

AQUEOUS SOLUTION HEATER

This aqueous solution heater has seamless tubes, a 20Ra electropolished interior tube side finish, and a double tube sheet design. Often for pharmaceutical applications, customers choose a double tube sheet to further seal and separate the tubes and the shell, while allowing for differential radial thermal expansion. The gap also allows for easy leak detection.

For energy conservation and safety reasons due to high temperatures, a 1.5" Inswool insulation jacket has been added along with welded foot supports and lifting lugs.



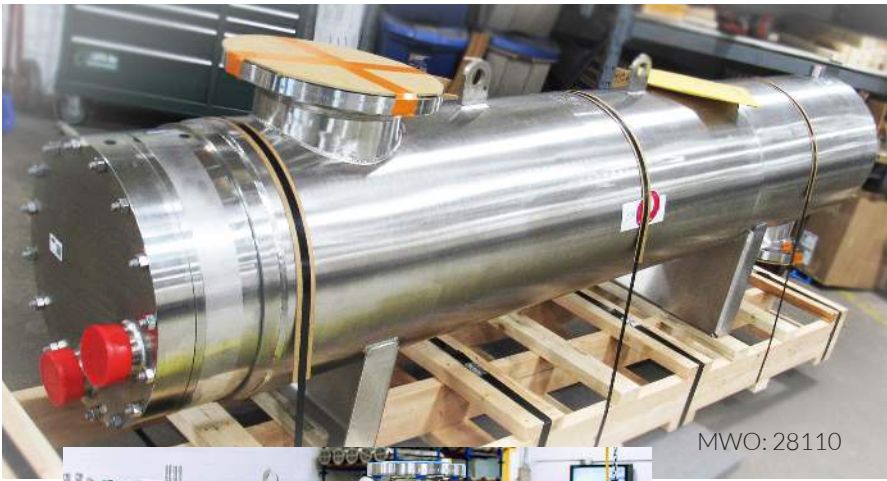
WATER-FOR-INJECTION

This large biopharmaceutical heat exchanger was designed for the high-purity application of water-for-injection (WFI). It was installed at a special 10° angle to promote draining and has a double tube sheet design to prevent cross-contamination of process fluids between the shell and tubes. This cooling unit also features a two-pass shell design that improves heat transfer when working with a small cross in the approach temperatures.

POINT OF USE COOLER

This pharma-grade heat exchanger was engineered as a point-of-use cooler (POU) for water-for-injection (WFI) solution. It has a double tube sheet and sits at a slight 1.2° angle to promote draining. It's a cooling unit featuring a two-pass shell design that improves heat transfer when working with a small cross in the approach temperatures.





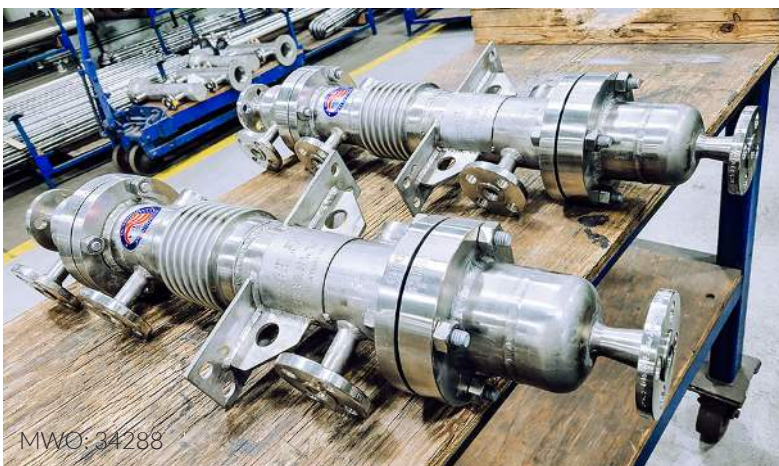
WATER COOLERS

These ASME-BPE pharmaceutical water coolers were built at a customer-specified 5° angle to promote draining and cleanability. Both are multi-pass units with 316L stainless steel U-tubes, double tube sheets, and Inswool insulation jackets.



