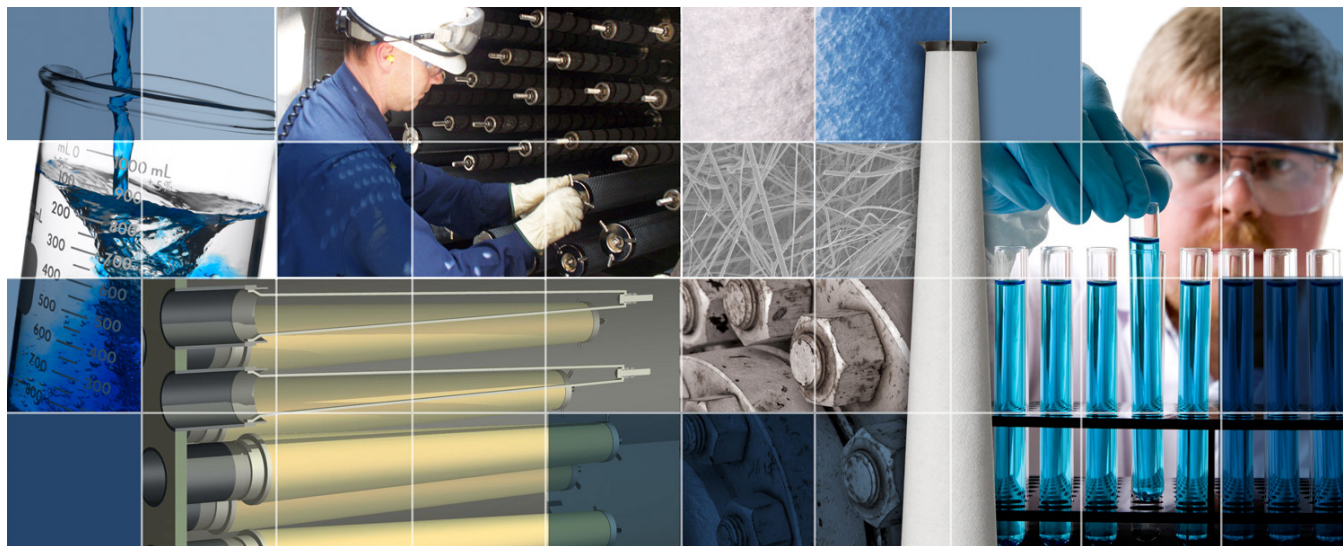


Pentair LIQUISEP® Technology

Water Removal from Hydrocarbon Fluids



Reliable, Proven Performance.

LIQUISEP® technology was developed to address the inherent deficiencies of conventional coalescers, making it possible to remove essentially all immiscible water dispersions from hydrocarbon process streams. The LIQUISEP technology overcomes the limitations of conventional separators, vane pack coalescers, wire mesh coalescers and even “high efficiency” mesh pads and filter separators, achieving superior separations under demanding conditions.

LIQUISEP technology makes use of proprietary LIQUIFORM™ media and our patented APEX® element design to intercept entrained droplets of even sub-micron geometries and effectively remove them from the process. The high surface energy LIQUIFORM media effectively disrupts the stabilized water droplets, allowing for efficient capture. Additionally, the fiber geometries are specifically designed to promote accumulation and removal of free water from the process stream. The APEX element design works in concert with the media technology promoting uniform fluid flow, while minimizing the potential for turbulence and high fluid velocities which might interfere with water removal from the process stream.

LIQUISEP technology protects critical assets from water contamination and the salts, acids and bases which it may contain. Application of the LIQUISEP technology allows optimized performance of downstream treaters, salt beds, exchangers and reactors while assuring the elimination of haze from finished products.



Effective recovery of free, entrained or emulsified water from hydrocarbon process streams mitigates the potential for product quality issues, process upsets and other operational challenges associated with liquid carryover such as salt deposition, corrosion, product haze or capacity constraints. Pentair's LIQUISEP technology allows removal of water to essentially its solubility limit in hydrocarbon process streams.

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Implementation of the LIQUISEP technology provides water separation efficiencies far beyond that available with conventional coalescing devices, particularly at very small droplet diameters. In challenging service such as emulsified feed or condensed water (e.g. – steam stripped distillate products) where conventional coalescers have limited performance, the LIQUISEP technology excels. Side-by-side comparisons of in plant environments have illustrated the advantage of the LIQUISEP technology relative to conventional coalescers utilizing “high efficiency” mesh pads. The LIQUISEP technology was run in parallel to the mesh pad coalescer to validate relative performance. At inlet water concentrations of 23,000 ppm – 30,000 ppm, the measured total water content of the conventional coalescer effluent was 476 ppm – 495 ppm while that of the LIQUISEP technology was 90 ppm – 115 ppm. At the operating temperature, the water solubility was ~100 ppm indicating that the LIQUISEP technology was operating at or near 100% efficiency for free water removal. The conventional coalescer in this case allowed nearly 400% more total water to pass to the downstream system and more importantly still allowed almost 400 ppm free water to pass.

Pentair’s LIQUISEP technology provides optimized water separation for optimized plant performance. The LIQUISEP technology provides solutions to numerous processing issues from feed conditioning to assurance of finished product quality.



Entrained water in hydrocarbon fluids is typically a source of downstream corrosion and fouling due to carryover of dissolved acids or salts. As an example, a process operating at 500 gpm (114 m³/hr) with as little as 200 ppm entrained fresh water (<1,000 ppm TDS) can deposit up to 36 lbs (16 kg) of salt per month in exchangers, columns and other downstream equipment. Deposition rates with salt laden or brackish water (1,000 ppm – 15,000 ppm TDS) can result in deposition rates up to 15 times greater.