cerafiltec

2025

Case Study

TURNING OILY WASTEWATER INTO OPERATIONAL GOLD

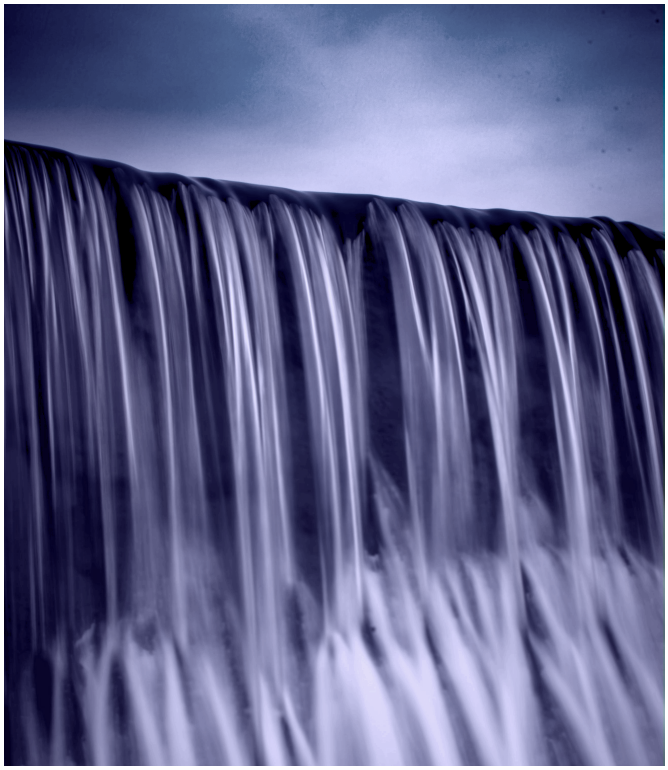
Ceramic membranes succeed where conventional filtration breaks down

REVOLUTIONISING INDUSTRIAL WASTEWATER TREATMENT

In the heart of Gujarat, India, a new approach to oily wastewater treatment is redefining what's possible for industrial water reuse.

Using advanced submerged ceramic membrane technology, this project tackles one of produced water's toughest challenges – unstable, oil-laden effluent – while unlocking reliable reuse for reinjection, steam generation, and compliant discharge. The result is a solution that is both environmentally resilient and operationally smarter. The produced water project in Gujarat demonstrates a step-change in how oily wastewater can be managed at scale. Produced water — the water brought to the surface during oil exploration — is highly variable and often heavily contaminated with oil and suspended solids. These fluctuations strain traditional polymeric membranes, which typically suffer from oil spikes, performance decline after repeated cleaning cycles, and frequent shutdowns for replacement.

Cerafiltec addressed these limitations with submerged ceramic ultrafiltration membranes engineered for extreme operating conditions. Unlike mainstream polymeric alternatives, ceramic membranes tolerate aggressive cleaning without degrading and maintain consistent performance even when feed quality shifts hour by hour. This durability allows operators to treat high-temperature influent reliably – a common barrier for conventional filtration in oil and gas sites.The ceramic system also streamlines the treatment train. By removing the need for dissolved air flotation (DAF) and clarifier units, it reduces overall footprint, mechanical complexity, and maintenance demand.



Operational costs drop accordingly, while filtrate quality remains stable and clear across changing conditions. Overall, the Gujarat case proves that ceramic membrane filtration can turn a volatile waste stream into a dependable operational resource — extending asset life, lowering costs, and enabling more sustainable water circularity in oil production environments.

Key Facts

KPIs

Fact	Solution
Water quality (Oil)	**30-250 mg/L**
Oil (Filtrate)	**<4 mg/L (BDL)**
Feed Water TSS Tolerance	**≤ 80K** ppm
Sludge drain TSS tolerance	**80K-100K** ppm
Filtrate Quality (TSS)	**98%** SS removal → <1 mg/L
Oil Removal Efficiency	**96%** Maintained during feed spikes
Design flux	**100 LMH**
Operating temperature	**≤ 60 °C**
Filtrate quality (TSS)	**98%**
Oil removal efficiency	**96%**
Membrane Recoverability	**High** Mech. & chem. cleaning
Process Configuration	**Submerged** Low fouling
Operational Sites	**Netherlands**
ZLD / MLD Capability	**≤70 MLD** Pilot-proven