Specialty Industrial Corrosion Products Demand ChemLine[®] Protective Coating System

ChemLINE®

Through the years and around the globe, Advanced Polymer Coatings has been called upon to deliver corrosion protection solutions with its ChemLine[®] coatings products. The following case studies offer a glimpse into different markets and various projects, highlighting solutions for different customer needs.

City of Margate, Florida Relies on ChemLine® to Protect Wastewater Structures

The City of Margate, Florida Department of Environmental and Engineering Services required extensive repairs and modifications on concrete baffle walls, channel walls, intake troughs, and tank sidewalls of a deteriorating influent flow splitter box on the aeration structure.

CH2M Hill, the project engineered requests that Southland Painting Corporation consider APC's ChemLine[®] concrete repair materials and corrosion resistant coating.

Because of the extensive decay provoked by both the wastewater and sulfide attack, many of the intake troughs and sidewalls required reforming and rebuilding to return them to their original thickness, structural integrity and architectural finish.

As a result, the structures were rebuilt with a special mortar and then recoated 24 hours later with ChemLine®.

The project manager for the applicator company said that after several months, the city is using that structure as a showpiece. They are completely satisfied with the results and they feel they have found a long term restoration system and solution that lends itself to projects in the wastewater industry.

Inspecting the ChemLine[®] coating system on the aeration structure.



ChemLine[®] Coating at Oil Refinery Reactors Prevent Corrosion from Concentrated Sulfuric Acid

At an oil refinery, the Sulfuric Acid Alkylation Contractor Reactors were having severe corrosion problems due to exposure from 88% to 99% wt% sulfuric acid. Sulfuric acid is a catalyst for the reaction that produces high octane gasoline.

On a certain section of the reactor that has high liquid velocities and high historical corrosion, the concentrated sulfuric acid at temperatures up to 122°F were causing corrosion of the carbon steel.

The process licensing vendor for the unit had previously used a ChemLine[®] coating with success on other various parts of these reactors so they recommended Advanced Polymer Coatings once again.

For the application work, the surfaces to be coated were first gritblasted to a SSPC10 (Sa 2.5) 3-4 mil (75-100 micron) blast profile. The first coat was then applied and brought to "B" stage. Once completed, the final coat was applied.

Since ChemLine[®] was applied there was no noticeable corrosion seen after one year of operation, where this timeframe had historically always been a point at which repairs needed to be performed.

Other benefits that the ChemLine[®] coating delivered were a prolonged service life for the unit, as well as increased safety for the company's operators. The ChemLine[®] coating is being evaluated for other applications at the facility.

APC ChemLine[®] Coating Protects Waste Water Tanks at BP Chemicals Lima Plant

At this BP Chemicals operation in Lima, Ohio, there were corrosion problems being encountered in the large waste water tanks. The steel floors were especially corroded and heavily pitted. APC provided ChemLine[®] putty to fill the pits, and then overcoated the floor with the ChemLine[®] high performance coating system for a solid protection system.

Also at this facility, a tank in service with 98% Sulfuric Acid was lined with ChemLine[®] to prevent corrosion. BP found what had been a long, costly and perplexing corrosion problem was solved by the unique corrosion resistant properties of the ChemLine[®] system.



Advanced Polymer Coatings Avon Ohio 44011 U.S.A. www.adv-polymer.com +1 440-937-6218 Phone +1 440-937-5046 Fax 800-334-7193 Toll-Free in USA & Canada



Ciba Specialty Chemicals, Inc. Specifies ChemLine® for Tank Bottom Coating

At this Ciba Specialty Chemicals facility in McIntosh, Alabama, corrosion was appearing on the bottom head of an intermediate storage tank. The acidic material in the organic solvent-based chemical was attacking the tank bottom, which was fabricated of duplex alloy 2205.

To handle the immersion service that was required, Ciba needed a protective coating that could withstand the harsh corrosive nature of the chemical and provide an impermeable barrier. Advanced Polymer Coatings recommended its ChemLine[®] 784/32 coating. Only the bottom portion of the vessel was lined because the corrosion was isolated in this area.

It has been more than three years since the coating was applied and the lining is still in service and in good condition, and there has been no further corrosion of the vessel. By using only a partial coating of the ChemLine® 784/32, Ciba was able to lower its overall project cost, and, most importantly, ensure a faster turn-around of the equipment since less internal preparation was required. Ciba has also testing ChemLine® coatings for other environments at the Ciba facility.



