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HEI
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Heat Exchange Institute
1300 Sumner Avenue • Cleveland, Ohio 44115-2851 • 216-241-7333 • Fax: 216-241-0105 • www.heatexchange.org

Condenser Modular Replacement vs. Retube

Surface condensers are typically designed for a 30-40 year life. Tube failures can be expected in condensers as a result of normal wear and deterioration due to corrosion and erosion. Tube failure rate is likely to accelerate after many years of condenser service. Occasionally, tubes are damaged during routine inspection and maintenance work as well. Plugging these failed tubes will ensure continued plant operation without replacing the condenser. However, increasing number of plugged tubes will adversely impact the condenser performance resulting in higher condenser back pressure and lower plant output. Typically when more than 10%-12% of the tubes in the surface condenser are plugged, plant management should consider remedial action to improve the condenser performance.

There are many driving factors when evaluating modular replacement vs. retubing. Desire to change tube material, power uprate potential, short outages, reliability, cost, quality and performance are some of the issues to consider. Refer to the table below for more information.

MODULES VS. RETUBE

	MODULE	RETUBE
Capital Cost	• Higher Initial Cost	• Lower Initial Cost
Reliability	• Designed to Current HEI Standards • Revised Support Plate Spacing • Optional Tube to Tubesheet Welding • Tube and Tubesheet Compatibility	• Tube to Tubesheet Compatibility • Field Rolled Tube Joints • Tubesheet Ligament Distortion or Cracking
Performance	• Improved Backpressure • Maximized Water Flow • Increased Output	• Unchanged or Degraded Performance
Design	• Increased Effective Surface • Advanced Tube Layout • New Support System • New Tubesheets • New Waterboxes (Optional) • Improved Deaeration	• Retain Existing Surface • Possible Tube Vibration / Tube Staking • New Tubesheets (Optional) • New Waterboxes (Optional)
Installation	• More Complex Installation • Longer Duration	• Less Complex Installation • Shorter Duration
Quality	• Shop Based Quality & Control • OEM Manufacturing Experience • Single Source Engineering, Manufacturing (and Installation)	• Field Based Quality & Control • Field Based Work • Multiple Sources

This Tech Sheet was developed by the members of the Heat Exchange Institute's (HEI) Condenser Section. HEI is a trade association comprising the leading manufacturers of heat exchange and vacuum equipment. HEI Tech Sheets are information tools and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific instructions regarding their equipment.