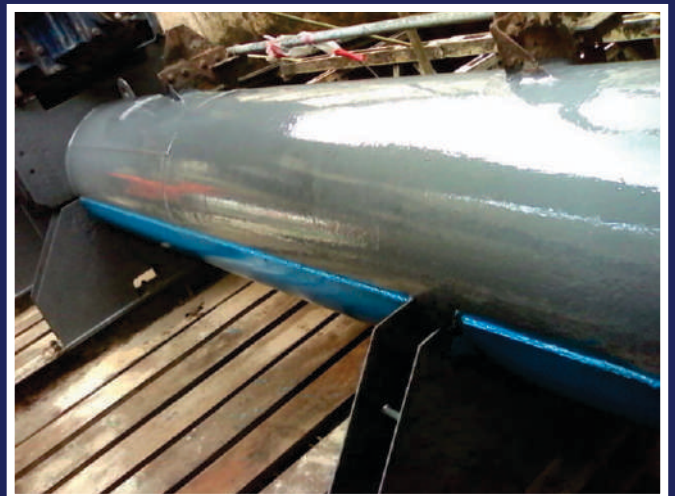
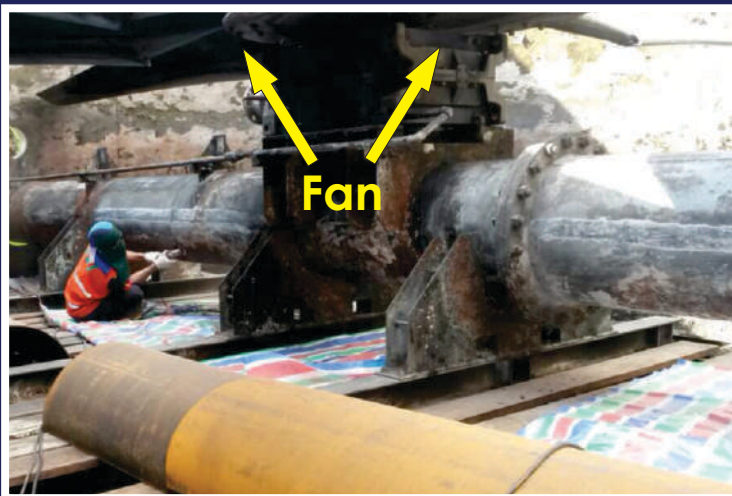


## Power Plant in Thailand Uses CeramAlloy and CHEMCLAD to Repair and Protect Cooling Water Pipeline

*This cooling water pipeline at a power plant in northern Thailand is subject to severe erosion and corrosion due to water forced out by the fans located on top of the pipes as seen in the bottom left photograph.*

*The bottom half of the pipe (only 2 mm / .08 inches thick in some areas) was repaired using welded plates which were bonded to the pipe with CeramAlloy CP+AC followed by two layers of CeramAlloy CL+AC.*

*The top of the pipe was coated with CHEMCLAD GP as a cost saving measure.*



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## ENECRETE, ENECLAD & CHEMCLAD Repair & Protect Containment Areas at Chilean Power Plant



**Client:** 900 Megawatt Thermoelectric Plant

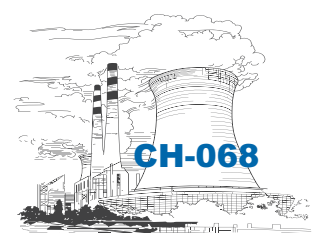
**Location:** Chile

**Problem:** Corrosion of 3 concrete acid containment areas.

**Solution:** After mechanically cleaning concrete walls, ENECRETE DuraFill was used to repair all damaged areas. ENECLAD CFS was then applied followed by two coats of CHEMCLAD XC for maximum protection.



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## CHEMCLAD GP Continues to Fight Corrosion on Waste Removal Trailers



CHEMCLAD GP was used to protect new and used waste removal trailer beds used at a California geothermal power plant.



## 1 Year in Service and Counting... Still Looking Good

**Geothermal Power Plant Uses CHEMCLAD SC to Stop Corrosion on Waste Removal Trailers**

**Client:** Geothermal power plant located in California.

**Problem:** Corrosion to the steel beds of the trailers used to transport geothermal waste product (very salty brine mineral debris) to waste facilities.

