

CONCO SYSTEMS

IN THE TUBE

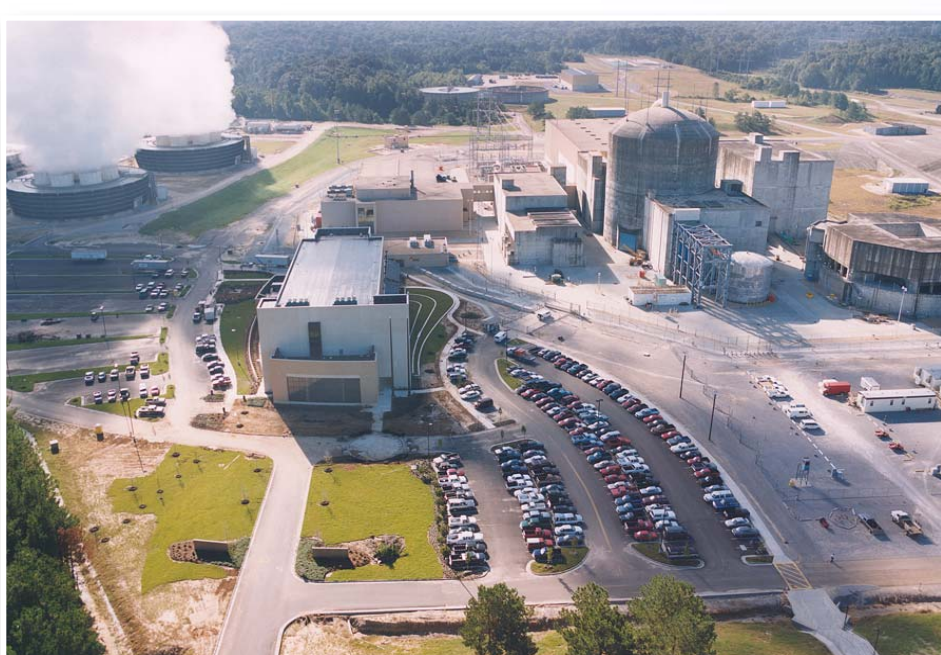
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Entergy's River Bend Station is a 991 MWe nuclear plant on the Mississippi River in St. Francisville, just north of Baton Rouge, Louisiana. In operation since 1986, the plant serves a major corridor through the state and contiguous environs and was able to supply continuous power to New Orleans and the surrounding region throughout the Katrina disaster. Concerns were raised recently when Engineering's evaluation of condenser efficiency reported declining performance, which was tied directly to MWe output of the plant. According to Ed Deweese, Sr. Lead Engineer, if they continued on a linear progression of degradation, they would soon fall below a 65% minimum condenser cleanliness/efficiency factor.

Various service contractors and cleaning methodologies were considered – hydro-lasing, chemical cleaning and mechanical tube scraping. River Bend Station has a hydrogen water chemistry system at the plant, which increases the dose rates at the condenser and taking the system out of service for a long period of time was a concern for Chemistry Management personnel. Continuous hydrogen injection into the feed water system provides long-term integrity protection to the reactor vessel. Based on these factors and other dose related considerations, it would be important to spend as little time as possible in the condenser areas for inspection and cleaning.

The decision was made to go with the mechanical tube cleaning method due to the reduced time required and inherent efficiencies

Solving Costly Condenser Blockage Recovers Over 2 MWe/Hour For Louisiana Nuclear Plant



Aerial view of the River Bend Station in St. Francisville, Louisiana.



Some of the mud and debris removed from the water box condenser tubes using the Conco C45 tube cleaners.

turn, created a low flow condition at the inlet side of the water box. Because of the low flow condition caused by the plastic fill pieces, the condenser tubes were severely fouled with mud that had settled in thick deposits.

For the first time, River Bend conducted an on-line cleaning operation. With the two crews working around the clock, they proceeded to "shoot" the tubes with Conco C45 tube cleaners. These cleaners have a four-metal-bladed center rivet design that provides overlapping tube I.D. coverage. A tarp was hung at the far end of the water box to catch the exiting cleaners, which were each cleaned and re-used several times. The crews were able to clean the more than 17,000 condenser tubes in each water box in only three days, completing the 34,000 + tubes in less than a week. In all, more than a thousand pounds of mud was removed from the first water box and almost as much from the second, along with the plastic cooling tower fill pieces and sponge balls (tube cleaners) that were blocked by the buildup of mud and debris on the tube sheets.

