

ADVANCED POWER PLANT MAINTENANCE SOLUTIONS

Extend Equipment Life & Boost Efficiency

Curran's specialized services including **steam / gas turbine cleaning, tubesheet coating, waterbox coating, & condenser tube ID coatings**. These are designed to clean, protect, and enhance critical equipment during your next maintenance outage. Our proven solutions reduce downtime, prevent corrosion, and improve operational efficiency. With over 40 years of expertise, we are a trusted choice for reliable and effective power plant maintenance.

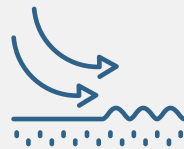
Curran's Innovative Solutions For Power Plants



Turbine Grit Blasting

Our grit blasting service provides an efficient, fully-contained method to clean turbine components ensuring optimal NDE/NDT inspection results.

Steam Turbine Grit Blasting



Condenser Tube ID Coating

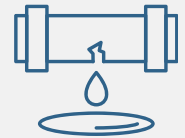
Our epoxy coating for condenser tubes drastically reduces corrosion and fouling, ensuring your condenser has a longer lifespan & operates at peak efficiency.

Before & After Condenser Tube ID & Tubesheet Coating



Tubesheet/Waterbox Coating

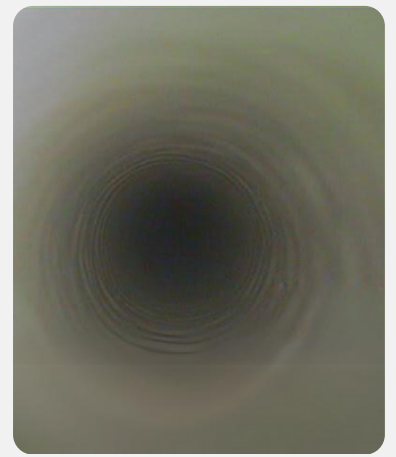
Our tube sheet / waterbox coatings rebuild and protect from erosion and corrosion, ensuring a completely refurbished tubesheet/waterbox and gives long-term reliability.



Tube Leak Recovery

Our epoxy-based recovery process repairs tubes, seals leaks and prevents further contamination or damage to downstream equipment.

Coated Condenser Tube



Turbine & Condenser Grit Blasting



No Rework Needed

Our grit blast cleaning ensures precise, efficient inspections with no need for additional cleaning, saving time and resources.



No Water Needed

Curran's patented nozzles deliver a high-velocity dry abrasive blast ensuring effective cleaning without water management.



Precise Inspection Data

Curran's grit blast cleaning method allows for accurate, high-integrity NDE data acquisition, minimizing maintenance impacts.



Global Capabilities

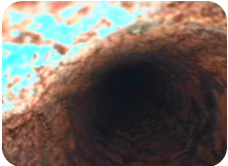
Curran International has full-service shops in 6 locations around the world: USA, Canada, Netherlands, Saudi Arabia, India, and Singapore. Our field crews have international capabilities.



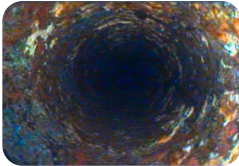
In-Situ Flexibility

We can do in-situ cleaning during maintenance outages. Our ability to move equipment between units allows us to maintain schedule, keeping us ahead of inspections.

Grit Blasting Vs Scrapers, Darts, Bullets



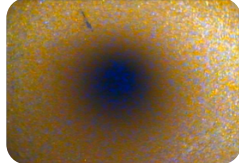
Condenser Tube Before



Tube After Nylon Brush



Condenser Tube After Metal Scraper



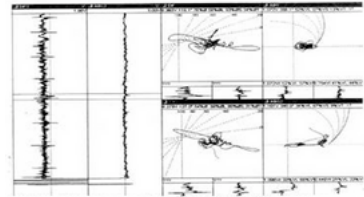
Condenser Tube After Curran Grit Blast



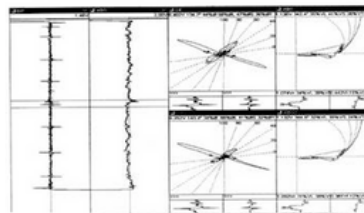
Unmatched Cleaning

Our Grit Blasting removes hard deposits more effectively than dry ice blasting and mechanical methods like scrapers, darts, and bullets. Our grit blast cleaning Ensures a thorough cleaning, and superior inspection data.

