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CASE STUDY

SERIES

PROJECT: Gas Butterfly Valve – Restore & Coat

OWNER: City of Hollywood, WWTP

DATE: January 2007

PRODUCTS: MCOR™ Primecoat™ MTe
MCOR™ 3115 | mClad™ mFill™
MCOR™ 2101 | mPlait™ MP

When it comes to a cost-effective method of dealing with fatigued mechanical parts that are corroded and pitted, the thought of hot welding and other expenses enters the mind. However, for those accustomed to working with innovative methods of metal reclamation involving polymer solutions, you know that easy high-performance solutions are available.

No one does this better than MCOR™. Specializing in servicing mechanics and maintenance crews, MCOR™ lends itself perfectly for in-house repair and coating methods to take mechanical assets out-of-service, restore them with cold-applied methods, and enhance them prior to returning back to service with high-performance protection.

The City of Hollywood is a municipality that works with vendors such as MCOR™ to solve mechanical issues on a routine basis. One such issue involved their butterfly air valve, used to cease flow of gases as part of the sewer treatment plant's operation.

The project was straight forward from MCOR™'s perspective - restore the surface (reclaim the lost pitting of metal back to its original profile) and make sure the metal was well protected for future service cycles. From a cooperative stand point, with MCOR™, the products would be safe, simple, and effective.

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Visible corroded metal confirms harshness of the gas flow

When the structure was removed from service, obvious surface corrosion was visible, and after a closer look, because of the flow of gas, some of the corrosion actually carved and pitted the steel.

Applying "cold" repair methods using polymers to restore, fill, and reclaim the profile would require good surface preparation. The selected material for the repair job was the MCOR™ 3115 | mClad™ mFill™, a versatile, multipurpose metal repair compound often utilized for metal filling and resurfacing badly pitted metal faces and structures (such as this butterfly valve face). Applying this material into all the pits with a build-up layer would be the most economical method to restore the metallic surface. This is because of the "cold" application benefits avoiding hot welding or other hot restoring methods. In addition, the material cures with high compressive strength, allowing for a sound structural repair and providing a renewed profile.

To begin, the surface was abrasively blasted to a SSPC-SP6 / NACE 3 "Commercial Blast Cleaning." Being in S. Florida, flash rusting (a quick occuring, thin layer of oxidation) occurs very soon after blasting, to avoid this, immeditaly after blasting, crews applied a holding primer- MCOR™ Primecoat™ MTe, a metal base coat with rust inhibitors.

After priming, the application of the MCOR™ 3115 | mClad™ mFill™ began. The application was simple, with a 1:1 mix ratio by volume. A manageable amount of polymer repair paste was used to fill in all voids and pits to the corroded steel, directly on top of the primer.

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Filling in pits and resurfacing metal with MCOR™ 3115 | mClad™ mFill™

Once the MCOR™ 3115 | mClad™ mFill™ hardens, the material can be dressed and sanded to achieve a profile similar to the orginal surrounding metal. All metal surfaces that were irregular and pitted, were restored.

After fully restoring the steel surfaces, the last step in the restoration project was applying a protective coating for future years of service. When repairing a steel structure, most of the cost is in the labor and repair methods. Therefore, it would make sense to apply a protective coating for a small additional cost because of the huge long-term benefit. Doing so will return the structure back to service better than it was when it was new.

Sanding and detail dressing of the 3115

Two coats of MCOR™ 2101 ensure ceramic protection against further corrosion and chemical attack

This final step, the protective coating application, was done with the MCOR™ 2101 | mPlait™ MP. The mPlait™ MP is a ceramic coating offering a high level of abrasion protection. It is cured with novolac and endures high levels of chemical and microbial induced corrosion, such as those found in sewer gas environments where this butterfly valve is utilized.

mClad™ mFill™ restores the flange face for a proper seal

Steel surface restored in its entirety

For more information, please contact your local MCOR™ consultant

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