

Special  
**POWER-GEN Edition**



## One Source. One Invoice. One Job – Well Done.

It's long been a practice of utilities and other owners of tubular heat transfer equipment to hire multiple contractors to work on their equipment. One company provides cleaning, another testing and, yet, a third implements any necessary corrective actions or repairs.

Performing projects with multiple contractors costs equipment owners more time and more money and, unfortunately, very often costs them less than satisfactory results. Further, utilizing multiple contractors all too often creates a communication, logistics and management nightmare for the equipment owners' project managers. Furthermore, if problems or issues arise in any phase of the project, the equipment owner frequently finds a bevy of finger pointing among the several contractors.



Curran International now provides NDE inspection for tubular heat transfer equipment in conjunction with our ID cleaning and coating services.

For over three decades, Curran International has negated these issues for equipment owners by being the one source solution.

Curran is a complete team of highly skilled, trained and qualified heat exchanger experts. Our mixed crews of mechanical and NDE

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**Hear Ye!  
Hear Ye!  
Curran international  
Invites You to  
Booth, #630, at the  
POWER-GEN Show.  
Come One!  
Come All!**



**DECEMBER 7-11, 2014**  
WWW.POWERGENERATIONWEEK.COM  
ORANGE COUNTY CONVENTION CENTER  
ORLANDO, FL, USA

**VISIT BOOTH 630**

experts are capable of handling all of your cleaning, inspection and repair needs – in a single comprehensive project. Curran’s mixed crews have worked together for years, so each knows what is expected and when.

**Having one point of contact for the entire work-scope means for a smoother job, reduced the overall project cost and less time needed to complete the work.**

Since Curran is a service company, as opposed to being a manufacturer of tube cleaning, inspection and repair equipment, Curran is not tied to a limited set of technologies, equipment or methods.

This freedom of choice enables Curran to utilize the method best suited to your tubular heat transfer equipment’s needs. Curran technicians are driven by the highest quality standards and the strongest commitment to customer satisfaction in the industry. Curran’s experience and expertise gained from numerous heat-exchanger related projects, provides equipment owners with the highest degree of quality service. Curran service means many years of trouble free, reliable heat transfer equipment performance.

Curran records and tracks events and trends evidenced by your equipment. This tracking allows Curran to use predictive maintenance that prevents or corrects issues early on – before those events can affect performance. In addition to increasing your system’s uptime, Curran’s predictive maintenance improves performance and enhances the longevity of your equipment.

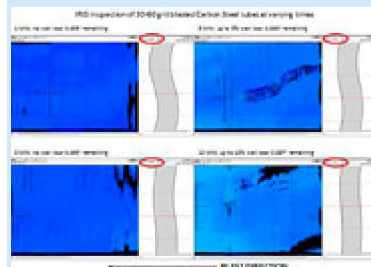
When you entrust the experts at Curran International to handle your tubular heat transfer equipment maintenance needs, you transfer the heat from you to Curran’s skilled technicians.

To learn more about this work, please contact Curran International at (281) 339-9993 or [dgrimes@curranintl.com](mailto:dgrimes@curranintl.com).

Please visit our website ([www.curranintl.com](http://www.curranintl.com)) to download Curran’s updated Service brochure.



Clean



Inspect



Curran International offers Eddy Current, Remote Field, Near Field, IRIS and Eddy Current Array.



Repair

## Your Fixed Equipment Reliability and Repair Specialist



Curran International's roots run deep into power plant field services. In 1977, my Father, Bob Curran, formed *Bob Curran & Son*. In Curran's early years, the primary services provided were grit blast surface prep of steam turbine fixed components; pipe and vessel coating and thermal spray of zinc and aluminum alloys. Since those formative years, Curran's comprehensive services offerings have greatly expanded. Today, we provide our power generation clients a reliable and efficient resource for *Heat Transfer Equipment Services*.

Over the years, Curran developed coating materials and applications, and provided the capital resources to support our growing team of industry experts. These developments enable Curran to serve clients worldwide.