**Solution:** Various conventional paints and liners had been used over the years and all of them had failed very quickly.

The trailer beds were grit blasted and two coats of CHEMCLAD SC were sprayed onto the 550 sq ft beds.

The power plant was so pleased with the results that work on 12 more trailers has been scheduled.

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**REPAIR - DON'T REPLACE<sup>®</sup>**

After one year in service transporting extremely corrosive brine mineral debris, the trailer beds are showing no signs of corrosion. Other products previously tried only lasted a few months.

27 trailers have been protected with CHEMCLAD GP at this particular power plant since 2013.



## Geothermal Energy Plant Rebuilds and Protects Acid Containment Area with ENECRETE & CHEMCLAD



This high pressure acid pump containment area and its pump bases, located at a western U.S. geothermal energy plant, were crumbling and falling apart. These pumps are pumping 3% hydrochloric acid.

After a combination of hydro-blasting and manual preparation, 600 sq. ft. of concrete was repaired and rebuilt with ENECRETE DuraFill mixed with locally sourced aggregate.

CHEMCLAD P4C was used to prime all the areas since the DuraFill was not applied to the entire concrete surface. 2 coats of CHEMCLAD XC were then applied to provide maximum chemical protection to this critical containment area.



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## Northeastern U.S. Power Company Saves Concrete Electrical Tower Base with ENECRETE & ENESEAL

**Problem:** Electrical tower concrete base was crumbling due to exposure to the elements.

**Solution:** Loose concrete was manually removed and the base was enclosed with a wood former to re-build its shape. **ENECRETE DuraFill** was mixed with sand and pea gravel and then poured into the former.

After removing the wood former **ENECRETE DuraQuartz** was used to fill in any imperfections to provide a smooth surface to the base.

**ENESEAL CR** was then applied to prevent corrosion where the steel meets the base as well as to give a clean, uniform look to the structure.



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## ENECRETE & ENESEAL Repair Fire Damaged Concrete Bases of 37 Ton Transformers

**Client:** Northeastern U.S. Municipality

**Problem:** 2 Power transformers were involved in an accidental fire causing them both to have to be removed and eventually replaced. The onsite engineers were concerned about the integrity of the concrete bases the 37 ton transformers were mounted on. Cracks and damage were visible after the transformers were removed.

**Solution:** Loose concrete was removed from the bases as the area was manually prepared. Wood forms were

built around the bases and ENECRETE DuraFill, mixed with a locally sourced aggregate, was used to repair all the damaged areas. ENESEAL CR was then applied to give the bases a uniform look as well as protect them from future environmental exposure.

The engineers were pleased with ENECON's ability to provide a cost effective solution for this very serious problem.



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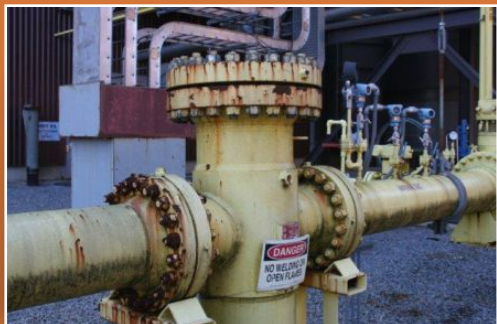
## Power Plant Protects 18 inch Diameter Gas Line with ENESEAL CR Safety Yellow

**Client:** Upstate (NY) Power Plant

**Problem:** 600 linear feet of an 18 inch diameter gas line was suffering from corrosion. The power plant was looking for a protective coating that could be applied with only manual surface preparation.

**Solution:** High pressure power wash to remove failed coating and loose corrosion deposits. Application of a three coat system of ENESEAL CR Safety Yellow.

**Cost:** \$24,000+ product and labor.



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## Northeastern U.S. Power Company Protects Switchgear Cabinet Roofs with ENESEAL<sup>®</sup>

**Client:** Northeastern U.S. Power Company.

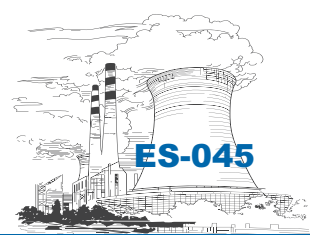
**Problem:** Aging switchgear cabinet roofs (constructed of galvanized sheet metal) were leaking at the seams and porcelain bushing penetrations.

