CASE STUDY

Semiconductor: Hot Water Cooled by Water

Exergy's compact Shell & Tube Heat Exchanger delivers efficient, maintenance-free wastewater cooling for semiconductor processing equipment — meeting strict spatial and thermal performance requirements.

The Objective

A semiconductor processing equipment manufacturer required a constant supply of cooling water to the machine. Wastewater leaving the machine needed to be cooled before safe discharge to drain. all within tight spatial constraints and with efficient thermal performance.

The Challenge

- Cooling wastewater effectively before discharge
- Maintaining reliable operation under spatial constraints
- Ensuring efficient heat transfer without adding maintenance complexity

The Solution

Exergy implemented a compact **Shell & Tube Heat Exchanger, Model #00256-1 (35 Series)**, constructed entirely of **316L Stainless Steel**. Water was recommended as the cooling fluid over water-glycol to maximize efficiency. The design's small tubing facilitated turbulent flow, enhancing heat transfer within a compact **1.5" shell diameter** and **20" tube length**.

Compact Design

Small footprint fit within the customer's space constraints

2.93 ft²

Heat transfer area for effective cooling efficiency

Zero Maintenance

No maintenance required — ensuring long-term performance

Process Safety

Wastewater cooled to acceptable levels before discharge

The installation of Exergy's 35 Series Shell & Tube Heat Exchanger addressed the customer's needs by delivering efficient cooling in a compact, reliable, and maintenance-free design ensuring compliance with wastewater discharge requirements while supporting semiconductor process reliability.