





CORROSION NEWS **MATCOR**[®]

A QUARTERLY PUBLICATION • SPRING 2010 • WWW.MATCOR.COM

IN THIS ISSUE:

-  Power Plant Cofferdams Protected By MATCOR's Sea-Bottom™ Anodes *Cover story*
-  Cathodic Protection For Concrete Structures *Page 2*
-  Passing of the Leadership Baton *Page 3*
-  Taking the Baton *Page 3*

Editor: Ted Huck • thuck@matcor.com

MATCOR, Inc. • Headquarters: 301 Airport Blvd, Doylestown, Pa. 18902 • 800-523-6692

PRSR STD
US POSTAGE
PAID
ROYERSFORD, PA
PERMIT NO. 539

No stronger name in corrosion protection[®]
MATCOR[®]

CORROSION NEWS **MATCOR**®

A QUARTERLY PUBLICATION • SPRING 2010 • WWW.MATCOR.COM

Power Plant Cofferdams Protected By MATCOR's Sea-Bottom™ Anodes



MATCOR is often tasked to design cathodic protection (CP) systems for structures with existing systems that no longer function properly. MATCOR did just this when asked to provide a CP system design proposal for a cofferdam at a power plant in New York. Known for its innovative design concepts and turnkey solutions, MATCOR custom designed a CP system to protect nine 50 foot diameter cofferdams submerged on one side and in direct contact with soil on the other side. MATCOR's proposal included design, materials, installation, installation supervision and commissioning/testing of the new system.



The power plant's existing CP system consisted of over 70 depleted anodes. MATCOR was awarded the project due to its cost-saving design, which consisted of two MATCOR Sea-Bottom™ Anodes.

"MATCOR's Sea-Bottom™ Anode is ideally suited for water environments with strong ocean currents where a fairly high level of DC current is required," says MATCOR Executive Vice President Glenn Shreffler. "The installation is not only easier but cheaper as MATCOR's Sea-Bottom™ Anodes can be installed in less than a day and are rugged enough to withstand damage from debris."



The plant's original system failed in the harsh service conditions, having sustained serious damage from debris. A more robust and high-powered system, the MATCOR Sea-Bottom™ Anode was custom designed to endure the application's strong currents, debris and waterway traffic. MATCOR's Sea-Bottom™ Anode has been proven in challenging applications such as the arctic Straits of Siberia without failure or problems.

The MATCOR system is made with high strength concrete. Each one weighs approximately 850 pounds without cable. The lead wire is housed in a high-density polyethylene pipe to protect the cable from external damage. The housing is perforated to take on water and prevent floating.

On the North side of the cofferdam, the first Sea-Bottom™ Anode was placed 25 feet away from the structure by a crane operator and diver. The second system was positioned 50 feet offshore to allow for barge and


The MATCOR Sea-Bottom™ Anode is lowered into the water and guided to the bottom by a diver to protect a cofferdam at a New York power plant.

Continued on page 2

POWER PLANT COFFERDAMS PROTECTED BY MATCOR'S SEA-BOTTOM™ ANODES Continued from cover

tug boat traffic. Each assembly was lifted at the sling marks and lowered into the water at the selected locations. The anodes were guided to the bottom of the waterway by a diver, and the cable was connected to the rectifier and junction box locations. To keep the cable pipe from shifting and to help the system sink into the mud, burlap bags filled with concrete were placed over the cable pipe at regular intervals.

With an extremely demanding construction schedule, MATCOR engineers successfully worked with multiple subcontractors to complete the job on-time and on-budget.

To learn more, visit www.matcor.com or contact Laura Bauer at (800) 523-6692 or lbauer@matcor.com. 

CATHODIC PROTECTION FOR CONCRETE STRUCTURES



After MATCOR installed a CP system on NASA's 215,000 square foot crumbling Vehicle Assembly Building roof, the concrete crumbling and deterioration stopped.

Owners and operators may understand they need CP but they often don't understand how it works. When it comes to protecting reinforced steel-in-concrete structures, even experienced engineers and practitioners may find this specialized application intimidating. This article will provide a brief overview of the unique application of CP to steel-in-concrete.

