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PRESS RELEASE

Streamlining Preservation During Planned and Unexpected Mining Shutdowns

Mining shutdowns are frequent. These can be partial or complete, planned or unexpected. Reasons differ widely, from scheduled maintenance to emergency repairs, from market changes to political unrest. Whatever the case, it is important for mine operators to have a preservation strategy that ensures asset integrity and a quick, rust-free startup when operations resume.

Simple and Effective Corrosion Protection

While equipment stands idle, rust does not. Corrosion prevention is therefore the prominent feature of asset preservation. It comes in a variety of forms, many of which are less than ideal because they may be cumbersome or ineffective. For example, tarps and vacuum-sealed bags are more likely to fail at rust prevention than materials that contain proactive corrosion inhibitors. Cortec® VpCI® Technologies offer the latter. They are highly effective and easy to use, minimizing downtime and maintaining asset value. Ultimately, they can have a significant ROI because of the minimal monetary and labor investment required in exchange for a quick, corrosion-free return to startup. Some VpCI® preservation examples are as follows.

- **Internal Void Space Preservation**

  Boilers, cooling systems, compressors, exhaust systems, ball mills, cyclones, centrifuges, and many other mining components contain void spaces that are difficult to protect against corrosion. Applying Vapor phase Corrosion Inhibitors is a comprehensive way to fill the entire void space, even difficult-to-access areas, with corrosion inhibiting vapors that are attracted to and form a protective molecular layer on metal surfaces. While the void remains closed, the corrosion protection continues. When the equipment is opened, the Vapor phase Corrosion Inhibitors drift away, typically requiring no flushing or removal before the equipment can be used. Void space protective materials include CorroLogic® VpCI®-339 Fogging Fluid and VpCI®-308 Pouches for general voids, the Boiler Lizard® for boiler layup, and the Cooling Loop Gator® for cooling water systems.

- **External Equipment Preservation**

  While Vapor phase Corrosion Inhibitors are perfect for many internal enclosed spaces, they also can be applied externally through the medium of plastic packaging film. Heavy duty materials such as VpCI®-126 HP UV Shrink Film and MilCorr® VpCI® Shrink Film provide a barrier to harsh outdoor elements such as rain and salt spray while also emitting Vapor phase Corrosion Inhibitors that form a protective layer on the external equipment surface. Packaging such as this is superior

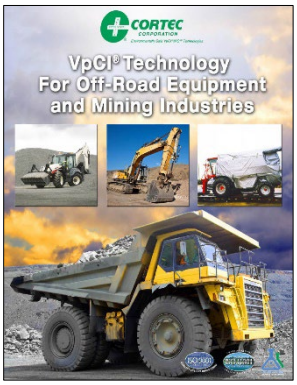
to regular tarps and vacuum-sealed bags because it provides more than a physical barrier to the elements. When the equipment needs to be started again, workers can simply unwrap the piece and bring it online—basically according to standard procedures.

- **Electrical/Electronic Preservation**

  HMIs and electrical cabinets are other prime candidates for Vapor phase Corrosion Inhibitors. In these cases, VpCI® Emitters are the delivery system of choice. For example, VpCI®-105 and VpCI®-111 Emitters are self-adhesive cups that can be placed inside electrical enclosures, providing enough Vapor phase Corrosion Inhibitors to protect 5 ft^3 (0.14 m^3)and 11 ft^3 (0.31 m^3) of space, respectively, for a couple of years. In fact, installing them during plant operation is recommended as a regular preventative maintenance plan.

- **Oil and Hydraulic Systems**

  Oil and hydraulic systems are another area where Vapor phase Corrosion Inhibitors offer an advantage. For example, where a natural approach to gearbox rust prevention might be to fill the system with hundreds of gallons of oil to protect as many surfaces as possible, M-535 (or M-531) allows the gearbox to be almost completely empty. The small relative dose of M-535/M-531 present in the gearbox will release Vapor phase Corrosion Inhibitors that will diffuse throughout the void space, offering more effective protection while eliminating excessive waste of petroleum hydrocarbons.



The mining industry faces many unpredictable factors. One thing that should not remain uncertain is the reliability of preservation methods to keep assets free of corrosion and ready to start at a moment's notice. By adopting a VpCI® preservation strategy in advance, mining management can be prepared for the unexpected and thus facilitate a smoother shutdown and a faster startup than might otherwise be the case. Contact Cortec® for further assistance implementing a successful preservation program for mining shutdowns.

Keywords: mining shutdowns, minimizing downtime at mines, preserving asset value, corrosion protection, changeout procedures, partial shutdown at mine, gearbox preservation, electrical preservation, air compressor preservation, mining heavy equipment

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