



Mitigating CUI using insulating coatings

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CUI, or corrosion under insulation, is an especially prevalent and potentially dangerous form of corrosion. Equipment and piping that is insulated with traditional thermal insulation such as Perlite, calcium silicate or mineral wool are potentially susceptible to CUI in temperature ranges of 140 F to 350 F. If the cladding surrounding the insulation is damaged and left unmaintained, which happens all too often, or if caulking deteriorates at protrusions, water can ingress through any breaks in the cladding and remain under the insulation for long periods. This hot and wet/moist cyclic condition is very aggressive to coatings. For years, refinery personnel fought CUI with epoxy and zinc primers. Both of these solutions work, but, unfortunately, are temporary at best. In time, the coatings will deteriorate and corrosion of the steel substrate will begin. With the insulation in place, any corrosion that occurs will proceed unnoticed for many months or years and dangerous situations can develop if through metal leaks occur. The problem is even more serious when coating maintenance programs are delayed as a result of budget cuts, which happen all too often.

In recent years many companies have stepped up their maintenance painting programs to reduce the threat of CUI. In these programs, the equipment is ranked and prioritized by potential for an incident and the level of consequences. Many companies have ongoing maintenance even on equipment in service. This means the grit blasting and painting must be done while in service, and at elevated temperatures. Reapplying insulation on in-service equipment presents many challenges and many times, the equipment has to be shut down.

In the past 15-20 years, a new type of insulation has come on the market, revolutionizing the way companies insulate and protect their equipment. These coatings go on in thin (20 milliliter) coats and can insulate, protect equipment from corrosion (with epoxy phenolic primers), protect personnel against burns and help stabilize some processes. Application of an insulating coating, such as Mascoat Industrial-DTI, is an alternative to the traditional coating and insulation system. Because insulating coatings are bonded to the metal, the gap between the insulation and metal is eliminated, there is no place for water

to collect, and CUI is mitigated.

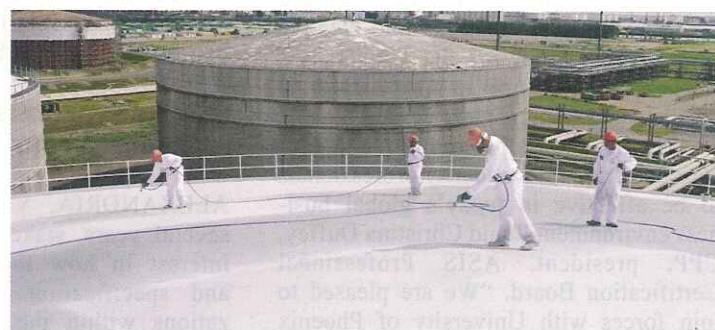
With traditional insulation systems, any coating deterioration is not visible until expensive removal of the cladding and insulation. This runs the risk that corrosion can proceed unnoticed for a long period of time. Inspection for deterioration in an insulating coating is easily accomplished without having to remove anything. The only time CUI would occur underneath an insulating coating is if there was existing corrosion before application and the surface was not properly prepared. If this is the case, CUI will show through the coating via some external, visual signs such as rust breakthrough and blistering.

Insulating coatings can be repaired long before corrosion becomes an issue. In addition to this benefit, there is significant cost savings if equipment or piping can be

withdrawn from the monitoring and administrative requirements of a CUI program. Numerous companies have been able to take previously vulnerable equipment out of their CUI program after the application of an insulating coating.

CUI is an expensive and pervasive problem in every refinery, but new technologies and forward thinking by plant personnel can help reduce corrosion, and all the risks and costs associated with it.

For more information, visit www.mascoatbic.com or call (800) 769-0233. ●



This refinery chose to use Mascoat Industrial-DTI to insulate its tank roof for CUI prevention, ease of installation and for the coating's ability to withstand foot traffic.

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