



# **PRODUCED WATER TREATMENT RE- INJECTION CASE**



## **Produced Water treatment – Re-injection of Produced Water**

**LiqTech Silicon Carbide membrane technology removes Oil in Water (OiW) and Total Suspended Solids (TSS) to very low levels, thus ensuring the highest quality of the produced water to be re-injected. High quality of the re-injection water leads to extended well life and lower oil production costs.**

### **The Case**

In offshore oil, oil-soaked particles can reduce reservoir permeability, which increases the risk of undesired fracking of the oil reservoir close to the sea bed. A Chinese offshore oil company wanted to improve the quality of re-injection water, i.e. remove more solids and oil than possible with conventional primary and secondary upstream treatment to reduce the undesired fracking risk.



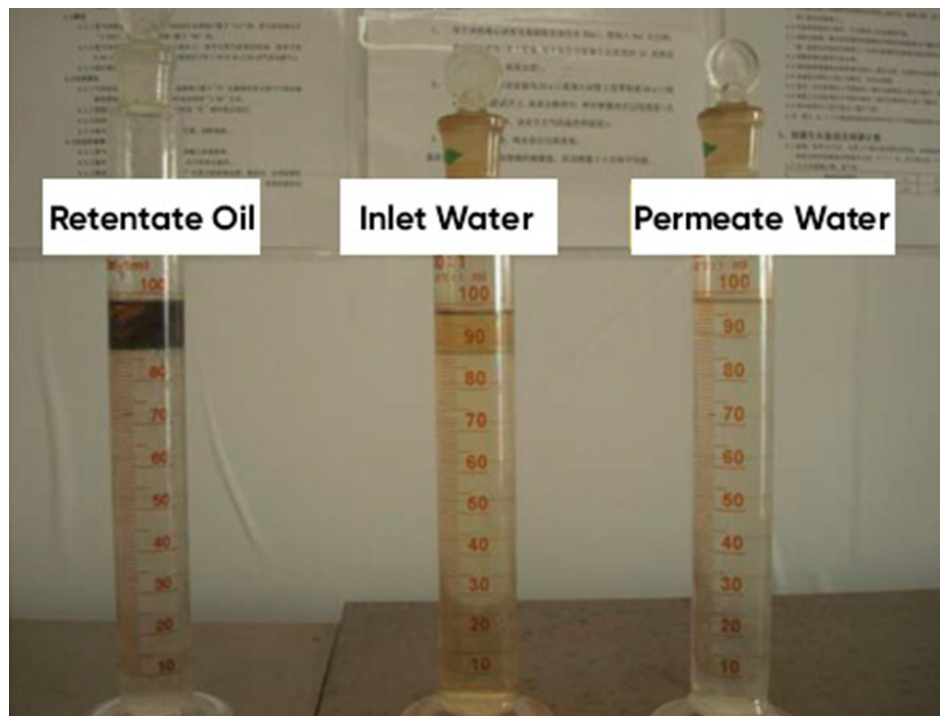
## The Solution

**To confirm the adaptability of the unit, the team picked two access points from the produced water process. One was the exit point of a hydraulic cyclone, where OiW in produced water is about 20ppm, another was the exit point of an oil skimming tank, where OiW in produced water is about 50ppm.**

LiqTech supplied SiC membranes, design, and commissioning of the system used for the project. The test on produced water showed that the SiC membranes delivered a treated water quality down to 5 ppm OiW and TSS of 1ppm, corresponding to a removal efficiency of more than 95%. The project proved that the SiC membrane unit is suitable for produced water treatment on the host platform and capable of delivering treated water quality per Chinese A1 class (the best quality standard).

The SiC Membrane unit built together with a Chinese equipment company is equipped with a feed pump that pressurizes the recirculation loop, a recirculation pump that generates the cross-flow, a backflush pump, and an automatic CIP system (Cleaning-In-Place). The pressure and flow rates inside the system are controlled by adjusting the position of the regulating valves and the pump speeds.





## LiqTech System Design

### Materials and Components

The UF membranes are made from Silicon Carbide material and prove to be extremely robust with high permeability and stable flux. Further, the membranes are chemically inert and very temperature resistant. Membrane housings and the entire piping is made of duplex steel.

### Operational performance

The SiC membrane system has shown a very satisfying process robustness and treated water quality. The system is operating at typical values shown in the picture.

PARAMETER	UNIT	FEED	PERMEATE
Oil in Water	ppm	20-50	1-5
TSS	mg/l	20-50	1-5
		Minimum	Maximum
Flow	m <sup>3</sup> /h	7	10
TMP	bar	0.1	0.5
Flux	L//m <sup>2</sup> .hour)	300	700
Permeability	L//m <sup>2</sup> .hour.bar)	500	1,000

**We are here to help you**