

Oily Water / Produced Water Treatment

Induced Gas Flotation



Definition

Induced Gas Flotation Systems are used to remove oil and solids from produced water to ensure that it is safe for disposal and re-use. Based on design flow rate and footprint available, Peerless can offer Vertical Compact Flotation Units or Horizontal Induced Gas Flotation Units.

Product Application

Waste / Produced / Oily / Process Water Treatment for the following industries:

- Onshore - Oil and Gas Processing Facilities
- Onshore - Early Production Facilities (EPF)
- Offshore - Mobile Offshore Production units (MOPU)
- Offshore - FPSO Topsides
- Refineries & Petrochemical

Process Description

Eductor-Type Induced Gas Flotation

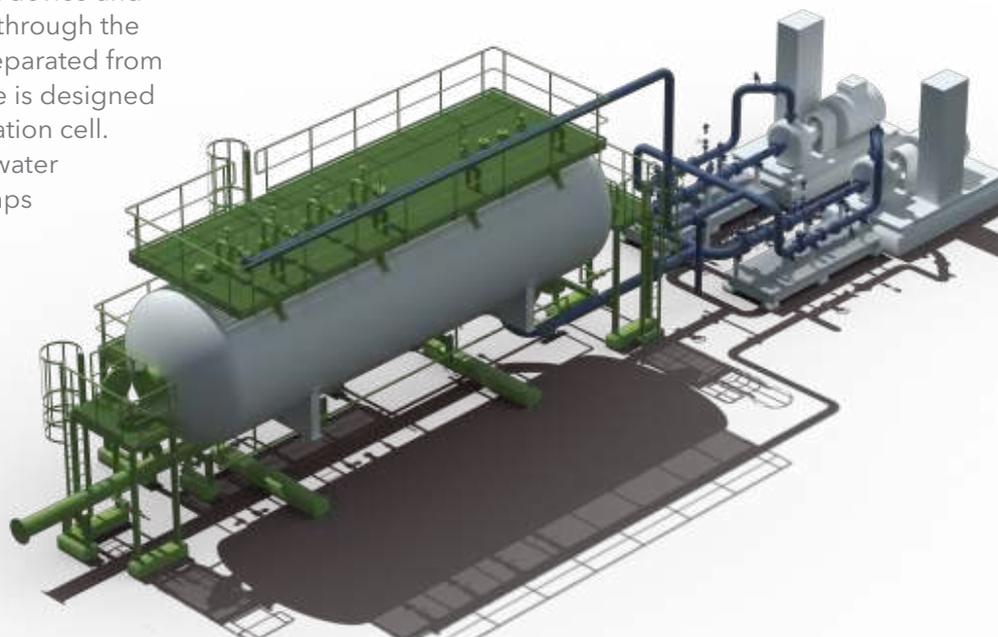
The water enters the unit through an inlet device and then flows down the length of the vessel through the four flotation cells. Each flotation cell is separated from the next by an underflow baffle, this baffle is designed to maintain uniform flow through the flotation cell. The recycle stream is taken from treated water section of the IGF Unit using Recycle Pumps and pumped back to through the gas eductors. The flow of pressurized water through eductor suck gas from the Gas Head Space within the IGF Unit and disperse the gas into the bulk fluid within the flotation cell. Each flotation cell contains a single Gas Eductor and a set of Gas Diffusers.

The entrained gas bubbles have the effect of floating oil droplets to the surface of the water where they form an unstable foam/scum layer on top of the liquid surface. The foam and oily water scum are removed by overflowing a weir into an oily water collection compartment.

Water leaving the final flotation cell passes around the under / overflow weir to the Buffer Water Section. Because the flotation gas is recycled no additional gas is required. In reality a small gas bleed is included to refresh the gas in the IGF Unit during times of low flow.

Compact Flotation Unit

Peerless Compact Flotation Unit (CFU) is the latest generation compact flotation unit available on the market. The philosophy of compact flotation is the combination of multiple separation technologies including cyclonic and flotation principles. Peerless Compact Flotation Units are available as a single or two stage system, combined or separate oil/gas outlets, the CFU is adaptable to the wide variety of oil industry process conditions and applications.





Horizontal IGF, Educator type



Horizontal IGF, Impeller type



Vertical IGF, Compact Flotation Unit

Impeller-Type Induced Gas Flotation

The Peerless M-Series flotation units are a self-induced/mechanical air (gas) flotation unit, and do not rely on external means such as blowers, compressors etc for their operation. The flotation unit offered is our standard Skimovex design equipped with 4 no. Flotation cells. Each cell are design to have retentional time of about 1 to 2 minutes per cell. As the Mechanism rotates, it creates a vortex and a negative pressure which draws air (gas) into the stator, forcing the air rich liquid throughout the cell. The conical shroud and vanes redirect the motion of this two phase liquid into a radial pattern. This ensures an even distribution to all parts of each cell and prevents a circular flow pattern from being established on the surface of the cell.

Once the two phase liquid enters the cell the air (gas) is released as finely disseminated bubbles. In these conditions, the contaminating oil and/or solids adhere to the bubbles. This mass of rising bubbles in turn carries the contaminants to the surface where they are skimmed off. The flow through the unit is under flow, each cell being separated by a baffle which is open at the bottom. In operation, each cell removes 50% of the contaminants that enter each cell.

Technology Advantage:

- Removal of free oil-in-water to less than 15 ppm
- Removal of fine solids
- Unlimited turndown
- Micro Gas Bubble Flotation

Capability:

- 40+ years of field performance
- Compact Footprint
- Simple and Robust design
- Meet Stringent Performance Guarantee
- Ideal for Early Production and Central production Facilities
- Modular Solution for Offshore and FPSO applications
- Rich industry expertise for fast track delivery of units

Our Services:

- Supply of internals and Process Design as well as Complete packaged assembly
- FEED Study Services
- Custom Built as well as Standard design
- Fast Track Delivery
- Rental Services
- Troubleshooting & Optimization of units