Any discussion of concrete structures begins with the basic understanding that typical concrete has a high pH level (approximately 13), which acts to passivate the steel. Unfortunately, concrete can become "contaminated" by salts, which serve to lower the pH of the concrete surrounding the steel. Once the concrete pH starts to drop, the steel is no longer passivated and the normal corrosion oxidation reaction of steel occurs freely.

As the steel reacts to form iron oxide, the volume of the corrosion products create internal stresses on the concrete, resulting in cracking and spalling. The corrosion process accelerates rapidly, leading to significant degradation of the structure. Fortunately, concrete is an electrolyte and will allow the flow of current from a source (the anode) to the structural steel (the cathode).

So what makes CP of concrete structures different than CP of buried or marine structures?

- Anode location and current distribution – the reinforcing steel is close to the structure's

surface, providing limited anode separation from the cathode. This makes anode selection and location a challenge.

- High localized swings in resistivity – concrete typically has a high resistivity unless wet or contaminated with chlorides, in which case it drops quickly. These changes in localized resistivity affect current distribution and anode system performance unless properly anticipated for in the CP design.
- Anode current density limitations – at the anode to concrete interface, high current densities lead to a secondary reaction creating hydrochloric acid. The hydrochloric acid attacks the concrete. This creates a gap between the anode and the concrete, rendering the anode ineffective.

With over 30 years of concrete CP system design experience, MATCOR offers the greatest expertise and widest-range of solutions for protecting concrete structures, including mesh overlays, saw slot systems, ribbon or wire anodes, probe anode systems, embedded or external linear anode systems, plate anodes and conductive coating systems.

To learn more, visit www.matcor.com or contact MATCOR at (800) 523-6692 or matcorsales@matcor.com.

PASSING OF THE LEADERSHIP BATON

After 35 years as President of MATCOR, William Schutt announced he was “firing” himself. Concluding it was the right time to relinquish leadership of the company he started in 1975, Bill quietly embarked on a search for an experienced executive to take MATCOR to a new level. This surprising and unorthodox move was typical of Bill Schutt. He is stepping down on his terms and at the time of his choosing because he feels it’s “the best thing for MATCOR”.

Shortly after graduating from Drexel University, Bill began his corrosion engineering career with a large engineering and international construction firm. In the 1970s, Bill was blazing the trail in the application of CP for concrete bridge decks; then in 1975 Bill formed MATCOR, Inc.

Today, MATCOR is a successful corrosion engineering company and custom anode system manufacturer. Bill has developed several of MATCOR’s technologically advanced products. MATCOR anode systems can be found around the globe from the plains of South Africa and the frozen tundra of Arctic Russia to South America and Kazakhstan. Bill has been awarded four patents for cathodic protection, received numerous industry awards, is a NACE Corrosion Specialist and a Fellow of ICORR (UK).

The story of MATCOR is in many ways Bill Schutt's story. Bill also maintains a very active role in his Doylestown and Bucks County, Pennsylvania communities. He gives generously of his time to support local charities and serves on the Boards of several non-profit organizations.

So what is the legacy that Bill Schutt is leaving? Would that be the products he developed and patented? How about the hundreds of people he has mentored, taught, worked with, employed and helped develop professionally over the course of his career? Or would it be the application knowledge he has developed and implemented to protect important industrial and historical structures in the United States and around the world?

The legacy Bill Schutt cherishes most is the positive impact MATCOR has had on the lives of its employees and their families. 🌐



MATCOR Chairman Bill Schutt plays his sax at the 2008 NACE CORROSION Conference & Expo in New Orleans, Louisiana.



Jeffrey Stello, new President and CEO.

TAKING THE BATON

A new horizon is on the way for MATCOR with the appointment of Jeffrey Stello as President & CEO

MATCOR is pleased to introduce Jeffrey Stello as the company’s new President & CEO. Stello is a results-oriented individual with the skills and experiences necessary to lead MATCOR through its next stage of growth. With the financial and operational

savvy to take advantage of diverse market opportunities existing both domestically and internationally, Stello is poised to take the company into a new direction with his vision for a client service driven MATCOR.

Stello is an accomplished leader, experienced in developing and executing business strategies for high-growth technological service industries and companies. During the past 20 years, he has held several executive level positions with operational, financial and general management responsibilities. Stello’s expertise in client satisfaction, operational excellence, international business, capital fundraising, business development and mergers and acquisitions integration will be valuable assets to MATCOR as it continues to grow its business. 🌐