lining. First and foremost, the liner manufacturer must understand the operating conditions of the tank. This includes

what chemicals will be contained and the concentration of the chemicals. Operating temperature is also a critical factor. Most metal finishing tank liners are “drop-in” and easily installed by the customer. Construction and operation of the tank dictate the best method to attach the liner to the tank. All of these factors must be evaluated to produce a lining that will provide a long, trouble-free service life.

Fail-Safe Fabrication

Since the liner is an independent, flexible material, it can be fabricated in any shape – round, rectangular, open or closed-top. This is ideal for existing tanks that are not square or have irregular surfaces. As liners actually drop in to the tank, they can be installed in minutes not hours. Each tank liner is engineered for a specific application, using standard manufacturing techniques and installation hardware. Every purchaser of a flexible tank liner should expect that all welds would be made using an RF dielectric weld and be inspected and tested prior to shipment. The specifications of these welds should meet precise quality standards.

Over the years, metal finishers have found that a non-bonded, custom-fabricated liner is the preferred solution to corrosion prevention and tank protection compared to a bonded lining or coating. A significant advantage of a tank liner compared to a coating is that the existing vessel does not have to be leak-proof, only structurally sound to support the liner. Also, minute differences in expansion rates between a vessel and coating will cause eventual separation and/or cracking wherever temperature changes occur. Flexible, non-bonded linings eliminate this hazard.

The Value of Prevention

The significant direct and indirect costs of corrosion can be reduced through proactive corrosion prevention that includes protecting tanks with flexible linings. The benefits of this effort will impact your bottom line and benefit your community. In addition to maximizing the life of your company’s assets and minimizing your operations down time, your company will increase employee and public safety, as well as protect the environment.