

Coatings extend condenser life

At many fossil-fueled plants, the condenser system's unlined water boxes and uncoated steel tube sheets often experience severe corrosion over time. When corrosion does occur, a pitted box can be resurfaced or relined with a rubber such as neoprene. Rubber offers considerable resistance to abrasion and most chemicals; 100%-solids epoxy, coal tar, and even fiberglass are also employed.

Rubber is preferred. Although the selection of a material to reline a water box is often dictated by whether the plant is cooled by fresh, brackish, or salt water, in most cases rubber is chosen because it has the best track record for long-term service. In fact, most firms that sell neoprene rubber linings offer extended warranties that are not available for other linings.

Rubber linings are also selected for water-handling equipment such as pumps, pipes, fittings, and tanks. The elasticity of the lining material simplifies application to complex structures. Substrates such as carbon steel, stainless steel, and concrete can also be lined. The linings can be applied on-site and, in emergencies or for short outages, the work can be done very quickly.

Elastomeric linings are a good solution to corrosion caused by chemicals used for water treatment and pollution control systems. For example, the rotary drum vacuum filter of flue gas desulfurization (FGD) systems is 100% rubber encapsulated, because any discontinuity or pinhole opens the door to severe corrosion resulting from the system's operation in an acidic and abrasive environment. Other components of FGD systems require different types of linings.

Fiberglass, phenols, and vinyl ester also are used to extend the life of systems in harsh-chemical environments. Sometimes coatings or topcoats of organic or inorganic zinc, alkyds, acrylics or silicone alone will do the job. Inorganic zinc and silicone, for example, are good choices for hot surfaces (Figure 5).

BRIDGEWATER PROTECTIVE COATINGS, INC.



POLYFIBER TECHNOLOGY

Corrosion Control Specialists

Telephone: 800-367-1406

Email: jscholz@corrosion-solutions.com

Web: www.corrosion-solutions.com

Extended outage averted. Thoughtful relining and coating can save a utility big bucks. During a scheduled holiday-weekend maintenance outage at a 1,000-MW coal-fired power plant 10 years ago, a crew from Bridgewater Protective Coatings Inc. (BPC, Bridgewater, N.J.) was brought in to strip and reline its water treatment regeneration tanks.

To prepare the tanks for the work, the plant's maintenance crew removed its costly resin and shoveled it—still damp—into an empty condensate storage tank nearby. The BPC crew then arrived and stripped and relined all the tanks and left them ready to be returned to service. But when the plant's maintenance crew went to retrieve the resin they discovered—to their horror—that the tank they choose to put it in was made of unlined aluminum. The recharging acid had severely pitted and even pinholed the bottom to the tank. At this point, it appeared that the owner of the plant would have no choice but to shut it down for an extended, unscheduled outage.

However, quick-thinking technicians came up with another, less-painful solution. They filled the lightly pitted areas of the condensate storage tank with a 100%-solids epoxy. They also used the putty to fill areas that had been more severely pitted and pinholed, but only after embedding aluminum discs in them.

When the putty was dry, the bottom of the tank and the lower 2 feet of its sidewalls were covered with a pre-cured rubber lining. The condensate storage tank was put back on-line after the holiday weekend and is still in service 10 years later.

—Jack Scholz, Bridgewater Protective Coatings Inc.



5. Coated waterbox. At many fossil-fueled plants, condenser system's unlined water boxes and uncoated steel tube sheets often experience severe corrosion over time. Properly coated water boxes will significantly extend equipment life. Courtesy: Bridgewater Protective Coatings Inc.