EXERGY HEAT TRANSFER SOLUTIONS

Cooling Chemistry Streams Application

A semiconductor facility customer needed to cool multiple chemistry streams from the cleanroom floor — drain and dump lines carrying aggressive process chemistries. The incumbent copper brazed plate heat exchangers presented serious operational risk: their susceptibility to leaks threatened cross-contamination between process and service fluids, compromising both yield integrity and worker safety. Exergy engineered a purpose-built 316 SS replacement that eliminates these failure modes entirely, delivering a drop-in solution with a significantly lower total cost of ownership.

The Challenge

Copper brazed plate heat exchangers are inherently vulnerable to corrosion and mechanical fatigue when exposed to the caustic chemistry streams common on semiconductor cleanroom floors. Leak events risk cross-contamination of process and service fluids, potential release of hazardous chemicals or gases into critical facility systems, unplanned downtime, and repeated capital expenditure on replacement units. These compounding costs maintenance labor, emergency shutdowns, and re-qualification of affected processes place an outsized burden on facilities and engineering teams.

The Exergy Solution

Exergy custom-designed a 316 stainless steel replacement heat exchanger leveraging both brazing and welding capabilities to produce a unit engineered for long-term resistance to varying chemical and thermal process conditions. The design was developed as a true form/fit/function replacement: it installs within the existing footprint with no modifications to hard piping, critical connections, or utility interfaces minimizing installation time and eliminating re-qualification risk for connected systems.

Drop-In Form/Fit/Function

Engineered to match the exact footprint and connection points of the original unit. No changes to hard piping, flanges, or utility connections required immediate installation with zero facility modification.

316 SS Construction

Full stainless steel fabrication using both brazing and welding processes delivers superior resistance to aggressive chemistry streams and thermal cycling, eliminating the corrosion pathways inherent in copper brazed designs.

Cross-Contamination Elimination

Robust all-welded and brazed 316 SS construction prevents leaks between process and service fluid circuits, protecting cleanroom integrity and eliminating the risk of hazardous chemical or gas release into critical facility systems.

Lower Total Cost of Ownership

Exergy's competitive pricing combined with dramatically extended service life eliminates repeated replacement costs, reduces facility maintenance labor, and prevents costly unplanned production downtime delivering measurable long-term savings.

316 SS

Material of Construction

Full stainless steel for maximum chemical resistance

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Hard Piping Changes

True drop-in replacement — no facility modifications

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Maintenance Costs

Significantly reduced vs. copper brazed alternatives

Why Exergy? Exergy's engineering team combines deep thermal design expertise with proven 316 SS fabrication capabilities brazing and welding to deliver custom heat exchangers that perform reliably over extended service lives in the most demanding semiconductor process environments. Our pricing model and design philosophy are built around minimizing the customer's total cost of ownership, not just the initial capital outlay.