Inspection Data After Traditional Cleaning Methods



Inspection Data After Curran Grit Blasting



Typical Applications

Turbine Rotors

Turbine Blade Rings

Turbine Diaphragms

Boilers

Turbine Valve Components & Bodies

Turbine Inner/Outer & Fixed Lower Shells

Turbine Studs, Nuts, & Washers

Exhaust Path Components

Induction Draft Fans

Forced Draft Fans

Condenser Tubesheets

Condenser Tubes

Waterboxes

Cooling Water Pipe

Frequently Asked Turbine Grit Blasting Questions

▼ How long does the process take?

Smaller turbine blasting jobs can take 3 shifts, while larger turbine outages can take up to 10 days to complete the turbine cleaning scope.

▼ Is our grit blasting process clean?

Our grit blasting process is totally contained. Our techs bring in turbine tents that completely cover the component being worked on. We tie-in an electric dust collector to capture any dust, thus completely eliminating dust from escaping our tents.

▼ What type of abrasive is blasted?

We have a national network of suppliers to meet OEM abrasive requirements; a common blast media is virgin Aluminum Oxide (220 or 180 sieve). Our suppliers can offer recycled oxide media meeting OEM requirements.

▼ Do you need to provide any equipment or support?

For a turbine blasting job we typically only ask that the client provide electrical tie-in for our dust collection, waste containers, scaffolding as needed to reach equipment, forklift support, service water and air.

4 Simple Steps to Clean Your Turbines or Condensers



Reach out to our team for a free consultation and proposal.

Phone: 281-339-9993
Email: sales@curranintl.com
Website: www.curranintl.com

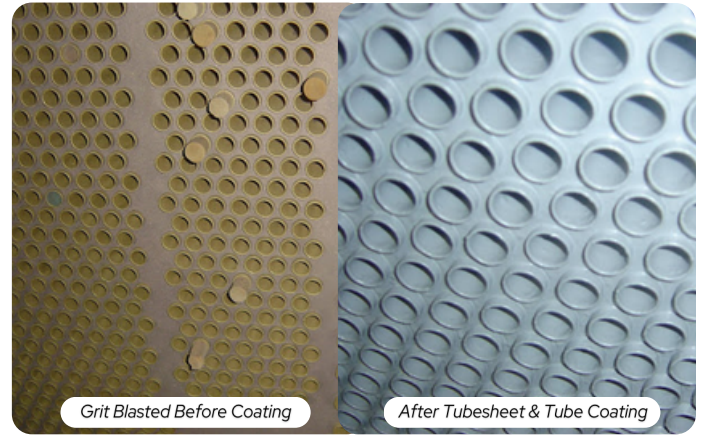
Provide us with detailed drawings of each piece of equipment you would like cleaned, including the level of inspection you require for each unit.

Get your detailed, tailored proposal outlining the estimated schedule, division of responsibilities, and cost for your project.

Approve the proposal and let our experienced team handle the rest, ensuring a high-quality finish and timely completion.