**Solution:** After first removing the failing metal straps and rubber gaskets/seam covers, the entire roof was manually abraded. New 'coatable' roofing seam tape was applied to the open seams. ENESEAL CR was then applied as a 'primer' followed by two coats of ENESEAL HR.

**Cost:** Each switchgear cabinet cost about \$30,000 for labor + materials and takes 3 days to complete. So far, 15 cabinets have been completed at various locations for this power company.







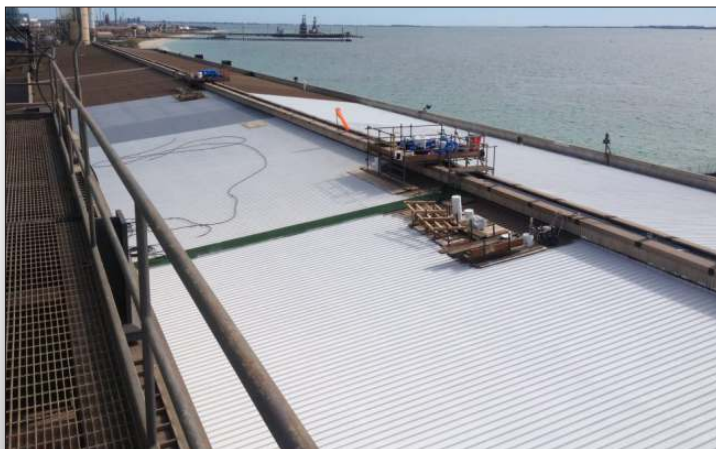
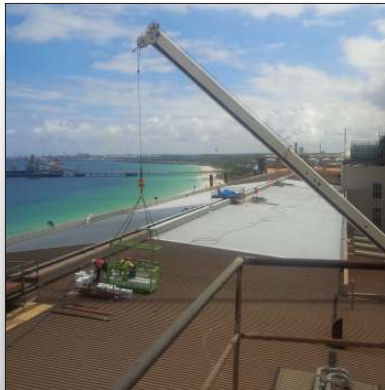
## Australian Power Station Protects 156,000 sq. ft. of Roof with ENESEAL



This 156,000 sq. ft. power station roof in Australia was in need of protection from the elements as well as airborne residue from an aluminum refinery nearby. ENECON Australia was called in to provide a solution.

After high pressure water blasting the entire roof, 345 units of ENESEAL CR were used to prime and seal the roof. Then 435 units of ENESEAL HR were used to provide a durable, seamless, flexible 'skin' that refracts and reflects heat while providing a moisture barrier to the roof.

This half-million dollar project was completed on-time and on-budget.



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## Electrical Utility Sub-Stations Undergo Major Water-Proofing & Corrosion Protection Overhaul



A mid-Atlantic power company is partnering with ENECON Corporation to provide a cost effective solution to leaking switchgear cabinets.

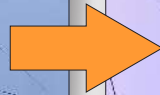
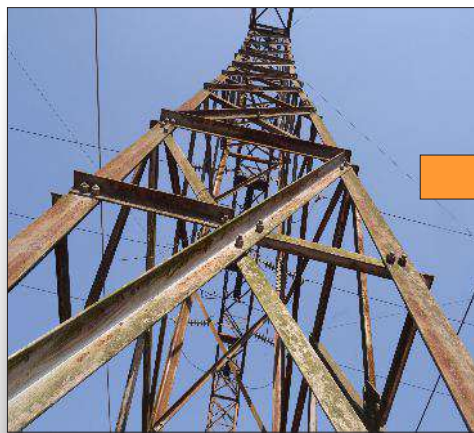
Many of these cabinets are 70-80 years old and leaks can cause the electrical equipment inside to explode, leading to power outages that can last months.

The ability to provide a detailed procedure for cabinet water-proofing and corrosion protection made ENECON the obvious choice for the power company's engineers.

They were so impressed with the results that hundreds of switchgear cabinets have now been scheduled for repair with ENESEAL CR and HR.

