

Advanced EPCON Dual Compact Flotation Unit Improves Produced Water Treatment by 27%

Successful field trial on Statoil installation verifies enhanced separation with customizable system that increases oil removal efficiency in 50% smaller footprint

CHALLENGE

Improve separation of oil from produced water while minimizing footprint and maintaining high capacity.

SOLUTION

Implement the compartmentalized EPCON Dual* compact flotation unit (CFU), which removes larger portions of small oil droplets and flotation gas bubbles.

RESULTS

Achieved 27% better separation rates than conventional compact flotation units with minimal maintenance and optimal up time.



Managing produced water for more efficient operations

Produced water is by far the largest waste stream in oil and gas production today. With water cuts of up to 99% in some mature fields, the water production rates are vast. Additionally, operations are moving into frontier environments that often must meet new and stricter environmental regulations regarding permissible overboard disposal limits.

Optimized produced water treatment solutions that feature increased capacity and performance in a reduced footprint have become necessary to adhere to admissible disposal regulations while maintaining desired oil production. New-build offshore production facilities in particular require a process solution for produced water that meets the highest standards of oil removal while simultaneously minimizing operator interference requirements.

Streamlining processes and reducing footprint

The EPCON Dual CFU introduces an engineered internal design that increases the overall oil-in-water removal efficiency while fully degassing the clean water outlet. The advanced CFU uses residual flotation gas to achieve optimal secondary separation in the lower part of the vessel.

The major advantages of the EPCON Dual CFU include

- significantly enhanced oil removal and degassing compared with conventional systems
- enabled compliant overboard disposal, eliminating the need for bulk storage and transportation to onshore disposal facilities
- reduced consumption of additional flotation gas compared with traditional multistage treatment systems.



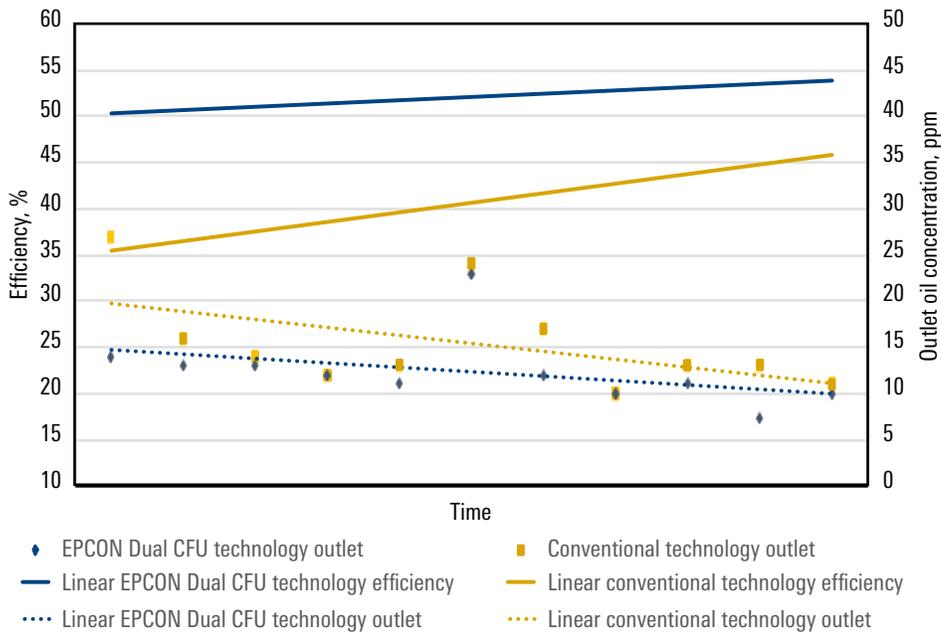
Schlumberger verified the EPCON Dual CFU's oil-removal efficiency during offshore testing in the Norwegian sector on a Statoil installation in the North Sea. Photograph by Harald Pettersen courtesy of Statoil.

Confirming excellent separation through extensive testing

The EPCON Dual CFU was developed through computational fluid dynamics simulation, onshore pilot testing, and offshore verification. Additionally, a successful field trial was performed on a Statoil installation in the Norwegian sector of the North Sea. The field trial verified 27% better separation rates compared with conventional technologies.



Schlumberger EPCON Dual CFU (left) introduces an optimized internal design that introduces a second oil removal section within the vessel and a second outlet for separated oil. The result is improved oil removal efficiency in half the footprint of conventional technologies.



Actual oil-in-water measurements compared with separation efficiency for both EPCON Dual CFU (blue) and conventional technology (yellow). The EPCON Dual CFU showed 27% better efficiency throughout the trial, including at low inlet oil-in-water values.