Randy Glueck, Senior Systems Engineer, maintains the condenser efficiency ratings, averaged hourly, for the plant. He says they are up to 80% and that they have realized an increase in power output of 2-1/2 MWe per hour, or 60 MWe per day. New circulating water screens have been procured and complete overhauls of the cooling towers are in progress at this time to prevent a recurrence of the problem in the future.

Admiralty brass tubes, 18 gauge, 45' 2" long and 1" in diameter. Inspection showed that the Delta water box was suffering significantly degraded performance and the reason was quickly apparent. Plastic "fill," V-shaped perforated sections located in the circulating water cooling towers had deteriorated and began sloughing off in small pieces, eventually winding up in the condenser, lodged against the inlet holes of the tubesheet. That, in

in comparison to other methods. Conco Systems, Inc., was selected to do the work based on their experience in cleaning power plant condenser tubes in general and, specifically in this case, condenser tubes in nuclear plants, including River Bend. Mike Willis, Conco's regional manager and Regina Godish, Conco's Vice President of Services, put together two crews, with a supervisor and three technicians on each crew. All personnel were badged and experienced in inspecting and cleaning nuclear plant condensers. Most were ready to start working the morning they arrived, following completion of site-specific training. The River Bend Station employs the Institute of Nuclear Power (INPO) Nantel Training Process that had the additional benefit of certifying the Conco crew for performing tube cleaning operations at any nuclear facility using the Nantel Process, which include most facilities today, for a full year.

There are four condenser water boxes serving the facility, each containing 17,452



River Bend Station Condenser Team (from left): Chuck Miller, Work Week Manager, Randy Glueck, Senior Systems Engineer and Ed Deweese, Sr. Lead Engineer (not shown – Mike Raymond, Sr. Chemistry Technician).

Show & Tell



By participating as exhibitors at trade shows, we have the opportunity to discuss our expanding technologies with a wide range of industry professionals seeking maintenance productivity solutions. We look forward to seeing you at these shows in the first quarter of 2008:

- **AHR Expo (International Air Conditioning, Heating, Refrigeration Exposition)**, New York City, NY, January 22-24
- **Energy Generation Conference**, Bismarck, ND, January 29-31
- **LINC Vendor Showcase**, Dallas (Addison), TX, January 31-February 1
- **NFMT (National Facilities Management & Technology)**, Baltimore, MD, March 4-6

HOPE TO SEE YOU THERE!

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This is Conco

■ Established in 1923

■ Recognized worldwide for "Absolutely the Best"

- Condenser Tube Cleaners
- Tube Cleaning Services
- Air Cooled Condenser Cleaning
- Tracer Gas Leak Detection
- Eddy Current Testing
- Support Services

■ Manufacturer of a wide variety of state-of-the-art equipment that includes tube cleaners, tube cleaning systems, hydrodrills, air-cooled condenser cleaning services and testing instruments engineered to keep you productive and efficient

■ Headquartered in the United States, with offices and representatives throughout the world:

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Prevent Costly Outages

Eddy Current Testing is one of the key services offered by Conco to keep your plant up and running. Headed up by General Manager Jason Wilburn, the Eddy Current Division is staffed by multiple analysts, several Level-2 managers and more than three dozen highly trained technicians, a number that can approach 60 in the busy Spring season. Our technicians are certified to ASNT SNT-TC-1A guidelines and our analysts have taken and passed both EPRI's data review and evaluation of balance-of-plant (BOP) heat exchangers, as well as Zetec's Data-Analysis class and we follow the most stringent nuclear guidelines. Our Eddy Current Division utilizes the best available technology from industry leaders Zetec and Corestar. Conco Eddy Current Testing is worldwide, with North and South America served through our headquarters in Verona, Pennsylvania and overseas markets served by our facilities in Europe and Australia.