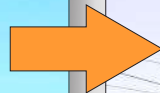
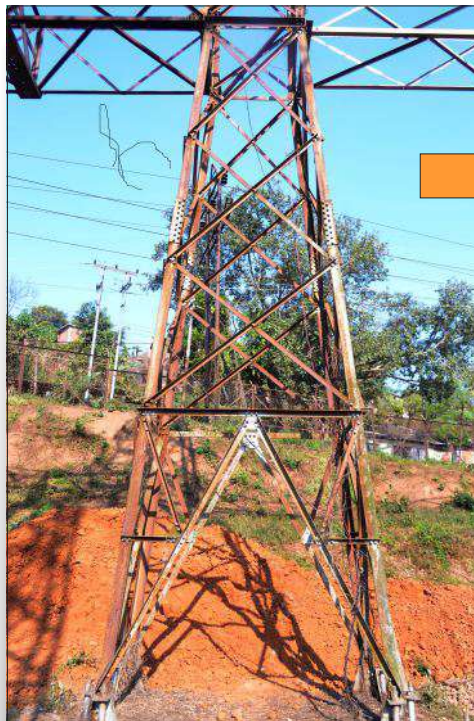
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## Indian Power Company Protects Their Electrical Towers From Corrosion With ENESEAL CR



Built in the 1960's, these steel electrical towers were severely corroding because of the very humid and rainy weather in this region of India. The power company was looking for a cost effective solution to this on-going problem.

ENECON's ENESEAL CR was first used for a variety of sample tests throughout the substation and after a 6 month trial period, ENESEAL CR was approved and specified for this application.



Over 12,000 sq. ft. of surface area was coated with ENESEAL CR. The power company engineers were so pleased with the results, additional substation towers will now be coated and protected.



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These large oil storage tanks located at a hydroelectric facility in Tennessee were in need of a new protective coating. The old lead-based paint was beginning to peel and surface corrosion was visible in certain areas.

Due to the safety risks associated with working with the surrounding high-voltage equipment, special temporary

containment was constructed prior to the tanks' surface preparation. The old lead-based paint was removed by pressure washing and then properly disposed of.

Two coats of ENESEAL CR were then applied providing a highly durable, corrosion resistant, elastomeric 'skin'.

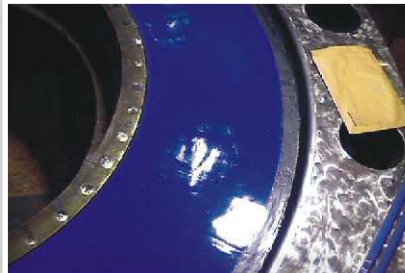
Problem Solved.

## Tennessee Hydroelectric Plant Uses ENESEAL CR to Protect Oil Tanks



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## Major Spanish Hydroelectric Pump Storage Facility Turns to DuraTough & CeramAlloy to Repair & Protect Critical Turbines



At this hydroelectric plant - one of the most important facilities in Spain - erosion and corrosion damage had created a serious maintenance concern for the plant engineers. They needed a cost effective and commercially proven solution to their cavitation accelerated, erosion/corrosion problems. They turned to their local ENECON Ibérica

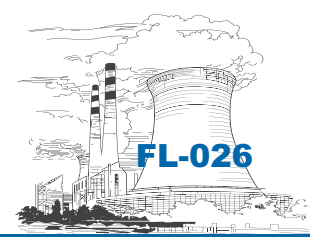
Field Engineering Team who recommended CeramAlloy to repair and protect all areas subject to erosion and corrosion with an added application of DuraTough on those areas subject to cavitation attack.

The head height at this plant is 450 meters (about 1,300+ feet). It also operates as a pump storage facility - pumping water at

night (using excess power from the grid) to the lake above in order to be ready to provide immediate power during the day as and when required.

The plant engineers are delighted with the performance of the ENECON system.