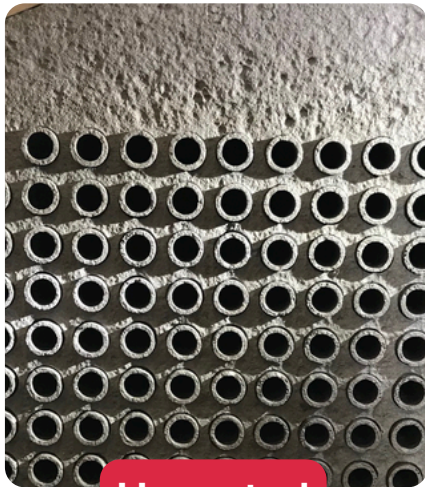
Curran's Condenser Tube ID Coating Solution

In 1996, Curran patented the spray-applied condenser tube ID coating system, revolutionizing the industry standard. Our tube ID coating reduces fouling and boundary layer drag, promoting better flow and reducing back pressure. This ensures sustained, long-term performance of fixed equipment that has been used by power-gen plants worldwide.

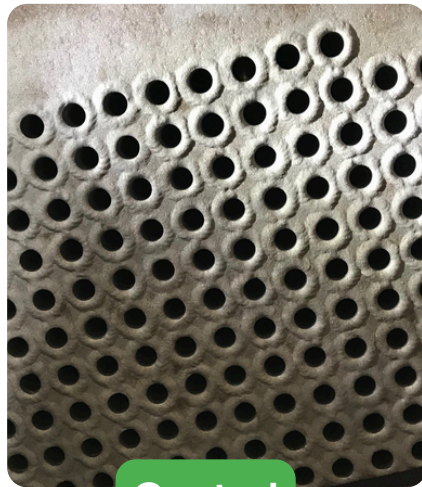


Maximize Tube Efficiency and Longevity *Stop Frequent Repairs. Maximize Your ROI.*

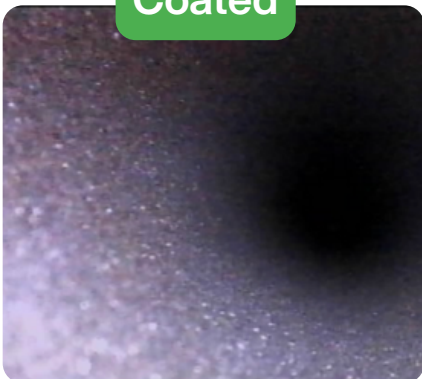
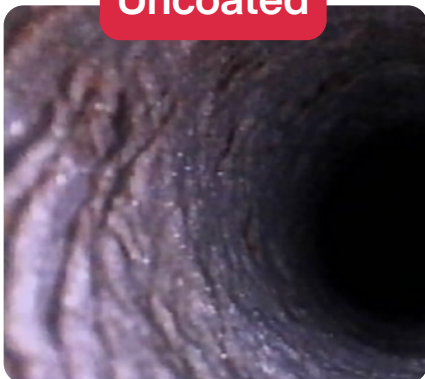
Our thin film tube coating materials, applied at <10 mils or 250 microns, provide a foul release suited for all water services. The coating also provides a barrier to any corrosion that tends to occur on bare tubes.



Uncoated



Coated



Our Coating Advantages:

Increase heat transfer duty



Reduce / eliminate fouling



Cost savings: Millions plus per year



Eliminate corrosion



Reduce maintenance



Energy savings



Throughput efficiency gains



After 8 years of side-by-side operation, then Grit Blasted for Inspection

Our Coating Capabilities

Equipment:	New Fabrication & Existing Equipment	Shop and Field Applications	Condenser Tubes	Exchanger Tubes				
Metallurgies:	CS	CuNi	Brass	SS	Duplex	CR	Ti	<i>and more</i>

Frequently Asked Questions

▼ How long do the coatings last?

The lifespan of Curran coatings depends on the specific application and operating conditions. Typically, our coatings can last between 7 to 10 years.

▼ At what rate will fouling be mitigated?

The rate of fouling mitigation varies based on the operating environment and service media flowing through your equipment. In many cases, Curran coatings typically reduce fouling by at least 20% or more.

▼ What is the maintenance/cleaning procedure for Curran-coated condensers?

Curran-coated condensers typically require less frequent cleaning due to the reduction in fouling. Standard low-pressure water washing or gentle mechanical cleaning methods are often sufficient to maintain performance without damaging the coating. Our team will provide procedure once condenser is coated.

