

Liquid/Liquid Coalescer

Definition

Separating two immiscible liquids is a very common yet challenging separation process in Oil and Gas industry. Two liquids can form highly stable emulsions for a variety of reasons including agitation, transfer through a pump and cooling. The stability of the emulsions is a function of the specific gravity differences between the liquids, their interfacial tensions and the droplet dimensions. In general, the smaller the droplets, the more stable the emulsion.

The most common liquid-liquid emulsions are aqueous streams dispersed within an organic or hydrocarbon liquid, and organic or hydrocarbon liquids dispersed within an aqueous liquid.

Process Description

The Peerless Liquid Coalescer system comes with single stage or a two-stage configuration in a single vessel.

Single Stage System

In single stage Liquid-Liquid coalescer, the separator element can intercept, capture and drain discontinuous phase droplets from a continuous phase that may be aqueous or hydrocarbon in nature. The elements are specifically designed to handle high dispersed liquid challenges, in systems with narrow specific gravity differences and low interfacial tensions.

The liquid stream with a dispersed discontinuous phase flows through the Peerless elements from the inside to outside. The highly dispersed droplets are intercepted and captured by Peerless media fibers. The highly specialized media allows for the captured droplets to come together and grow as the continuous phase liquid moves through the media matrix. The reclassification of droplets allows the dispersed phase to exit the elements with large droplets allowing

rapid disengagement and separation. The separated secondary liquid phase is collected and drained from the vessel via liquid-level controls.

Two Stage System

The two-stage liquid-liquid coalescer is a Peerless proprietary designed unit provided with two different cartridges and partition in bottom section to separate raw feed and filtered liquid.

The Aqueous/Continuous Phase enters the coalescing element and flows inside-to-outside. The coalescing elements are made of Borosilicate Glass media comprising inorganic microfibers supported by polymeric supports in a spatially locked pore configuration with advanced separator layers to





maximize droplet formation and disengagement. Small liquid droplets suspended in the continuous phase come together, or coalesce, as the mixture moves through the coalescer medium.

Contaminant-free liquid and large droplets of the dispersed phase flow toward the Separator Cartridges located next to the coalescer stage. Separator elements are made of Silicone-based media comprising organic microfibers in a spatially locked pore configuration to maximize water rejection.

The flow is outside to-inside. The separator medium is hydrophobic preventing the aqueous / continuous phase from entering the separator. Only the non-aqueous continuous phase fluid flows through the separator. The two liquids are removed by separate drain connections.

Typical Applications:

- Removal of water from hydrocarbons such as natural gas liquids, Naptha, NGL Condensate, kerosene or diesel
- Removal of water from aromatics
- Removal of hydrocarbons from water or other aqueous streams like amine or caustic
- Removal of oil from Produced water

Technology Advantage:

- Meets stringent performance guarantee requirement
- Wide range of material to suit every process requirement
- Longer design life of cartridges

Our Services:

- Supply of only Internals/Vessel+ internals/ Modular Skid Package
- Custom Built/Standard design
- Fast Track Delivery
- Troubleshooting & Optimization of units
- After Sales Service

