

NEWS ALERT

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COVER STORY

Chill Out—and Stay Rust-Free

Most industrial plants have at least one cooling tower or chiller and, often, heat exchangers and tanks—equipment that's tied into metalworking and finishing operations. In other situations, such equipment is integrated directly with finishing machinery. No matter how or where they're configured, corrosion of those types of equipment will usually prompt the question of your plant's finishing guru: How do we prevent rusting? Also, use of such equipment is sometimes seasonal or otherwise sporadic based on processing requirements, or involves idle periods during maintenance and repair. Corrosion can be particularly active when equipment is laid-up during off-times.

What's a VpCI?

A 2002 study initiated by NACE International pegged the cost of corrosion in the U.S. at \$276 billion—that's \$332 billion in 2010 dollars. While the study was prompted by Congress related to transportation and infrastructure, its results break down costs by industry categories. In the Production and Manufacturing segment, corrosion damage cost \$17.6 billion in 2002—over \$21 billion in 2010 dollars.

Volatile Corrosion Inhibitors (VpCIs) have been in use since the 1940s in U.S. Navy applications. The 1970s brought the development of vapor phase corrosion inhibitors, marketed by Cortec Corp. under the trademark VpCI. Non-toxic and organic, the latter chemistry protects metals across a wide range of metalworking and manufacturing conditions and processes.

Bob Boyle of Cortec said, "In fact, VpCI molecules actually use the same mechanism that accelerates corrosion to accelerate the release of protection molecules—a built-in defense mechanism." Once VpCI protective ions are adsorbed onto the surface,

they create a protective barrier to contaminants such as oxygen, water, chlorides, and other corrosion accelerators.

There's a Gator in My Tank

The interestingly named, VpCI-based Cooling Loop Gator (CLG)—developed for short- or long-term lay-up of cooling towers and other equipment mentioned above—can be used as a building block in many water treatment formulations. Including a patented inhibitor package, the CLG diffuses through air or water toward metal surfaces, forming a strong molecular layer that reaches even inaccessible/recessed areas and interior cavities. Providing protection in both liquid and vapor phases, the CLG protects against corrosion of enclosed spaces for up to 12 months.

Packaged in a water-soluble, EcoSol-brand bag, the CLG is simply placed into the cooling system solution. The bag then completely dissolves. Recirculating the treated water for 10-12 hours distributes the VpCIs throughout the system. A single CLG bag treats up to 500 liters of water.

Utilizing evolved forms of biodegradable, non-toxic, non-irritating VpCIs, the CLG protects a variety of metals, including galvanized steel and yellow metals. Usable for lay-up and flushing, the chemistry is nitrate-, phosphate-, amine-, and chromate-free. Also compatible with other materials such as rubbers and polymers, CLG-treated systems don't require flushing prior to equipment startup.

The CLG meets requirements of Federal Test Method, STD 101C, Method 4031A, and NACE Standard Recommended Practice RP0487-2000.

For more information, contact Cortec Corp., 800-426-7832, 651-429-1100, www.cortecvci.com



On the left is a mild steel, VpCI-protected panel; the right panel shows corrosion exhibited without VpCI protection.

Cortec® Corporation is a world leader in innovative, environmentally responsible VpCI® and MCI® corrosion control technologies for the Packaging, Metalworking, Construction, Electronics, Water Treatment, Oil & Gas, and other industries. Headquartered in St. Paul, Minnesota, Cortec® manufactures over 400 products distributed worldwide. ISO 9001 & ISO 14001:2004 Certified.