ChemLine[®] Provides Corrosion Resistance for Scrubber in Australia

A smelting services company in Australia needed to line tow large scrubbers used to treat exhaust gasses from furnaces.

These corrosive gasses are essentially products of combustion, containing hydrogen fluoride, sulfur dioxide, sulfur trioxide, condensable organic vapors and nitrogen oxide.

APC's ChemLine[®] was used to answer this protective need, and had been in service delivering superior corrosion resistance.

ChemLine[®] Lining Inside Pipe Provides An Effective Abrasion and Corrosion Solution in Venezuela

Advanced Polymer Coatings was presented with a tough challenge, focused on the extremely abrasive and corrosive interior environment of steel piping used in a crude oil recovery operation in Venezuela.

The Venezuelan company uses spiral-welded 36-inch diameter steel pipe in the operation. During the process, salt water with a high sand content is pumped down through the pipe to pressurize oil wells. Then crude oil is

pumped back through the pipe and out of the well. The very physical abuse of the salty slurry severely limits performance.

Advanced Polymer Coatings was consulted and recommend using a ChemLine[®] coating system, a protective lining engineered for extremely high abrasion and corrosion resistance service.

Other key benefits of the ChemLine[®] coating for this application included its ambient cured formulation and its ease of application. Pipes in 40foot lengths were lined using automatic spray equipment. Two coats of ChemLine[®] were applied to a thickness of 20-22 mills.

ChemLine[®] coatings are used to handle the tough conditions of oil well piping for the crude oil industry.







5 Years of Continuous Tank Success at BP With 98% Sulfuric Acid

When BP's plant in Port Lavaca, Texas was experiencing heavy loss of metal in the upper portion of its Sulfuric Acid tank, they looked for a coating system that could handle this aggressive chemical.

The loss was caused by the outside air entering the tank and lowering the Sulfuric Acid concentration in the upper portion of the tank.

BP replaced the corroded steel plates and coated the complete tank with APC's ChemLine[®] coating system. A ChemLine[®]-composite dip tube was installed to handle loading and uploading.

After five years of continuous service, the ChemLine $^{\otimes}$ coating and composite pipe have performed well, only having lost their gloss.



Inspecting tank bottom after the APC ChemLine[®] tank coating application.

ChemLine® Coating Protects Scrubber from Corrosion

When Catalyst Recovery in Lafayette, Louisiana, Inc., a company owned by Porocel, was having corrosion problems with an existing stainless steel tank, they turned to Advanced Polymer Coating's ChemLine[®] for results.

At the facility, a stainless steel stack scrubber vessel with a 10-foot diameter x 20-foot high scrubber-tank lining was badly corroded and leaking corrosive materials in hundreds of spots.

This scrubber removes smoke and particulates from the exhaust gas that is discharged from the catalyst recovery units. Sulfur and water are mixed with the gases creating Sulfuric Acid that is then neutralized by Sodium Hydroxide bringing the ph to a more alkaline level. The inlet temperature is 300 to 400°F and the shell is maintained at 200°F using spray nozzles. The various

chemicals that are involved include: Sulfuric Acid, Sulfurous acid vapors and condensate, Sulfur Dioxide, sodium sulfates, and sodium sulfites.

APC's coating solution was ChemLine[®]. The scrubber was first gritblasted to prepare for the coating. In addition, numerous small holes were repaired. The tank was then dehumidified during the entire ChemLine[®] coating application, which was followed by a forced hot air cure at 350°F for six hours. The work took six days to complete.

The client was pleased with finished results, especially since the tank was in such poor condition. An internal inspection was then done two months later during a major shutdown. The ChemLine[®] coating is now protecting the vessel from corrosive attack and has extended the life of the tank versus replacing the vessel which was estimated at \$250,000.

The applicators involved with this project were TopCor and Performance Blasting.

ChemLine[®] Protects Stainless Steel tank at BP Acrylonitrile Plant

BP's stainless steel tanks at the Port Lavaca, Texas facility were being eaten away by a bacteria known as MIC. The micro-organism is introduced to the acrylonitrile tanks through the tanks' waste water system. The bacteria creates small cracks in the tanks' stainless steel walls that are then attacked by other chemicals (Acrylonitrile, Hydrogen Cyanide, Acetonitrile, and Benzene) in the unfiltered waste water which is at a 160°F temperature.

These tanks were lined with APC's $\mbox{ChemLine}^{\circledast}$ system and have now solved this corrosion problem.



Stainless steel tanks lined with ChemLine[®] coating prevent corrosion.