



Water Treatment

Nautilus™ Technology Suite

Separating the Product Stream and Enhancing Water Quality

The Nautilus Technology Suite is a scalable design with enhancement options to accommodate a wide range of water treatment needs and situations. Featuring a chambered separation system with internal gas buster and level control, the technology's longevity is a testament to its successful design for oil water separation.

The Nautilus Enhanced Separation Technology (EST) features an upgraded Nautilus tank. The tank is enhanced by adding dissolved gas flotation in its chambered system to expedite the oil water separation process. The Nautilus EST package also includes an enhanced mixing system, optional emulsion breaker skid and an automated level control system.

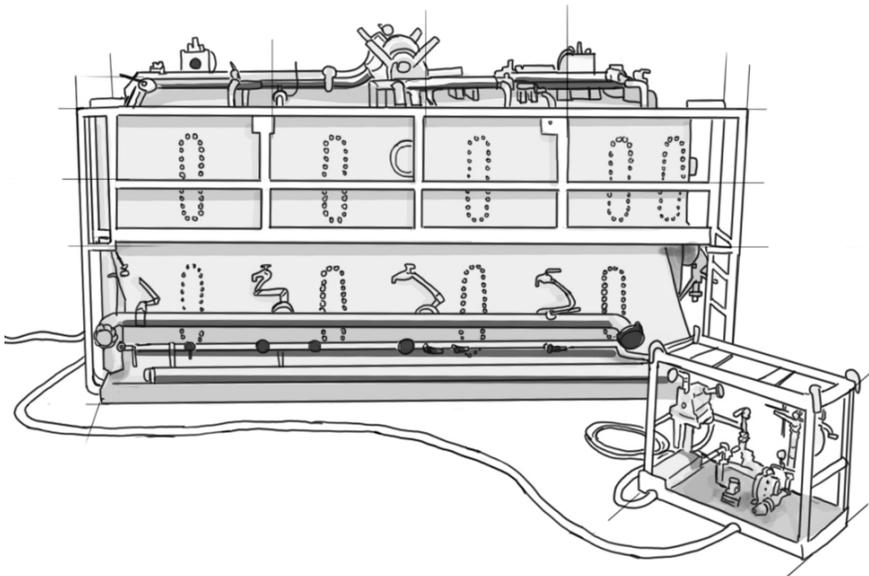
Harmful gases such as H₂S, both expected and unexpected, can be problematic when conducting three-phase separation in a low pressure environment. CETCO's Nautilus technology allows for robust venting through sound engineering. Other methods like venting directly above a separation unit, such as from a gas buster, runs the risk of hazardous gases descending into the work area below; CETCO's venting system is not subject to this risk.

Applications

- Oil water separation methods
- Water treatment
- Polishing
- Well stimulations
- Acid flow backs
- Pipeline maintenance
- Hydrostatic test dewatering
- Decommissioning

Features & Benefits

- Robust venting system capable of 3.2 MMscf/day (134,500 ft³/hr)
- Not subject to liquid misting or carryover
- Closed system with pipe away design for safe venting
- Mitigates hazardous gases in the work area
- Enardo flame arrestors eliminate flame propagation risks
- Meets all 14C regulations and client lifting requirements



Technical Specifications

Nautilus	120 BBL Nautilus	60 BBL Nautilus
Width	8'6"	8'9"
Length	17'4"	9'4"
Height	9'6"	9'4"
Weight	15,000	10,000
Wet Weight (lbs.)	39,379	26,254
Area (sq. ft)	96	89
Capacity (cu. ft.)	505	337
PSF	410	295
Practical Flow Series	4	2
Max Flow Series	5	2.5
% Capacity Used	75	75
Gas Flow (cu. ft./hr)	50	25

Pioneering Process

At each treatment stage, CETCO technology improves water quality. This stepwise process assures that the discharge specification is met or exceeded.

STAGE 1

First, the fluids enter the Nautilus tank comprised of four individual compartments; each with chemical injection, sparging and oil separation capabilities. The Nautilus tank provides a great deal of flexibility in breaking emulsions and segregating solids. Undesirable waste can be isolated and treated independently. Oily water is progressively cleaned from one compartment to the next.

STAGE 2

Fluids are then pumped through solids filters to remove particulates and coalesce additional oil. CETCO provides various solids filter skids depending on the rate desired. The skids are designed to be operated and maintained online. Various micron sizes and fabrics are available for specific applications.

STAGE 3

Water flows through a designated CETCO patented media in a specifically designed vessel. Through either coalescing or adsorption processing, CETCO provides the appropriate media to treat your stream. The fluids may be treated by a second vessel in the series, if needed, before routing overboard.