Again this year, Curran will exhibit at *POWER-GEN*. When visiting our booth, you will have an opportunity to learn about Curran's mechanical repair and surface prep services, NDE, and coating applications. These and other high-value services, coupled with hard won expertise, make Curran International a unique turnkey partner. Our proprietary services, grit blast tube ID cleaning and thin film coating, leverage the other specialized services such as tube alloy sleeving, and tubesheet cladding.

Curran's commitment to engineering innovative solutions and to providing expert execution is further demonstrated in the development of advanced coatings. One such coating creates a hydrophobic foul release surface. In addition, we are a provider of Second Generation explosive tube plugging. Curran also offers a JIT inventory strategy for contracted clients. This list goes on.

Curran's early roots remain firmly planted at many of the clients we had the privilege of serving more than 35 years ago.

I look forward to hearing from you and I welcome your visit to Curran's *POWER-GEN 2014* Booth, #630.

Yours,

*Ed Curran*  
Ed Curran



Images taken down tube damage as a result of inlet end erosion; while many tubes were permanently plugged, more than 1000 were returned to operations.

## For Curran, It's Another Day at the Power Plant

More than 1000 tubes salvaged and returned to service.

A 20% increase in surface area of a 4,800 tube condenser bundle.

Plus, improvements in turbine back pressure and plant heat rate.



Recently, a 50-year old condenser bundle was rehabilitated and given five more years of productive life. As part of a turnkey project performed by Curran International, more than 1,000 previously plugged tubes were returned to circulating water service – returning more than 20% of the operating surface area.

A 50 megawatt steam condenser located at a power generation station in South America had been operating with an unusually high number of plugged tubes. In fact, about 42% of the bundle was plugged.

This condition further compounded a number of known integrity issues with the unit's steam boiler. Additionally, the severe corrosion across the tube sheet likely contributed to condenser circulating water leaks, which compromised steam purity and shell side integrity.

The goals of the rehabilitation were to evaluate and restore all serviceable plugged tubes to operation, and to eliminate any further erosion and wall loss on all remaining tubes using a Curran high functionality thin film release coating.

After consultation with Curran project managers, plant engineers focused on one of the two bundles in the divided condenser. Next, a comprehensive plan was developed to remove all existing tube plugs, assess tube condition and perform repairs.

Each of the previously plugged tubes were marked either for repair or to be re-plugged. Several hundred tubes were found to be completely severed from erosion wear at section behind the tube sheet. These tubes were deemed non-repairable and permanently plugged.

### **Recovery of 20% of bundle surface area**



All tubes marked for repair, and existing in-service tubes, were carefully grit blasted of cooling water scale and deposits. A single application of Curran coating was applied to full length tube IDs. Following the tube ID coating, the condenser tube sheet received a multi-step application of protective coating. The Curran tube sheet system consists of a flowable prime coat to wet-in and seal the tube and tube sheet joints, and a high-build paste grade polymer epoxy. Total application thickness across the tubesheet was about 1200 microns.

Curran International high-functionality 100% solids epoxy systems are formulated for versatility. These flowable blends exhibit superior capillarity. Curran's paste grade, high-build blends cure as a homogenous system creating a protective barrier.

### **Hydrophobic thin film eliminates water deposits, non-reactive interface.**

The hydrophobic properties of the coating eliminate cooling water fouling and scale attachment, as well as eliminating further erosion at the substrate.

Even as a thin film applied down tube, the coating is a non-reactive interface with cooling water precipitates, thus eliminating the formation of under-deposit corrosion cells.

### **Tight condenser at Hydro**

About 80% of the tubes in the bundle were coated. The tube sheet coating, which is a protective inert barrier to galvanic potential, reduces inlet-end friction and cooling water velocity erosion. When the coating was mechanically cured, the plant engineers performed a shell side hydro with the operational integrity confirmed, the rehabilitated condenser bundle was brought back on-line.

To learn more about this work, please contact Curran International at (281) 339-9993 or [dgrimes@curranintl.com](mailto:dgrimes@curranintl.com).