Copper Mine Corrosion Protection

Featuring K5™

Project:
Montana Resources
Copper Mine Sludge
Processing Tank Liner

Location:
Butte, Montana

Owner:
Montana Resources

Applicator:
Rowell Spray Systems

System:
K5™ with AE-4
(adhesion enhancer),
Polyprime-100,
Envelo-Pour 8 lb. foam

Total Area:
12,000 square feet

Completion Date:
July 2009

PROBLEM:

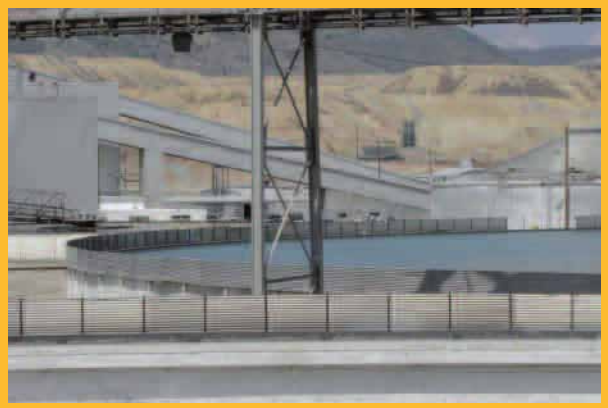
The Montana Resources copper mine sludge-processing tanks were deteriorating and leaking due to severe abrasion and corrosion issues. Sludge (sand & water) is pumped in from the mine into storage tanks. Sand and water are separated with a large spinning mechanical boom that forces the sand through a cork screw drain at the bottom of the tank. The interior bottom-edge of the tank walls were built with a 16" concrete curb and 3' steel plate liner. The concrete curb allowed the mechanical boom wheels to move around the tank edges. This process created significant abrasion and corrosion damage resulting in several leaks around the tank edges. Other expensive epoxy coatings were used in the past, but failed in less than one year. Montana Resources needed a tough and reliable solution in place to keep operations moving at full capacity.

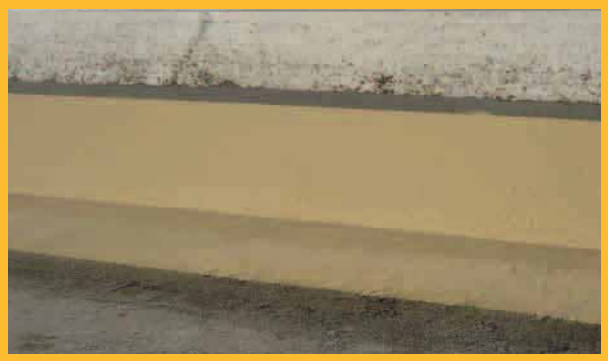
SOLUTION:

SPI's K5™ polyurea coating was chosen because it has the strongest abrasion resistance in the protective coating industry. The steel plate and concrete curb surfaces were sand blasted to remove the failed epoxy coating. Polyprime-100 was applied to seal the concrete surface. K5™ polyurea with AE-4 (adhesion enhancer) was applied to the concrete and steel surfaces at 130 mils. The AE-4 additive eliminated the need for a primer and allowed for immediate spraying to the steel substrate, saving time and preventing rust from setting in.

RESULTS:

Montana Resources drained the tank for inspection after being in service for 90 days. There were no visible signs of any damage. The K5™ coating performed so well, Rowell Spray Systems was awarded several more tank projects.





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Coal Mine Corrosion Protection

Featuring Polyshield HT™

Project:
Coal Mine Corrosion Protection

Location:
Canonsburg, PA

Owner:
CONSOL Energy, Inc.

Applicator:
IPI, Inc.

Coating System:
POLYSHIELD HT™ Polyurea
With AE-4 (adhesion enhancer)
80 mils

Total Area:
1500 sq. ft.

Date Completed:
June 2010

PROBLEM:
The coal mining process creates an extremely corrosive environment that accelerates the breakdown of steel from rust. CONSOL Energy, the largest producer of high-Btu bituminous coal in the United States, needed a durable coating system to protect parts of their coal mine steel infrastructure. Replacing sections of steel is a very expensive process, costing approximately $150 per foot, not including labor and safety expenses. Other important project requirements included: minimizing any fumes to maintain internal air-quality, using a fast curing product that would not interrupt 24/7 mine operations, and be able to withstand power washing to remove daily coal residue build-up.

SOLUTION:
Project officials and the contracting company evaluated several options. They chose SPI's Polyshield HT™ polyurea because of its corrosion resistance, high elongation and rapid curing properties. This elastomeric coating provides a seamless, flexible membrane that conforms to virtually any substrate shape. Polyshield HT's™ hydrophobic, fast-set properties allow for applications in high moisture environments. In addition, this advanced polyurea contains 100% solids, has zero VOCs and is odorless after application.

