

## TUBE SLEEVES

### *Why retube when 95% of your exchanger tube is still in good condition?*

The majority of tube problems in heat exchangers and condensers occur within the first 5% of the inlet end of the tube, usually within or directly past the tubesheet.

Traditionally, retubing the entire bundle was the only viable option.

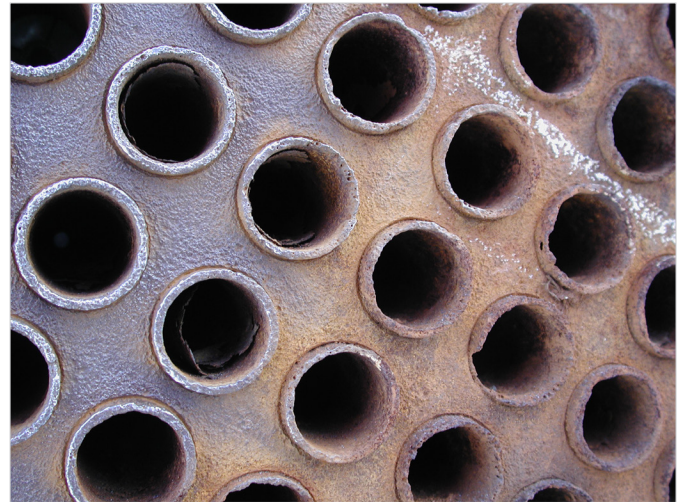
Partial or total bundle retubing, either in-place or in the shop, can be a costly repair. The EST Group's Hydra-Loc™ technology is now available to recover the use of eroded or corroded tubes without retubing.

### How is this done?

- After careful evaluation of your heat exchanger, the proper sleeve, length & material are selected. Sleeves are available to fit host tube sizes from 3/8" to 2" OD. Standard sleeve materials include a number of stainless steel alloys, nickel alloys, and copper alloys.
- EST service technicians then clean and prepare the tube ends to accept the sleeves.
- The sleeves are then inserted to the proper depth in the tube and either hydraulically or mechanically expanded into intimate contact with the host tube.

EST Group brings over 30 years of experience in the design of patented, reliable, cost effective heat exchanger repair and testing devices.

### Before...



### After...



**EST Group serves the power generation, refining, chemical, pharmaceutical and offshore industries worldwide. QA Program certified to ISO-9001.**

EST Group is dedicated to providing you with a complete range of lifecycle products and services for tubular heat exchangers, condensers, pipes, piping systems, and pressure vessels. Our products and services include:

### 1. Develop & Deliver Reliable Products That Save You Both Time & Money.

With over 30 years of experience EST Group specializes in the design and manufacture of unique heat exchanger and pipe testing and plugging tools and equipment. EST Group's goal is to provide quality, cost effective products that meet your requirements.

Our products include:

- Hydra-loc™ Tube Sleeving - mitigates effects of tube erosion through use of metallic tube sleeves.
- Pop-A-Plug® Tube Plugging System - quickly prepare & plug leaking heat exchanger tubes. Available for tubular exchanger applications at working pressures ranging from vacuum to 7,000 psi (480 Bar). Pop-A-Plugs® are installed without welding, explosives, or damage to heat exchanger tubes, tube joints, or expensive epoxy coatings.
- G-Series Tube Testing Guns - quickly identify leaking exchanger tubes or tube joints using shop air.
- GripTight® Test Plugs - reusable hydrostatic testing plugs capable of safely testing pipe at working pressures to 14,000 psi (961 Bar).
- High Lift Flange Weld Testers - isolate, purge, weld, and test flange-to-pipe and flange-to-nozzle connections in minutes. Meets ANSI B16.5 requirements. Authorized for use by the National Board of Boiler and Pressure Vessel Inspectors.

### 2. Provide Complete Turn Key Shell & Tube Heat Exchanger and Field Testing Services.

EST Field Services' experienced technicians provide a host of services including mechanical tube cleaning, inspection testing, sleeving and tube plugging services in applications ranging from nuclear and fossil fired power stations, refineries, chemical, petrochemical, pharmaceutical, and Navy & commercial marine applications worldwide.

- Heat Exchanger Inspection & Testing - visual, eddycurrent, hydrostatic, pneumatic, vacuum, and helium leak testing.
- Mechanical Tube Cleaning - air/water propelled, or rotating designs.
- Tube Plugging - using the Pop-A-Plug® tube plugging system near end or through-the-tube (plug both ends of the tube from one end).
- Tube Sleeving - inlet, partial or full length using our Hydra-Loc™ Tube Sleeving technology.
- Tube Pulls & Retubing - full or partial retubing in the field.
- Hydrostatic Testing Services - isolate and pressure test new weld joints without filling the entire line or vessel.

### EST's Quality Assurance System

EST Groups' products and services are provided under a Quality Assurance Program certified to ISO-9001, ANSI N45.2, 10 CFR 50 Appendix B, and NQA-1.