## German Utility Company Repairs and Protects Cavitation Damage on Francis Turbine with CeramAlloy<sup>®</sup> & DuraTough<sup>®</sup>

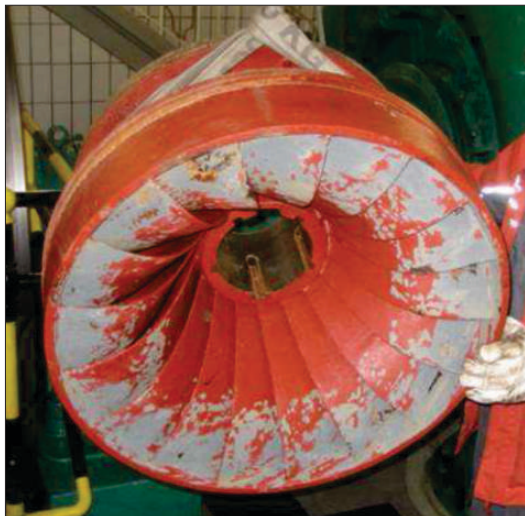


**Client:** German Hydroelectric Plant.

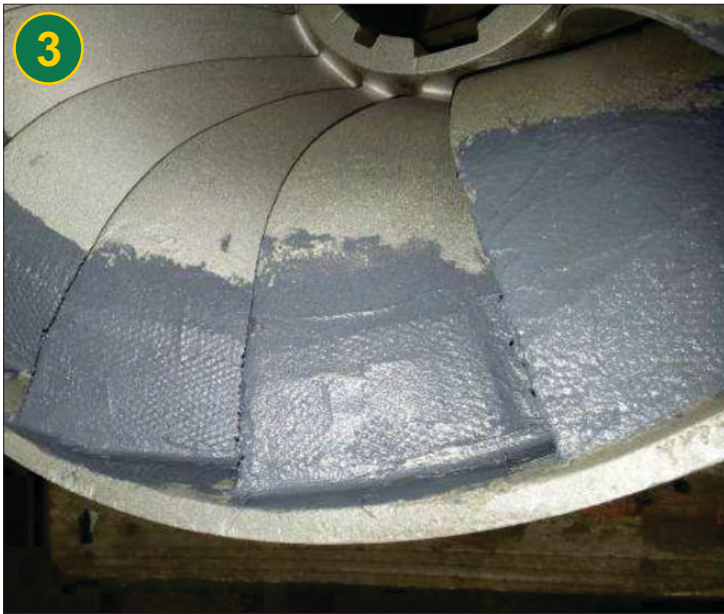
**Problem:** Francis turbine vanes were suffering from erosion and corrosion due to the effects of cavitation after the failure of a previously applied coating.

**Solution:** After grit blasting the turbine, the vanes were rebuilt by tack welding steel mesh to the deeply cavitated areas. The vanes were then rebuilt with CeramAlloy CP+AC then two coats of CeramAlloy CL+AC were applied. DuraTough DL was applied to protect against future cavitation problems.

**After operating for 7,000 hours, the repaired turbine was opened for an inspection and found to be in near perfect condition.**



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- 1. Steel mesh is welded to the vanes.**
- 2. CeramAlloy CP+AC covers the mesh repairs.**
- 3. CeramAlloy CP+AC rebuilds the vanes.**
- 4. The turbine is coated with CeramAlloy CL+AC.**
- 5. DuraTough DL provides the cavitation protection.**

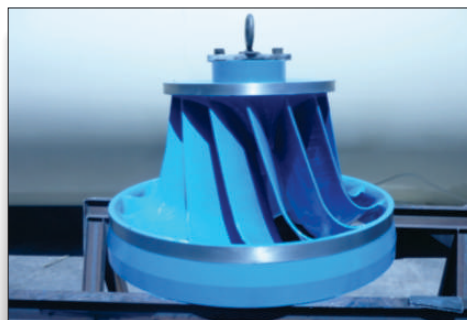
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## Hydroelectric Power Plant Repairs & Protects Francis Turbine with METALCLAD<sup>®</sup> & FLEXICLAD<sup>®</sup>

*In a 54-year old hydroelectric plant near Santiago, Chile, major problems of erosion, corrosion and cavitation, made even more severe by a large amount of suspended solids, necessitated a complete refurbishment of this Francis turbine.*

*The plant engineers called in their local ENECON Fluid Flow Specialists who determined that an integral solution to the problem involved a complete restoration process.*

