

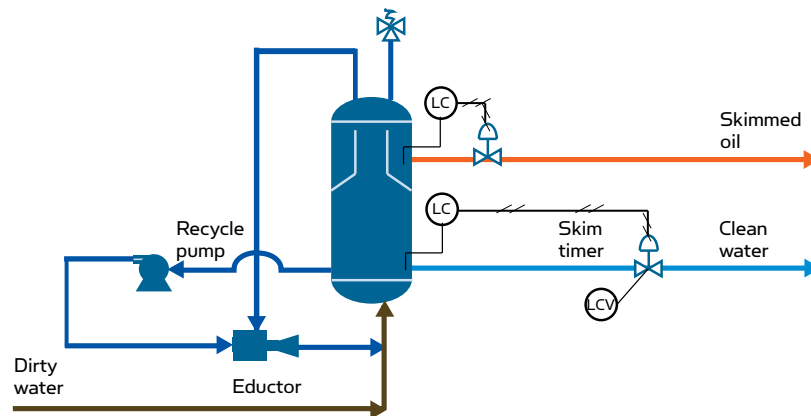
# ProFloat INDUCED GAS FLOTATION SYSTEMS



to recover oil and to condition waters for overboard discharge, re-injection or further polishing through filtration, ProSep's ProFloat Flotation Systems deliver highly efficient removal of oil and solids (1,000 to 150,000 BPWD with a separation efficiency of up to 98%) while completely containing the process.

ProFloat is ideal for secondary treatment of produced and wastewaters in refineries, petrochemical plants and in the oilfield. The solution can integrate into existing systems as standalone vessels or be fully skid-mounted as a turnkey package.

## SINGLE-CELL INDUCED GAS FLOTATION VESSEL



## FEATURES

- Contained, gas-tight design
- Compact skid design
- Simple and reliable design and operation
- No internal moving parts, no specialty parts needed
- Availability of pressurized operation
- Low skim rates
- Operational and environmental safety
- Minimal energy requirements

## INDUCED GAS FLOTATION

ProFloat employs induced gas flotation (IGF), as opposed to dissolved gas flotation (DGF), because of issues of solubility of inert and fuel gas at the high temperatures characteristic of produced water

processes. The ProFloat IGF is available as either a vertical single-cell or a horizontal multiple-cell.

## PRINCIPLES OF IGF

The highly efficient, motion-insensitive vertical induced gas flotation (IGF) process, with its small footprint, is ideal for space-limited installations, and especially for floating production applications.

The process begins by providing a venturi-type eductor with pressurized water, which passes through and creates a vacuum at the gas suction port. The gas drawn from the vapor space in the IGF is induced into the recycle stream via an

eductor. The gas is then thoroughly mixed with the water and contaminants through the aid of a static mixing device. This homogenous mixture is then released into a separation vessel. "Floated" oil and solids are skimmed from the surface of the vessel, and clarified effluent exits from the bottom of the vessel.

ProSep's IGF has a vertical design that uses Stokes law by reducing the apparent density of oils and solids by their attachment to the finely dispersed gas bubble population in the separation vessel, and by increased droplet size and buoyancy through coalescence.

Minimization of the liquid surface area susceptible to

motion can be accomplished via the use of a compact and lightweight vertical single-cell or multiple vertical single-cell IGFs, as it is much easier to hold the liquid level control of a vertical vessel during operation due to its relatively small liquid surface area.

### **HORIZONTAL MULTIPLE-CELL IGFs**

The IGF is also available in horizontal multiple-cell when higher separation efficiencies and flow rates are required. Multiple-cell units are also better at handling upsets. ProSep's multiple-cell IGFs are ideal for many onshore and fixed offshore applications because of their ability to consistently achieve OiW concentrations near the lower limit of 15 mg/l.

## **BENEFITS OF ProFloat IGF**

- Energy-efficient code and non-code designs
- No hazardous off-gas emissions
- Minimal moving parts
- Single pumps (vs. multiple internal mixing mechanisms)
- Compact, customizable skid-mounted equipment
- Insensitive to FPSO and floating platform motions
- Low skimmed oil rates (typically 1-3%), minimizing downstream tankage
- Simple "set it and go" operation
- Low chemical consumption
- Low maintenance / operator intervention

## **REFERENCES**

Available upon request.

## **FOR MORE INFORMATION**

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