

Preventing Catastrophic Tube Failures in Heat Exchangers with Tube Stabilizers from Curtiss-Wright

When severe internal (ID) or external (OD) tube wall damage or a complete tube break occurs, prompt action is essential. Left unaddressed, broken or partially fractured tubes can whip violently within the exchanger, striking adjacent tubes and rapidly multiplying the rate of damage or failure.

This phenomenon can accelerate internal destruction, causing the heat exchanger to effectively consume itself from the inside out.

The Role of Tube Stabilizers

Tube stabilizers are critical in these scenarios. These devices which are inserted into damaged or broken tubes, dampen tube oscillation, reinforce structural integrity, and reduce the likelihood of further damage to surrounding components.

Limitations of Older Stabilizer Methods

Earlier stabilization methods had significant drawbacks. Blunt rods often failed to capture the disjointed end of a broken tube, allowing it to continue whipping inside the bundle. Cables, particularly when frayed or improperly anchored, could jam during installation or migrate unpredictably once installed.

In some extreme cases, stabilizers not fixed in place were expelled during operation, popping out installed tube plugs or traveling through the exchanger and damaging downstream equipment.

Pop-A-Plug® Tube Stabilizers

Tube Stabilizers from Curtiss-Wright address these challenges with a reliable, purpose-designed solution consisting of three components:

- **Anchor** – installed at the tube sheet to firmly hold the stabilizer in place and prevent migration of stabilizer. A separate tube plug must be installed afterward for a complete tube seal.
- **Rod or Cable Length** – selected based on the type of damage and installation constraints.
- **Bullet or Wedge-style Tip** – aids insertion and/or realignment of damaged tubes.

Choosing Between Rod & Cable Style Stabilizers

- Rod-style stabilizers are ideal for fractured or failed tubes. Their rigidity provides a higher fill factor (rod OD to tube ID), which helps realign disjointed tube ends and minimizes movement during operation.
- Cable-style stabilizers are better suited for tubes that are damaged but intact, especially where vertical clearance is limited. While more flexible and cost-effective, only degreased cable should be used to reduce fire risk.
- Combination rod-and-cable configurations are also available and can be tailored for U-bend tubes or other specialized applications.

Tip Configuration Options

- Bullet-style tips are standard and facilitate smooth insertion into the damaged tube.
- Wedge-style tips provide additional functionality by helping to engage and realign severed tube ends during installation.

Unplanned shutdowns caused by tube failures can cost facilities hundreds of thousands in lost productivity, equipment damage, and safety risks. Pop-A-Plug Tube Stabilizers from Curtiss-Wright offer a proven, engineered solution for mitigating these failures, preserving adjacent tubes, improving repair longevity and protecting the integrity of heat exchangers, feedwater heaters and/or surface condensers.

For maintenance managers and plant engineers tasked with keeping critical equipment online, this solution isn't just a repair tool... it's insurance against cascade failures, costly outages and potential safety incidents.

For more information, visit:
valves.curtisswright.com/EST

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Pop-A-Plug® Tube Stabilizers

Stabilize Weakened or Fractured Tubes

Severe tube wall damage or tube ruptures can cause tube ends to whip violently, striking adjacent tubes, rapidly compounding the problem. Protect heat exchanger equipment from inside-out destruction with **Pop-A-Plug Tube Stabilizers** from Curtiss-Wright.

- Unique anchoring system eliminates stabilizer migration
- Rod or Cable style configurations available
- Compliant with QA Systems, including; ANSI N45.2, 10 CFR 50 Appx. B and 10 CFR 21

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