*After cleaning and grit-blasting the turbine, METALCLAD CeramAlloy CP+AC was applied to rebuild all deeply eroded areas. CeramAlloy CL+AC was then used to resurface the turbine blades. Finally, the FLEXICLAD DuraTough DL system was used to protect all wet areas against cavitation as well as the abrasive action of the sand and silt in the river water.*



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## DurAlloy Stops Critical SF-6 Gas Leaks

A major Northeastern U.S. utility company was experiencing SF-6 gas leaks on its substation breakers. Cracks in the old solder joints were causing this gas to leak from the insulator bushing caps. SF-6 gas has excellent cooling and insulation capabilities. However, SF-6 gas is an expensive and ozone-depleting gas so leaks are unacceptable.

In the past, the utility company's engineers were repairing these leaks by soldering, but only with limited success.

Recently, the local ENECON distributor was asked to provide a proposal to repair the leaks with DurAlloy.

First, the old solder and paint were stripped away from the bushing caps. After a thorough cleaning, DurAlloy was applied to completely seal the failed joints.

The engineers were so pleased with the results, the repair using DurAlloy and ENECON Field Support has become a standard procedure for the utility's maintenance program.



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## CeramAlloy Protects Nuclear Power Plant Pump



Over 3 years ago this large main circulating pump, 1 of 12 at this Mid-Atlantic region nuclear power plant, had been coated with 3 coats of CeramAlloy™ CL+AC.

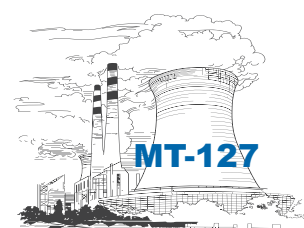
This pump had been operating continuously in very corrosive, brackish water conditions.

During a scheduled maintenance shut-down the plant engineers discovered that the CeramAlloy™ CL+AC was in virtually perfect condition.

Following minor touch-ups, the pump was put back in service for another 3-year cycle.



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## Nuclear Power Station Saves Over \$20,000 Repairing Deteriorated Spool Piece with CeramAlloy



The component is a 14” diameter, cement lined, spool piece that is mounted between a large strainer and an isolation valve on the service water system at a nuclear power station. During a refueling outage, this spool piece was removed to allow for maintenance on an adjacent component. The deteriorated condition of the piece was unexpected. The cement lining was severely eroded as were the inside diameters of both the inlet and outlet flanges.

The facility needed to get the piping system back into service as soon as possible. It was determined that fabrication of a new pipe spool would require over a week to accomplish and, due to the time pressure, the cost would exceed \$25,000.00.

The onsite ENECON Northeast service team, was asked to accomplish abrasive blasting of the component so that plant engineers could make an assessment of the true condition. Once the spool piece was determined to be structurally sound, **METALCLAD CeramAlloy CP+** was used to rebuild the spool lining and damaged flanges and **METALCLAD CeramAlloy CL+** was used to totally encapsulate the surfaces exposed to the brackish river water.

The spool piece was ready for re-installation just two days after removal at a fraction of the cost estimated for replacement - an excellent example of the practical benefit of “Repair don’t Replace”!



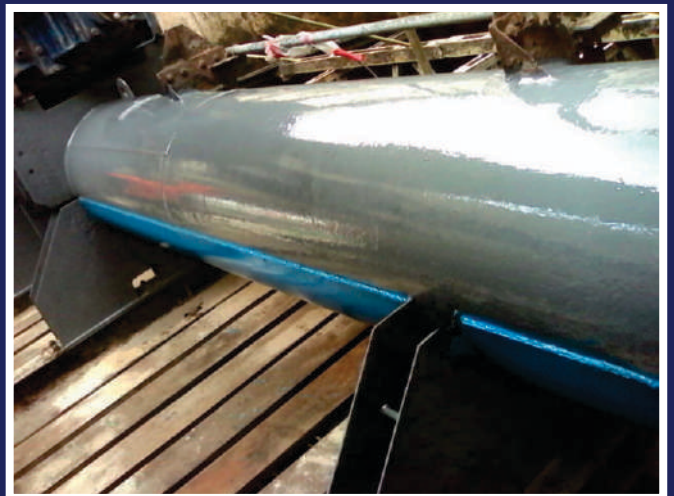
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## Power Plant in Thailand Uses CeramAlloy and CHEMCLAD to Repair and Protect Cooling Water Pipeline