Our 4 Step Condenser Tube ID Coating Procedure

Curran’s condenser tube ID coating procedure involves grit blasting the tube ID to remove corrosion and contaminants, followed by the application of a thin-film coating. Each tube is thoroughly tested after coating to ensure optimal performance and longevity.



1. Evaluation & Remediation

We begin by assessing for contaminants like chlorides or MIC and remediate these to ensure a clean surface for optimal coating adhesion.

2. Surface Preparation

Tubes are grit blasted to remove corrosion and create a surface profile, with video probe verification to ensure all pits are properly cleaned.

3. Coating Application

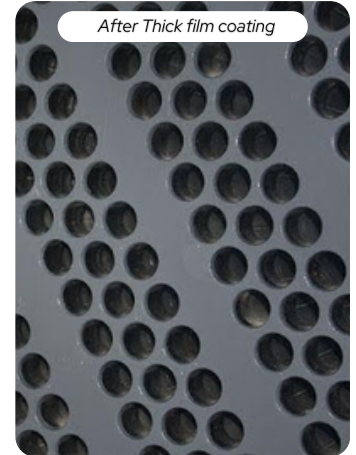
Multiple layers of epoxy coating are applied based on the severity of the pitting and operational conditions, ensuring full protection against corrosion and fouling.

4. Curing & Quality Assurance

The condenser is properly cured, cleared of all grit, and returned to the client, ensuring long-term performance and reliability.

Condenser Tubesheet, Waterbox, & Cooling Water Pipe Coating

Curran offers a solution to deteriorating components with a thick film tube sheet, waterbox, and pipe coating system. This coating when applied will encapsulate the tube to tube sheet joint, rebuild the tube sheet or waterbox, and eliminate tube to tube sheet leaks and prevent further corrosion and erosion. Our tubesheet, waterbox, and pipe coating is specifically formulated for cooling water service & It will return your components to better than new.



Eliminates Leaks

The coating seals the tube-to-tube sheet joint, completely preventing leaks and reducing maintenance needs.



Rebuilds & Repairs

The cladding system restores deteriorated tubesheets, extending the life of critical components.



Long-Term Protection

Provides over 20 years of reliable, worry-free service, reducing the frequency of costly repairs.



Improved Cooling Efficiency

Enhances water flow through the system, improving overall cooling performance.



Corrosion Resistance

Protects against corrosion and mechanical damage, ensuring the longevity of waterboxes and cooling pipes.

Condenser Tubesheet & Waterbox Coating Process

1. Surface Preparation

The tubesheet is degreased and grit blasted to a "white metal" finish (NACE No. 1/SSPC-SP5) to ensure a clean surface for optimal coating adhesion.



2. Prime Coat Application

A liquid-grade prime coat is applied at 10-15 mils (250-380 microns), sealing the tube-to-tubesheet joint with capillary action to prevent leaks.

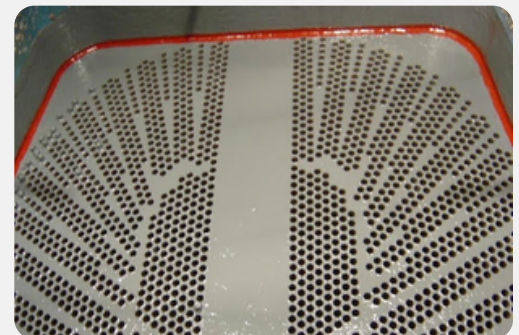


3. Build Coat Application

The tubesheet is degreased and grit blasted to a "white metal" finish (NACE No. 1/SSPC-SP5) to ensure a clean surface for optimal coating adhesion.

4. Top Coat & Final Touches

One to two top coats of 5-10 mils (250-380 microns) are applied, providing long-lasting protection from erosion, corrosion, and chemical attack. Caulking is added to the tubesheet-waterbox joint if needed.



