Automotive Plant Dip Tank

ChemLINE CASE STUDY





The Stage #2 steel alkaline cleaner dip tank at an automotive plant in the Midwest had problems with early corrosion issues in the tank and housing.

The operating conditions in this tank were alkaline cleaner at 140°F immersion temperatures. RO water was used in make up water adding to the corrosion issue. The tank is also boiled out (chemically cleaned) from time to time with strong alkaline solution at 150°F to remove oil and grease and sludge.





The experts at Chemical Containment and Advanced Polymer Coatings were consulted to come up with a polymer lining solution for this challenging application. Working with PW Associates in Troy, MI, who were the consulting engineers, a plan was initiated with very innovative ideas to provide a long term lining solution for this tank.

On July 2, 2010 the contractor Ultimate Corrosion Control



Inc (UCC) commenced the job second shift. UCC furnished workers that performed quality work at the plant previous and who are experienced and knowledgeable in the surface preparation and application of high performance industrial coatings.

All surfaces to be lined prior to abrasive blasting were cleaned by with a hydro-jet at 30,000 psi. All surfaces were free from contamination from grease, oil, salts and other contaminants.





Advanced Polymer Coatings

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After cleaning, the surface was abrasively blasted to SSPC-SP5 (NACE #1, SA3) white metal finish with 3 mil profile. Black Beauty 1240 was used in accordance to our specification. The blasting debris was collected in vacuum boxes and the airborne contaminates collected in large dust bags.

The tank was cleaned and primed in a fashion that did not compromise the abrasive blast. Humidity was monitored and was 65% or lower during coating operations and the substrate temperature was within the range 10° to 40°C and 3°C of the dew point.



UCC applied the first spray coat of ChemLine[®] 784/32 (red) to the floors and walls and the suspended stairs in the dip tank and weir tank at 6-8 mils (150-200) microns wet film thickness in accordance to the specification.

UCC allowed the (red) prime coat to cure to the B Stage and applied one coat of mixed clear APC resin and hardner and pressed one layer of fiberglass mat into the wet basecoat and fully saturated the fiberglass reinforcement. The fiberglass coves, fiberglass couplings and eductor header outlets were installed using thickened ChemLine[®] 784/32. This was allowed to cure to B Stage.



A second full coat of ChemLine $^{\odot}$ 784/32 (Gray) at a wet film thickness of 7-8 mils was applied to achieve 6-7 DFT top coat.



The tank was covered with 2" of ceramic insulation and held in place using Unistrut placed perpendicular to travel.

After the complete ChemLine[®] 784/32 coating system was applied, a 70°F dry air was blown into the tank to promote material to release solvent and to be ready for soak post cure. A temperature probe and chart was installed by PW at the roof level to insure that housing temperature did not activate the sprinkler system in the plant. At no time did the temperature exceed 75°F. Protective caps were installed over the CPVC eductor header outlets to prevent the fittings from distorting during post cure. Temperature probes were affixed to the 4 eductor header insulation caps.

Cure Schedule

The size of heating equipment and number of heaters used by UCC were adequate for the job. Indirect forced air heating was used using propane. The soak temperature used was 185°F for six (6) hours. A chart of the cure schedule is available upon request.



In conclusion, UCC performed the task in accordance to Advanced Polymer Coatings specification. The client has received a long term service life for the tank lining. The cleaning of the Stage 2 will be easier because of the low surface energy of the very dense coating applied in the tank.

This case study provided by Paul D. Turner from Chemical Containment Systems, Inc.