



Curran  **international**
Tubular Heat Transfer Equipment Services



ABOUT US

COMPANY HISTORY

Curran International provides innovative solutions to improve the reliability of fixed equipment for refinery, petrochemical, power generation, oil & gas processing industries. Curran is known globally for its exchanger tube ID coatings that minimize tube fouling and inhibit corrosion. We provide a wide range of Tubular Heat Transfer Equipment Services to restore exchangers and extend the useful service life of fixed assets. Our services are facilitated at shops located in six countries and industry partners located around the globe.

CAPABILITIES

Our corporate location and full-service shop is located in Houston, Texas; it has a temperature controlled coating chamber, a contained grit blast plant, and one of the largest natural gas fired convection ovens on the Gulf Coast.

Curran International also has full-service shops in five locations around the world; Canada, Netherlands, Saudi Arabia, India, and Singapore.

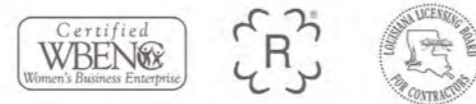
Our field crews have mobilized to more than 30 countries and serviced equipment at some of the largest enterprises in the refinery and petrochemical and power industries.

- Turnkey crews, 24/7 project execution
- Proven safety performance, low EMR
- Global equipment resources & references

SAFETY

Curran International is fully committed to employee safety. Since its inception, Curran has maintained an excellent safety record. We are recognized and approved for on-site contract work by the global leaders in the refinery and petrochemical industries. Curran International supports the right of every employee to have "Stop Work" authority; job safety comes first.

CERTIFICATIONS



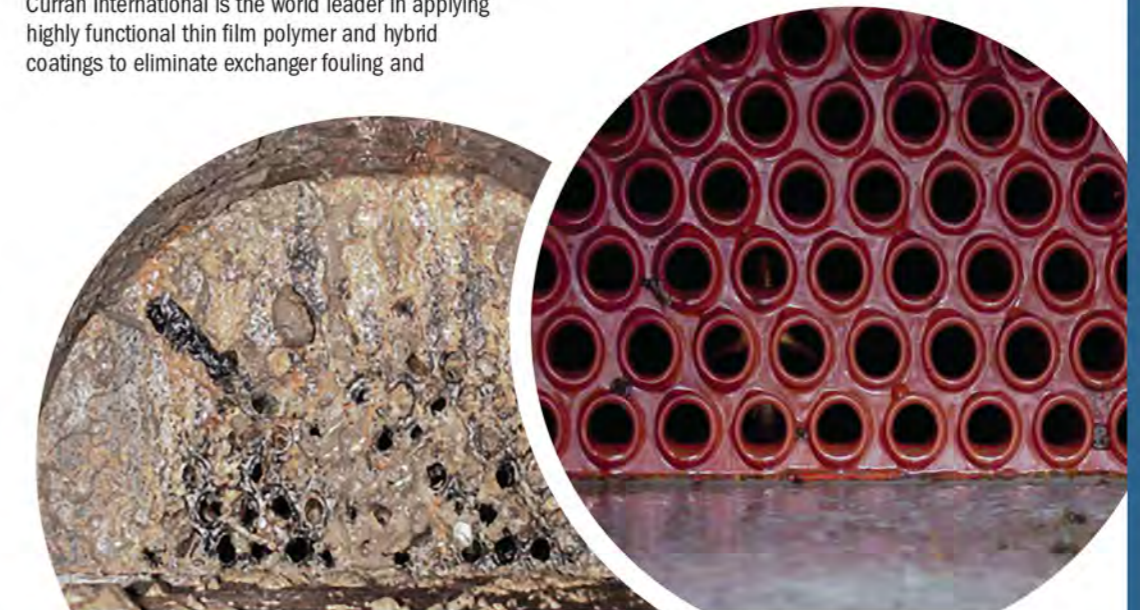
WE PROVIDE ALL
OUR SERVICES
GLOBALLY
AND **IN-SITU.**

HIGH FUNCTIONALITY TUBE ID COATING

Thin film exchanger coatings have proven to mitigate fouling and corrosion that reduce asset life and cause unplanned shutdowns. Fouling leads to reduced heat transfer and production bottlenecks, increased maintenance; tube corrosion risks the integrity of exchanger mechanical performance and plant safety.