Condenser Waterboxes & Components Coating

Carbon Steel

Curran International's epoxy coating system for carbon steel waterboxes provides a durable, high-performance barrier that protects against corrosion and abrasion. This coating, typically applied at 30-125 mils, is ideal for cooling water applications where steel surfaces are exposed to harsh conditions. Thicker coatings are used in areas with heavy corrosion or where higher abrasion resistance is needed.



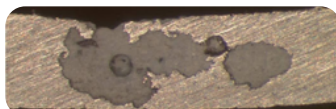
Cast Iron

For cast iron components, Curran uses a specialized process to remove degreasing and decontaminate the surface before applying the same high-performance epoxy coating. This process ensures the cast iron surface is properly prepped, even addressing non-visible contamination like oil or chlorides. Rebuilding or smoothing corroded areas is part of the process to ensure the epoxy adheres seamlessly, providing long-lasting protection against corrosion and wear.

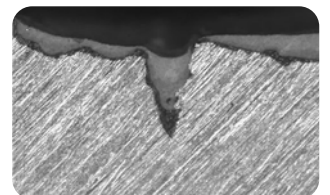


Real World Coating Application:

At Cottonwood Energy in Texas, we applied a coating to 20-gauge stainless steel tubes that were heavily corroded by manganese. The coating material penetrated deeply into the corroded pits, providing thorough protection and sealing.



A cross-section of the coated exchanger tube shows the coating filling corrosion at the weld seam. After coating, pull tests showed the tubes had an adhesive strength of over 800 PSI.



Curran's Tube Leak Solution

Condenser tubes often leak due to corrosion, disrupting the entire steam circulation system. When cooling water contaminants enter the shell boiler side, they can lead to severe boiler tube corrosion and even damage the turbine. Traditional temporary fixes like blowdowns, sawdust, and plugging are costly, require frequent repetition, and reduce the number of operational tubes, ultimately threatening condenser efficiency. Curran International offers an innovative tube lining system and epoxy-based tube repair to permanently seal condenser tube leaks. This technology has successfully repaired holes up to 1.5 mm in diameter, with a recovery rate of 60%-80% of leaking tubes, keeping them operational for 5+ years.



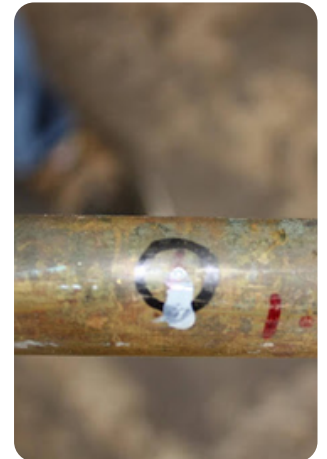
Our Tube Leak Repair Procedure

The Curran condenser tube repair process can be performed either as **part of a full condenser tube coating or as a standalone solution**. It begins with comprehensive surface preparation, where the tube ID is grit blasted to ensure optimal adhesion. Leaking tubes are then repaired using a two-step recovery procedure, with pressure testing after each stage to confirm the holes are sealed. If additional steps are needed, we work closely with the client to determine whether to proceed, ensuring that the recovery meets their performance and budget expectations.

*Condenser tube
w/ pinhole*



*Condenser tube
after repair*



The Results After Curran Tube Leak Repair



Once Curran International completes the tube leak repair, the condenser is restored to optimal performance. Tubes that were previously leaking are **pressure-tested at 80 PSI**, ensuring the repair holds strong. With our epoxy coating solution, repaired tubes **remain operational for 5+ years, significantly reducing the need for costly and frequent maintenance**. By sealing the leaks, we prevent contaminants from entering the system, protecting critical components like boilers and turbines from further damage. As a result, overall plant efficiency improves, unplanned downtime is minimized, and the lifespan of your equipment is extended.

Your Next Steps



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Some Of Our Power Gen Clients



Reach Out Today To Learn More

“Discipline to procedure & Safety is our top priority.”

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