

Steam Pipe – Paper Company Personnel Protection & CUI Prevention

Client Name and Location: Withheld, Alabama USA

Date of Application: June 2018

Coating Used: Mascoat Industrial-HT and Mascoat Industrial-DTI

Application: Steam Pipe

Reason for Application: Personnel Protection and CUI Prevention

Dimensions: ~20 cm x 20 m

Mils Applied: 80 mils MI-HT & 120 mils MI-DTI

Equipment Surface Temperature: 400-500°F (200-260°C), depending on steam load.

Application Notes: The paper mill had a steam line that was running directly below the 2nd floor. Since a paper mill is an extremely humid and wet environment, moisture would constantly seep into the conventional insulation surrounding the pipe. This moisture would not only cause CUI, but eventually led to the insulation failing and falling off multiple times. After repairing the insulation countless times, the head engineer consulted Mascoat to ask if there was a coating that could replace it. MI-DTI, the company's flagship product, is only capable of sustained loads of 350°F (177°C) with spikes up to 375°F (190°C). At the time, Mascoat's Research and Development Department was working on an insulating coating that would handle higher temperatures, but the Beta Product had only been proven in laboratory scenarios. To observe the coating's abilities in the real world, Mascoat asked if the mill was willing to test the new MI-HT. Since there were no other solutions available to their problem, they gladly agreed.

Along with needing a solution that would reduce the amount of maintenance on the pipe, personnel protection was of utmost importance to the mill. Workers had to commonly access the piping directly adjacent to the steam pipe and faced the risk of burns if they came in contact with the high temperature surface. Mascoat's recommendation was to apply MI-HT to 80 mils to bring the surface temperature down to 350°F (177°C), at which time MI-DTI could be installed. MI-DTI has a NACE-accepted study showing that the surface temperature would drop to ~130°F (54°C) at 120 mils thickness, well within personnel protection limits with up to 5 seconds of skin contact.

Per application instructions, MI-HT was installed on top of a temperature-appropriate primer in a series of 4 coats while the pipe was out of service. After application, steam was gradually released into the pipe to cure the coating at 200°F (93°C). Curing took approximately 2-4 hours, at which time MI-DTI was applied to a thickness of 120 mils in 6 coats. The application took 6 days in total to allow for drying between coats.

After application was completed and the pipe brought back into full service, there was no browning, cracking, or debonding of the coating noted over a period of a few days. Any one of these would have been seen as a coating failure. Measurements were taken to verify that the surface temperature was around 130°F, and the Mascoat rep then put his hand on the pipe for 5 seconds to show that it was indeed safe for personnel to touch. The mill and Mascoat deemed the application a success and were anxious to see how MI-HT stood up to the test of time.

Update October 2020

Mascoat reached out to the mill once again to see how the coatings were holding up. The report back was succinct and to the point. "The coatings are behaving in the same way as just after they were installed. We have had no maintenance or personnel burn issues, and we're extremely happy with the performance."