Curran International is the world leader in applying highly functional thin film polymer and hybrid coatings to eliminate exchanger fouling and

corrosion. All applications are subject to Curran quality control, and critical hold points documented and reported to client. We coat shell & tube, exchanger bundles, air coolers, U tube and plate and frame exchangers; provide in-service exchange tube ID restoration; tube end coating, OD tube coating; in-situ and field coating applications.



Side by Side:
Comparison of exchangers in cooling water service in same operating unit; uncoated (L) and coated (R), less than 1-year of service.

CURRAN 1000 SERIES

An advanced two-part 100% solids epoxy coating designed for high temperature immersion service in cooling water, hydrocarbons and process streams. This coating is an organic/inorganic hybrid with superior mechanical performance; resistant in cooling water steam services to 365°F and excursions to 400°F (204°C). Applied to 8-14 mils total DFT.

CURRAMIX 2500

An ultra-low DFT ambient-cure coating system designed for high temperature fouling services; possesses excellent hydrophobic & oleophobic properties, anti-coking performance, resistant to thermal cycling and is suitable for services to 1200°F. Ideally suited for heat exchanger tubes, plate & frame exchangers. Applied to 20-40 microns total DFT.

PHENOLIC

Shop applied, bake catalyzed, suitable for all cooling water services, hydrocarbons, salt solutions and solvents. Immersion resistance to 365°F; applied to 7-10 mils total DFT.

PFA, PTFE, PPS

Shop applied, bake catalyzed thermo-melts; superior resistance in chemicals, solvents, and acids. Immersion resistant to 500°F. Applied to 8-14 mils DFT.

SOL GEL

Ceramic SiO "backbone" hybrid with organic and inorganic components, suitable for plate & frame, and tube bundles in process critical services. Applied to 20-40 microns total DFT.

ALLOY TUBE LINERS AND FERRULES FOR EXCHANGER RESTORATION

ALLOY LINERS

Curran repairs corroded exchanger tubing using a tube-in-tube alloy liner inserted and hydraulically expanded the full length of the existing tube. The high-pressure expansion makes “intimate” contact down existing tube, and shielding it from corrosion.

- Curran provides tube cleaning; our grit blast prep optimizes liner-and-tube interface
- Curran can hydraulically install liners in-situ, or at client fabrication location.

Curran International has an inventory of high pressure pumps and expansion tooling. We source tube stock from a wide network of domestic and international mills delivering ASME/ASTM grade material; MTRs are provided with all tubing.

Global Supplier:

Contact Curran International for tube liner, ferrule, and retube projects. We provide turnkey services globally.

ALLOY TUBE FERRULES & SLEEVES

Tube end ferrules and sleeves are a useful way to help stop inlet erosion and extend the life of existing tubes. Ferrules and sleeves are typically 6” to 18” long sections, cut to length and typically flared and chamfered at opposite ends.

Hydraulic expansion of tube end ferrules and sleeves is the premier method for installation:

- No single point of expansion; hydraulic method expands entire length in one operation.
- Minimal “work hardening,” less wall reduction compared to mechanical expansion.

EXCHANGER AND CONDENSER RETUBING

Curran International offers a turnkey solution for condenser tube replacement projects with qualified specialists experienced in all facets of tube removal, condenser restoration and tube installation.

Curran has the tooling and material handling equipment ready to mobilize to global project locations, and offers flexible project resource planning to optimize local labor resources.

CURRAN PROVIDES:

- Technicians and equipment for global mobilizations for condenser retube projects.
- Curran has earned NBBI “R” stamp for shop and field repair of code exchangers.
- Turnkey re-tube and epoxy coating project execution.



CURRAN EXCHANGER CLEANING

Curran International’s patented dry grit blast tube ID cleaning process has revolutionized how clients clean their tubes in preparation for Non-Destructive Evaluation (NDE). Compared to conventional tube cleaning, Curran cleaning offers predictable results, eliminates cleaning rework, and promotes high integrity inspection data collection.