CANNABIS PREHEATER

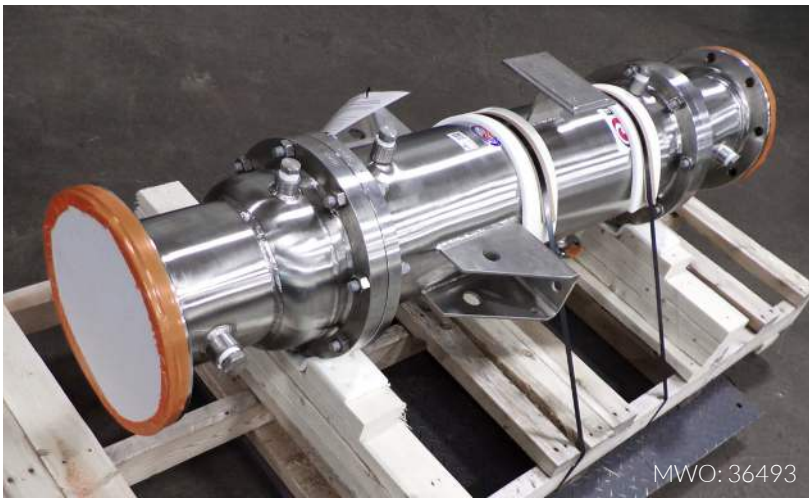
This project is a pair of 316L stainless steel vertical straight tube preheaters and tanks designed to process cannabis. They were built with 3/8" seamless tubes and tri-clamp utility connections. The product contact surfaces were polished to 20Ra, and the exterior to 40Ra.



VAPOR CONDENSERS

These 3" x 18" straight tube condensers were built for a nuclear medicine application and designed for vertical installation. They have 1/2" seamless tubes and removable fabricated bonnets on both ends. The shell contains a bellows-style expansion joint for thermal expansion protection.

Although designed with sanitary product contact surfaces, the exchangers are designed to TEMA B guidelines.



MWO: 36493

AIR HEATER

This project spotlight is a straight tube air heater crafted for a cutting-edge biosciences facility in the Midwest. Using steam, the heater will increase the temperature of process air over 40°F. The unit has 1" tubes, removable fabricated bonnets on both ends, and was built to ASME code.

POINT OF USE COOLER

This project spotlight is a 10" x 48" U-tube point-of-use (POU) cooler with dual duty. Its pharmaceutical design includes 316L stainless steel tube side components, 20Ra electropolished tube side finish, seamless tubes, and a double tube sheet design to allow for leak detection and help minimize the risk of cross-contamination.

In addition, it has a six-pass tubing and bonnet design, which promotes turbulent flow in lower flow rate applications while still maximizing available surface area. To help maintain temperature and protect it from environmental conditions, this cooler also has an Inswool insulation jacket and ThurmaloX shell coating.



MWO: 36837



MWO: 36106

TOLUENE HEATER/COOLER

This atypical pharmaceutical unit is a toluene heater/cooler. Toluene is a colorless liquid hydrocarbon widely used as a solvent.

Diverging from traditional pharmaceutical units featuring double tube sheets and insulation jackets, this exchanger was designed as an outlier. Instead, it incorporates a bellows-style expansion joint, seamless 316L stainless steel tubes polished to a 25Ra, and removable bonnets.



VAPOR CONDENSER

This is a 10 x 48" BEM pharmaceutical-grade vapor condenser. The unit was designed for vertical installation with all 316L stainless steel seamless straight tubes. The lower bonnet is removable with 2" vapor and condensate outlets.

AQUEOUS EXTRACTION HEATER

This is one of four vertical product heaters built for a personal care project in South America. They were made with all 316L stainless steel and their seamless tubes were polished to 32Ra. They were designed to TEMA C guidelines and ASME Code.



FALLING FILM EVAPORATORS

This project spotlight is a connected set of pharmaceutical-grade falling film evaporators and condensers made for essential oil extraction.

WIPE FILM EVAPORATORS

This custom pair of wiped film evaporators were built for a hemp processing application. Their 304L stainless steel straight tubes were bright annealed to reduce surface oxidation.

Enerquip custom designs many of its heat exchangers for hemp processing and oil extraction, with a wide variety of styles, orientations, and options available.



MWO: 28817



MWO: 35606

PURIFIED WATER HEATER

This project spotlight is a 6" x 48" U-tube purified water heater for the pharmaceutical industry. This unit has a double tube sheet design to minimize stress on the tube-to-tube sheet expansion and allow for leak detection. As a pharma-grade exchanger, it has seamless 316L stainless steel tubes, an Inswool insulation jacket, and a ThurmaloX shell coating.

FERMENTATION CELL BROTH COOLERS

Check out these stunning 316L stainless steel fermentation broth coolers crafted for a cutting-edge biosciences facility. Each unit has 55 one-inch tubes, and with no channel covers, they're ready for seamless integration into the customer's piping.



MWO: 36362

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