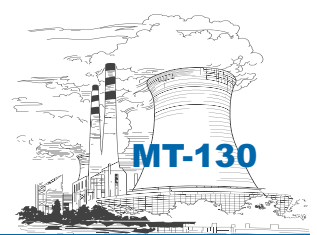
*This cooling water pipeline at a power plant in northern Thailand is subject to severe erosion and corrosion due to water forced out by the fans located on top of the pipes as seen in the bottom left photograph.*

*The bottom half of the pipe (only 2 mm / .08 inches thick in some areas) was repaired using welded plates which were bonded to the pipe with CeramAlloy CP+AC followed by two layers of CeramAlloy CL+AC.*

*The top of the pipe was coated with CHEMCLAD GP as a cost saving measure.*



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## Power Station Brings Salt Water Circulating Pump Back to Life

This utility in the northeastern U.S. reclaimed a damaged salt water circulating pump using METALCLAD CeramAlloy and some outstanding repair techniques.

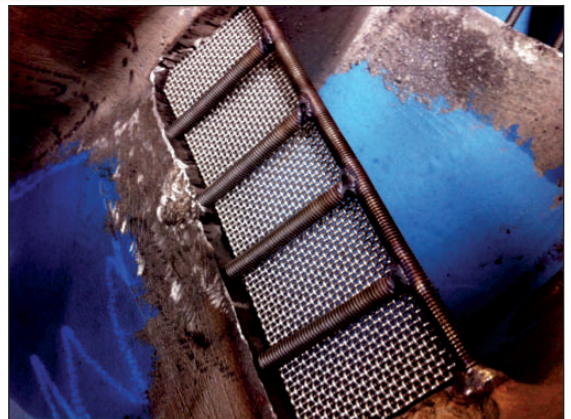
The pictures below illustrate the 'imagineering' that was employed to repair the eroded stationary guide vanes and then resurface the entire component.



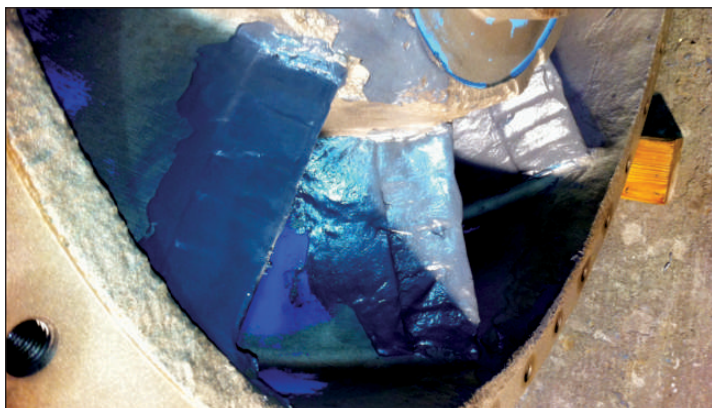
The severely eroded vanes were cut away.



A threaded rod "skeleton" was installed by tack welding to the already cut vanes.



A heavy wire screen was welded onto the rods to provide reinforcement for the CeramAlloy.



CeramAlloy CP+AC used to rebuild the vanes to their original size.



CeramAlloy CL+AC used to coat all surfaces.



The completed component ready for service.

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## 12 Massive Circulating Pump Casings at this Nuclear Power Plant Were Repaired & Protected with CeramAlloy



A major U.S. nuclear power plant chose ENECON to supply turn-key services to install CeramAlloy CL+AC on 12 massive circulating pump (circ. pump) casings. The plant's engineers felt that the performance of CeramAlloy on the circ. pump impellers, (reference MT-114) in a demanding brackish water environment was proof enough that CeramAlloy should be used to protect 12 circ. pump casings during a system overhaul.

The circ. pump components were shipped directly to ENECON at a local blasting facility large enough to stage and blast all of the components. Once the interior and exterior surfaces were abrasive blasted, the ENECON application team applied 3 coats of CeramAlloy CL+AC to all interior and exterior surfaces.



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