aspen aerogels®

Guarding against CUI corrosion

Technical insulation should protect assets and workers, conserve energy, and keep processes running at their optimal temperature. But what happens when that protection is actually causing harm? For facilities dealing with wet insulation, that's exactly what can happen. The problems start with rates of heat loss, and energy costs, creeping higher, year-by-year.

As moisture spreads across more of your piping and equipment, it can eventually destabilize key processes, and overwhelm steam and heat-trace systems. But the most dangerous consequence remains hidden from view: corrosion under insulation, or CUI.

CUI occurs when insulation traps and holds moisture against a carbon or stainless steel substrate. While this is nothing new, it's becoming more common as fibrous and cementitious products developed for high-temperature use migrate into service below 150°c. At these lower temperatures, liquid water can exist at or near the metal surface, giving rise to the kind of wet-dry cycles that can accelerate corrosion rates by a factor of 20. Most damaging of all, this accelerated corrosion is hidden from view.

In response, plant managers have fallen back on coatings and inspection programs, but these are really the last line of defence.
The First Line of Defence: Keep It Dry
If you can keep the surface drier, for longer, you reduce the risk of corrosion. As flexible aerogel blanket insulation, Pyrogel® XTE has been designed to operate in wet environments.

Pyrogel resists the ingress of liquid water, even in environments subject to periodic flooding. In the event that water does get in, such as at seams at terminations, Pyrogel's open-cellular nature allows your insulation to breathe. So long as the surface is operating above the local dew point, the water will eventually evaporate. This combination of properties, resistance to liquid, permeable to vapor is the same theory used in high-tech winter clothing. And it's this difference between a smoothly running facility, and a CUI-induced loss of containment.

How else does Pyrogel help? Its inherent durability facilitates periodic CUI inspections, as the same piece of material can be re-used many times over. Plus, due to its famously low thermal conductivity and thickness, Pyrogel can often be installed right up to the flange face, eliminating the cut-backs, and subsequent water-ingress points often required for bolt removal. Pyrogel's ease of application means you can address more at-risk surface areas with the same work force.

Learn more about Pryogel XTE and discover how an insulation engineered to resist its natural enemies can protect your two most important assets - your people and your plant.

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