



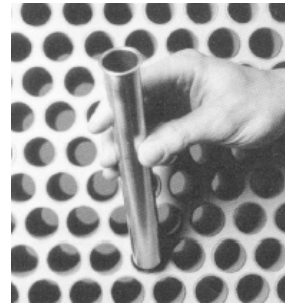
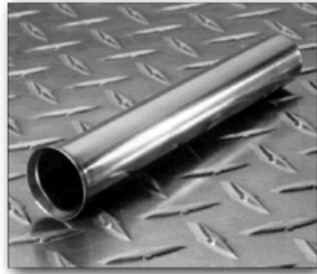
PT. Hexareka Niagatama

CONDENSER & HEAT EXCHANGER RESTORATION SYSTEM



www.cti-ind.com

CTI SHIELD/SEALS™



It is common knowledge that many heat exchanger (HX) tube failures occur within the first 6 inch of the tube. Inlet end erosion, stress corrosion cracking and crevice corrosion are different types of failure mechanisms that are common in shell-and-tube HX.

In the past, the accepted repair for HX tube damage localized to the inlet was full tube replacement or shortening the tube bundle – despite the fact that more than 95% of its length usually remains undamaged. Either type of repair has proven extremely expensive and time consuming.

Previous attempt to correct tube end erosion/corrosion have included the use of conventional ferrules made of plastic or ceramics. Such conventional ferrules typically are loose-fitting, and normally cemented or glued in place.

The CTI Shield/Seal™, is a thin-walled metallic tube insert made of highly durable alloys. The Shields are expanded – either mechanically, hydraulically or a hybrid of the two – into existing damaged tube ends, adding years of service. The benefits including:

- Protecting damaged tube inlets
- Restoring plugged leaking tubes to active service
- Restoring original compressive strength to weakened tube-to-tubesheet joint

Unlike CTI Shield/Seal™, ferrules cannot retuned plugged tube to circulation and cannot restore tube-to-tubesheet joint strength. Because of their heavy wall, there is a severe flow reduction and, at the same time, the creation of the phenomenon known as end step erosion. In many cases, the ferules have cracked or some loose, and they cannot effectively be installed to the tube outlet ends.

Choosing the proper alloy is critical in the case of tube inserts. Material can be chosen from a range of different alloys. Selection is based on the existing tube material, the service of the HX, and the cause of the tube failures. Typically, the shield alloy selected is superior, but galvanically compatible, to that of the existing tubes. Options for shield material range from copper-based alloy to stainless steel to nickel-based alloy.

Typical applications:

- Tube end erosion
- Stress corrosion cracking
- Crevice corrosion
- Localized Pitting
- Ammonia grooving
- Improper tube expansion
- Weakened tube-to-tubesheet joint

Since 1976, CTI has installed over 6 million Shields throughout the world, from condenser to air coolers to HP feedwater heaters.

Why replace the entire tube when only the first few inches need repair?