The steel substrates were cleaned and sand-blasted to provide a 6 mil anchor profile for adhesion purposes. Next, the applicator spray-applied 80 mils of Polyshield HT™ with AE-4 (adhesion enhancer) to the steel surface. Using AE-4 eliminated the extra step of applying a primer, saving time and money.

RESULTS:
CONSOL Energy officials are very excited with the performance of Polyshield HT™. Mine maintenance personnel are able to power wash the corrosion-resistant coating to remove coal residue and dust. They now have a reliable solution in place that will extend the service life of their multimillion dollar investment. This substantial cost-saving solution also lowered their eco-footprint by avoiding the need to replace parts of their steel infrastructure.

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Leak Prevention

Featuring Polyshield SS-100®

Project:
Deionized Water Tanks

Location:
Magna, Utah

Owner:
Large Copper Mines

Applicator:
Hydrodynamics, Inc.

System:
60-80 mils (1½-2mm)
POLYSHIELD SS-100® Polyurea
Standard Grey Color

Total Area:
Two tanks, Approximately
35' H x 25" diameter

Completion Date:
December 1994

PROBLEM:

Mine personnel discovered leaks in two concrete storage tanks. The tanks were originally used to store lime solution and were being converted for deionized boiler water storage. When the tanks were first converted the mine owner lined the floors and walls with an epoxy coating. Subsequently, when the tank was filled with water, leaks were observed. The epoxy had failed and they needed a superior solution.

SOLUTION:

The leaks needed to be sealed with a coating that would not crack or peel with the concrete expansion and contraction from the seasonal climate changes. The project owner contacted Hydrodynamics to find a coating solution. Hydrodynamics recommended SPI's Polyshield SS-100® polyurea due to the product's water resistant and elastomeric properties. The inside of epoxy-coated concrete storage tanks were grit-blasted, followed by epoxy grouting in areas that were cracked. Then Polyshield SS-100® polyurea was applied at 60-80 mils (1½-2mm) on the tank floors and walls.

RESULTS:

In October 1996, the owner was contacted regarding performance of the tanks. SPI was informed that the Polyshield SS-100® polyurea coating was performing well and there were no visible signs of damage.

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Corrosion and Abrasion Protection

Featuring Watershield III™

Project:
Rehabilitating Mining Ball Mills

Location:
Louisiana, U.S.

Owner:
Global Equipment Manufacturer

Applicator:
Advanced Construction Coatings

Coating System:
Watershield III™ with AE-4
80 - 125 mils

Total Area:
2,000 square feet

Date Completed:
August 2010

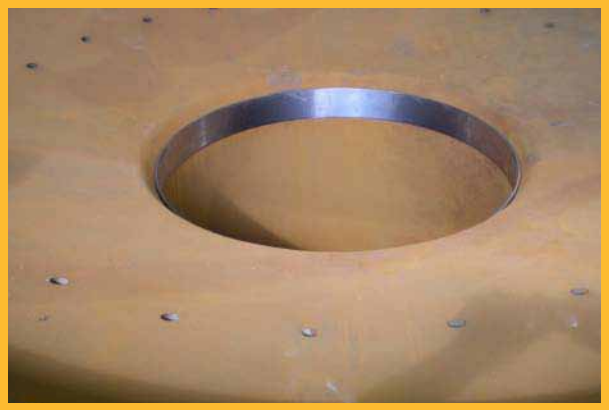
PROBLEM:
One of the world's leading equipment manufacturers for the Mining, and Oil & Gas Industries wanted to convert dry ball mills into wet mills. These 10' x 10' retired ball mills were going to be rehabilitated for a South America refinery that would use them for grinding oily and sandy sludge. The sludge was being refined to allow it to pump into a coker unit for further treatment.

The inside of the steel ball mill drums needed protection from corrosion and the sand & metal balls used to crush the sludge material. Extreme service conditions required a coating that would properly adhere to the surface, while providing good abrasion and corrosion resistance. Extending the service life of the retired ball mills would provide substantial cost savings for the refinery, eliminating the need to buy expensive new steel material.

SOLUTION:
SPI's Watershield III™ polyurea was ultimately selected due to the coating's good corrosion and abrasion resistance. Utilizing the NACE-SSPC-10 near white metal surface preparation standard, the applicator abrasive blasted the steel surfaces to remove years of built-up corrosion damage.

Next, SPI's Watershield III™ polyurea coating, with AE-4 (adhesion enhancer), was spray-applied at 80 - 125 mils. The AE-4 admixture increases adhesion to properly prepared substrates and eliminates the need to use a primer.

RESULTS:
The project manager carefully inspected the rehabilitated ball mills. Both the equipment manufacturer and end client were were completely satisfied with the finished product. The OEM was able to extend the equipment's service life, saving them money, while reducing their eco-footprint.



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