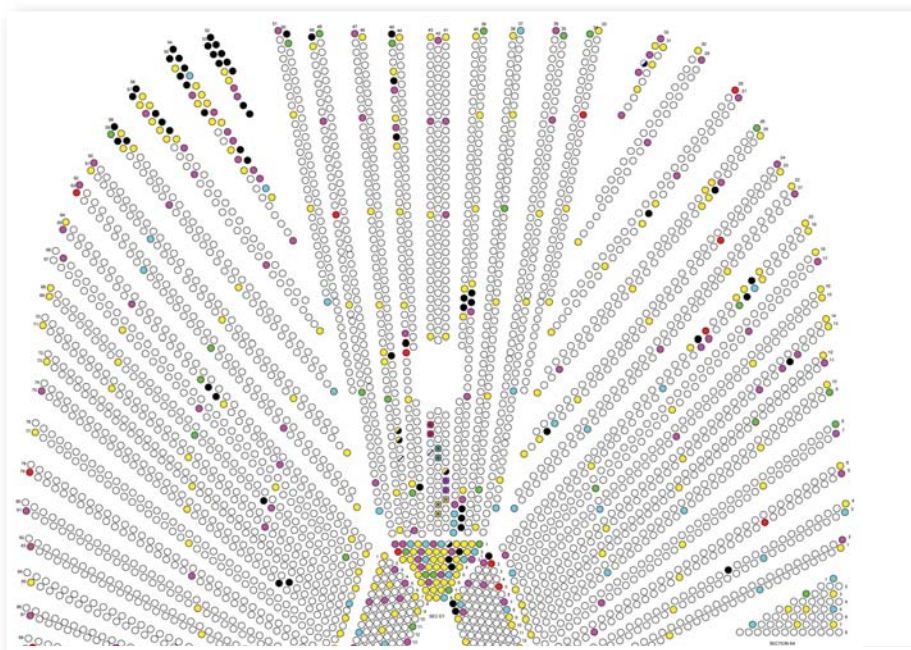
Conco Eddy Current Testing helps prevent forced outages.

A testing project at a plant can run anywhere from a few days to a few weeks, depending on the number and size of the condensers. Most power plants, including all nuclear plants, conduct Eddy Current Testing as part of their regular preventive maintenance programs. This is especially

important for condensers that have been in service for extended periods of time. Eddy Current Testing helps to avoid forced outages by detecting various defects, such

as pitting, cracking, corrosion, erosion, grooving and dents that can cause condenser tube failures and result in forced outages and lost time.

When Conco completes a comprehensive Eddy Current Testing evaluation, we can create a multi-color tubesheet map for a graphic illustration of your tube wall condition. Any developing trends in your heat exchanger are obvious as each tube's condition is represented by a different color.



Conco's at-a-glance tubesheet map shows obvious trends.



Jason Wilburn,
General Manager,
Eddy Current
Division

By utilizing Conco's Eddy Current Division to inspect your heat exchanger tubing, you will receive "absolutely the best" test results.

A Night at the Opera



Conco's crew outside the Sydney Opera House.

Conco Systems continues to demonstrate their effectiveness in the HVAC market development. Most recently, Conco performed a chiller condenser cleaning and non-destructive testing for the Sydney Opera House, located in Sydney, Australia. Conco Systems PTY LTD performed work on three of the primary chillers, used for cooling this facility, keeping opera fans comfortable.

Due to the success of the cleaning, tremendous improvements were achieved in

the overall performance of the chillers.

Both the facilities Manager and the engineer in charge were satisfied with the application and expect to continue to utilize Conco for these services in the future.

The Sydney Opera House is certainly a "Trophy" facility and the project marks a milestone in Conco's HVAC development. We look forward to future projects of the same caliber.

Photo Search...!



We would like to thank Jeff Collier and his crew from Vectren Power Supply in Evansville, Indiana, for their winning photo entry. The photo entries included a comprehensive PowerPoint presentation demonstrating effective tracer gas leak detection technologies at the AB BROWN GENERATING STATION. Jeff and his crew, Jim and John, are the winners of a \$100 American Express Gift Card. Congratulations to Jeff, Jim and John, whose photos are shown here. Enjoy your gift card, guys, and thanks for participating in our photo contest. Jeff and his crew were chosen randomly from more than two dozen entries.

Send us your JPEG photo to info@concosystems.com along with your name, title, facility address and telephone number. The winner's name and photo will be published in the next issue of In The Tube. It can't get any easier than that...so get "snapping."