Air coolers, shell & tube exchangers can be cleaned in-situ; dust abatement system ensures containments are vacuum tight. Curran is experienced with process air coolers, SRU reactors, boilers and condensers, all metallurgies and U tube exchangers. Curran techs visually confirm cleanliness, eliminating cleaning rework!

Never again let “dirty tubes” compromise your PEI inspections; NDE clean tubes are scoured of tenacious scales, oxidation, and mineral scaling.

POWER PLANT CONDENSERS AND EXCHANGERS

Power plant steam condenser cleaning is often an annual routine; Curran offers commercially practiced methods using projectiles (scrapers and scrubbers), and can provide Curran cleaning using dry grit blast where tenacious scales require specialized methods.

Side by Side:

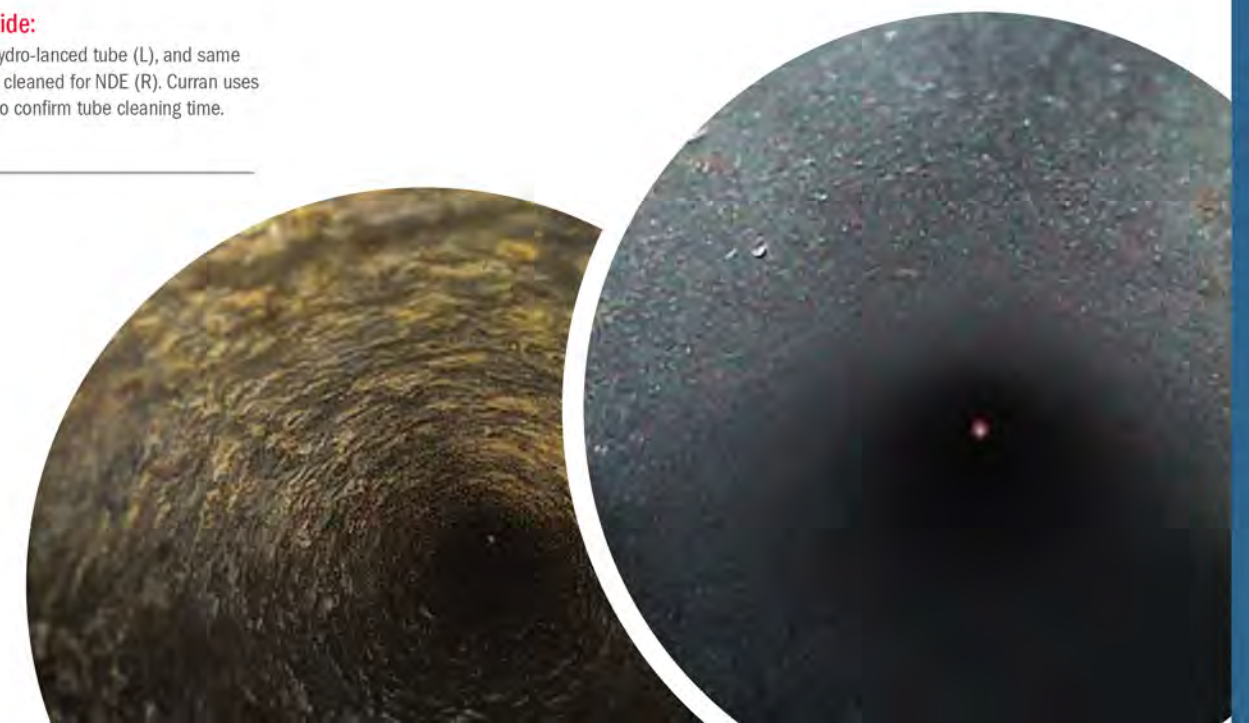
Images of hydro-lanced tube (L), and same tube Curran cleaned for NDE (R). Curran uses borescope to confirm tube cleaning time.

TURBINE GRIT BLASTING

Curran International provides on-site/in-situ dry abrasive surface prep of turbine components for NDE inspection. Since 1981 Curran has provided crews and equipment for power generation turbine outages, all work is performed using vacuum containment systems that protect disassembled equipment from nuisance dust and debris.

