



Tank Storage Magazine Article Thermal insulation introduction

In late 2006, Joseph Newcombe, Chief Engineer for High Sierra Energy at the Port Everglades Facility in Florida, had a problem. The holding tanks on site were constantly losing heat through the top and conventional insulation, though used on the sides of the tank, could not be used on top because of personnel issues, specifically accessibility, and also creating fire hazard issues. Placing conventional insulation on the top restricted access to personnel working on the tank, making routine maintenance to the tank all but impossible. That was when he turned to Old Dominion Insulation of Richmond, Virginia. They offered him a solution in the form of **MetalTec TC thermal insulation coating**.

Developed over 12 years ago by MetalTec Products, **MT TC** is a thermal insulating coating that goes above and beyond any benefits that conventional insulation methods could ever offer. Made from composite ceramics and applied via spray method, **MT TC** tackles three major problems that plague facilities daily around the world; Corrosion Under Insulation (CUI), personnel protection and heat retention. Plants and process facilities constantly battle with these issues, which are all directly related to heat transfer and the materials used to reduce that heat. This is why the use of innovative materials, like **MT TC**, has become a must, rather than an option and was an excellent solution to High Sierra's problem.

Heat retention is a necessity in any industrial environment. To achieve consistent quality control, facilities need to keep constant temperatures in their units. When heat is lost through heat transfer, extra energy must be expended to attain stable temperatures. Losing and replenishing energy in the form of heat not only wastes money, but can adversely affect the product. The most common area for heat loss on a tank is on the top because heat rises. Since the top of a tank needs to be accessible at all times for standard maintenance, conventional insulation is not an option. Mr. Newcombe knew this and therefore had **MT TC** applied to the top of the tank. Before application of **MT TC**, The top of the tank was 134°F and the rim was 154°F. After application of 200 mils on the entire surface of the top, the top of the tank was registering 94°F and the rim was 98°F.

Before the application of **MT TC**, the tank used two heaters that struggled to keep a constant temperature, with little success. Product temperatures were never stable and during rain storms, the product would be flash-cooled and therefore loading would have to stop due to cooling. These factors led to lost time due to heat recuperation. Now, not only do they only need one heater to achieve a constant temperature, they actually turn off the heaters on the weekends and still keep a stable temperature within the tank. When readings were last taken by MetalTec Products in April 2007, internal temperatures were being held constant at 235°F, while the ambient temperature surrounding the tank was 78°F. The end result was dramatic rises in efficiency and cost-savings associated with powering the heaters, but that isn't the only way that **MetalTec TC** has improved the efficiency of High Sierra's tanks.

Corrosion Under Insulation (CUI) is one leading costs of maintenance in the industry sector. All plants, facilities and commercial areas that have hot or cold tanks have to deal with Corrosion Under Insulation. Due to the intrinsic corrosive atmosphere and its ability to gestate worse corrosive atmospheres between a substrate and its conventional insulation, CUI has no problem taking hold and spreading like wildfire. Basically, CUI is the cancer of the industrial world. Because of the lack of substrate inspectability that is inherent with conventional insulation, once the CUI has been found, it is usually too late to save the substrate. After the insulation is peeled back, there is a crumbled mess of insulation and substrate flaking onto the feet of the inspectors. What was once sturdy, stable steel now resembles spent pipe tobacco. The conventional insulation materials used in the past have played into the rapid process of substrate degradation due to creation of a corrosion-promoting internal atmosphere. This adds to increased industrial maintenance schedules and downtime for repairs.

MetalTec products overcome that problem because of the very nature of the coating itself. Since it is applied to the substrate either directly or on top of a primer, there is no room for CUI to take hold. Best of all, the substrate is now viewable at all times. This means that the inspection team doesn't have to destroy a large area of insulation prior to inspecting.

If repairs are necessary, they are made to that specific area and the now-exposed substrate is easily touched up with Delta T Industrial. As Mr. Bradley summed up, "I am pleased with the inspectability of the top, the ease and safety of maintenance personnel being able to walk on the top and the low maintenance of **MT TC** as compared to conventional insulation". Additionally, Mr. Bradley reported that after application of **MT TC**, CUI and flash-cooling are no longer issues on the top of that tank. Since the maintenance costs associated with fixing CUI problems is no longer a factor, at least on the top of that tank,

the result is more money saved for the company as well as productivity being recouped.

Spending money efficiently isn't the only thing that affects a company's health, though. So is protecting the people who are working for that company. In an industrial setting, personnel protection is always at the top of every manager's mind, or at least it should be. When personnel are working around tanks, piping and other areas involving high temperatures, they shouldn't have to worry about brushing against a substrate and scorching themselves. **MT TC** eliminates this risk by insulating the substrate and reflecting the internal heat back into the substrate instead of transferring it to the hand or hip of a worker walking by. As the heat travels from the substrate through the coating, it passes through microscopic insulation particle cells that help dissipate and reflect the heat, resulting in reduced heat flux that reaches the environment surrounding the coating. All of the cutting-edge technology that has gone into developing **MT TC** results in drastically lower temperatures transferred out of the substrate. If a tank is holding product that is 200°F, only 40 mils of **MT TC** will bring the substrate to or below 140°F (depending on ambient conditions), generally accepted as the industry standard for personnel safety. And since it is applied like paint, installation takes a fraction of the time that conventional insulation does.

Any of these issues by themselves must be addressed to increase the efficiency, production and safety of any facility, no matter how large or small. By addressing all of these issues in one single product, a facility can make certain that everything that can be done to increase these three qualities is being done, at least from an insulation perspective. Mr. Newcombe realized this and is currently considering replacing conventional insulation with **MT TC** in other areas to reduce maintenance costs and significantly improve performance all over the facility.

MetalTec products were started in 1995 in Belgium to reinvent the insulating coatings industry as it was known at the time. MetalTec has since become the leader in controlling thermal and sound transfer and develops a variety of products that can be tailored to meet individual needs. All of MetalTec's thermal insulation coatings are environmentally friendly, meet all of the top quality and industry standards, and pass a stringent internal quality control process during manufacturing. Offices in European Union, Africa and Middle East allow MetalTec to provide a consistent, quality product in a timely manner anywhere in the world.

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