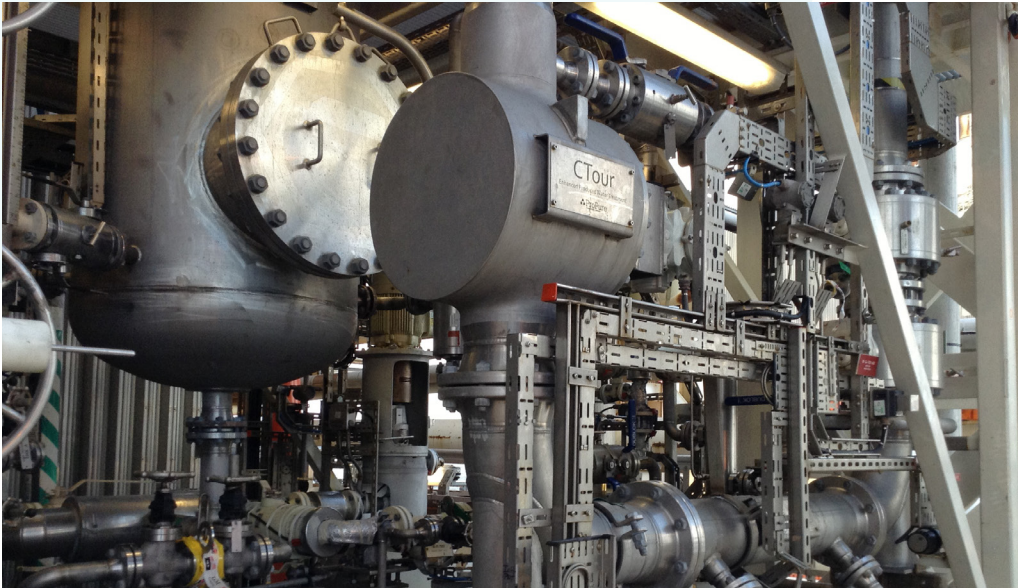


CTOUR™ PROCESS

The patented CTOUR™ process removes both dispersed oil and water soluble organics through condensate injection into produced water streams.



BENEFITS

- + Removes OIW to below 5 ppm TPH
- + Reduces water soluble organics (PAH, phenols, BTEX) by 80 – 95%
- + No waste products – no disposal or transportation costs
- + Additional chemicals not required
- + Simple retrofit for existing systems
- + Low OPEX
- + Robust process, low maintenance
- + Removal of < 5 micron oil droplets
- + Applicable for a wide range of API crudes

CTOUR PROCESS

The CTOUR™ process utilizes the principles of solvent extraction to remove residual hydrocarbons from produced water by injecting condensate into the process stream.

HOW IT WORKS

During the injection of condensate through ProSep's proprietary inline injection and mixing technology, the residual hydrocarbons coalesce with the condensate to form larger and less

dense droplets. These oil droplets are hydraulically or mechanically separated from the produced water stream by downstream separation equipment, and the hydrocarbons are recovered back into the applicable process stream.

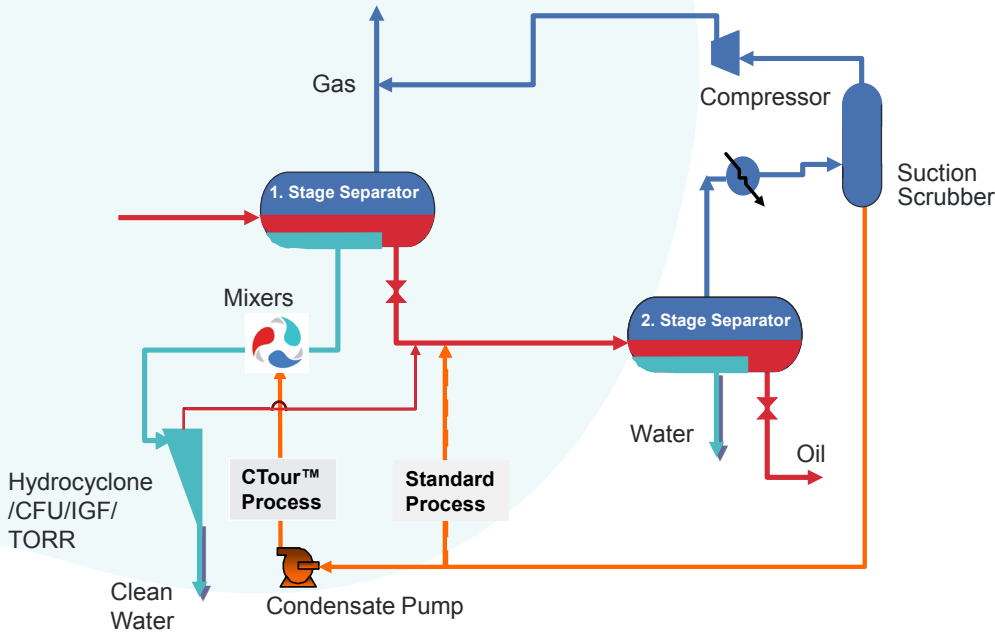
TREATMENT LEVELS

The CTOUR process routinely yields residual oil discharges of < 5 ppm total petroleum hydrocarbons (TPH), while at the same time removing 80-95% of harmful water soluble organics, such as polycyclic aromatic

hydrocarbons (PAH) and BTEX (benzene, toluene, ethyl-benzene and xylene) components.

The CTOUR process is used extensively in Norway, having treated as much as 70% of all Norwegian offshore produced water. This equates to more than 2 million barrels of water per day.

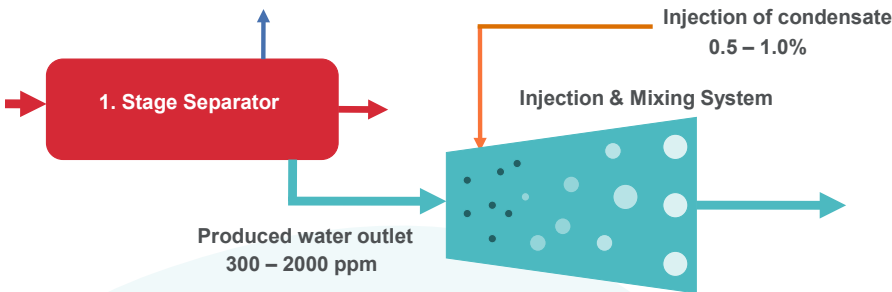
CTOUR™ PROCESS IMPLEMENTATION SYSTEM



PROCESS PRINCIPLES

- + Solvent extraction process for dissolved and dispersed hydrocarbons
- + Homogenous mixing is achieved with ProSep's proprietary mixer technology
- + Oil & condensate are removed by a standard separator:
 - Hydrocyclone
 - Flotation
 - Axial cyclone
 - Gravity vessel
 - Coalescing filter

CTOUR™ PROCESS BASIC MECHANISMS



APPLICATIONS

This unique process can be implemented at any offshore platform, onshore gathering site or production facility, including process upgrades, debottlenecking and retrofits where condensate is available.

ProSep offers a variety of downstream separation units that couple with the CTOUR™ Process, such as Hydrocyclones, IGFs, or CFUs. ProSep offers the technical expertise for specifying these solutions so that each can be adapted to suit specific process conditions at the target location.

CLIENT QUOTE

“
THE CTOUR PROCESS IS AN EXCELLENT SOLUTION FOR TREATING PRODUCED WATER
”