CURRAN CLEAN IS:

- Greater fill factor for NDE probes, better data accuracy
- Reduced background “noise,” faster technician analysis
- Complete waste containment, no nuisance impact



CURRAN PROTECTIVE COATINGS FOR FIXED EQUIPMENT

CURRAN 500

An advanced two-part 100% solids epoxy, versatile formulations manufactured; high build trowel applied material, sprayable, and brush and roll coating. Suitable for all power plant and chiller cooling water systems:

- Condenser, HVAC chiller tube sheets, waterboxes
- Circulation water piping, channels, marine boxes

CURRAN 1000R

An advanced two-part 100% solids novolac epoxy, a brush and roll material for high temperature immersion service in cooling water, hydrocarbons and process streams. Temperature resistant in water, steam to 365°F (185°C); tolerates excursions/steam outs to + 400°F (204°C). Suitable for:

- Exchanger Tubesheets
- Field Repairs of Curran 1000 Applications

CURRAN 1200

A high functionality two-part 100% solids novolac epoxy coating formulated for high-volume coating applications. Using a heated hose airless spray rig a single coat can be applied to 20-24 mils. May be used in tanks and vessels in hydrocarbon and solvent services, water/steam immersion temperature resistance to 365°F (185°C). Suitable for:

- Process vessels/hydrocarbon tanks
- Piping, channels, towers

CURRAN 1500

A 100% solids hybrid novolac epoxy used to repair corroded steel, formulated to provide resistance in "cold wall" services, where coated substrate protects steel in hot immersion service and outer surfaces may be uninsulated. Atlas cell tested six-plus months deionized water at 210°F (98°C); pressurized Atlas Cell tested for 60 days de-ionized water at 365°F. When fully cured, 1500 is a machinable coating and can be used for flange repairs. Suitable for:

- Uninsulated vessels & pipe ID in hot immersion service
- Channels, bonnets, restoration of pitted steel



SERVICES LINE CARD

EXCHANGER TUBE ID AND OD COATINGS

(STRAIGHT, U-TUBE, PLATE AND FRAME DESIGNS)

- Anti-fouling & corrosion protection for cooling water, produced water, process streams
- Ultra-thin hydrophobic and oleophobic release coatings (Sol Gels & PFA)
- High-temperature anti-coking coatings
- Shop and field applications

GRIT BLAST TUBE CLEANING FOR NDE

- Curran's patented tube ID cleaning using dry grit.
- Air Coolers, Shell and tube, SRU boilers, Tail Gas units, Reactors, Condensers
- In-situ execution, full dust collection, all metallurgies

EXCHANGER RESTORATION AND TUBE REPAIRS

- Full length alloy tube liner installation using hydraulic expansion
- Tube end erosion solutions: tube end ferrules, tube sleeves, tube end coatings
- Exchanger & condenser retubing ("R" Stamp certified)
- Exchanger tube re-roll, tube leak chasing using pneumatic testing
- Tubesheet restoration using epoxy cladding

CORROSION RESISTANT PROTECTIVE AND SACRIFICIAL COATINGS

- 100% solids polymeric coatings and epoxy cladding systems
- Exchanger channels, tubesheets, bonnets, vessels, tanks, water boxes, circulation water pipe
- Fluoropolymer coatings for corrosive services; PFA, PTFE, ETFE, and PPS

ADDITIONAL SERVICES

- Thermal Spray/Metalizing: electric arc and gas combustion for CUI and "sacrificial" applications; applying nickel alloy and precious metals
- Pressure Vessel, Valve internals; Process Tower, trays, packing and other internals



HEAD QUARTERS: Houston Texas

SHOP LOCATIONS: Houston, Edmonton, Rotterdam, Singapore

FIELD LOCATIONS: India, Saudi Arabia

CAPABILITIES: Globally

CURRAN IS APPLYING
SOLUTIONS.



CURRAN INTERNATIONAL

4610 Vicksburg Lane,
Dickinson, TX 77539

HEADQUARTERS:

Houston, Texas

SHOP LOCATIONS:

Houston, Edmonton, Rotterdam, Singapore

Phone: **281.339.9993**

Fax: **281.339.9994**

CURRANINTL.COM

