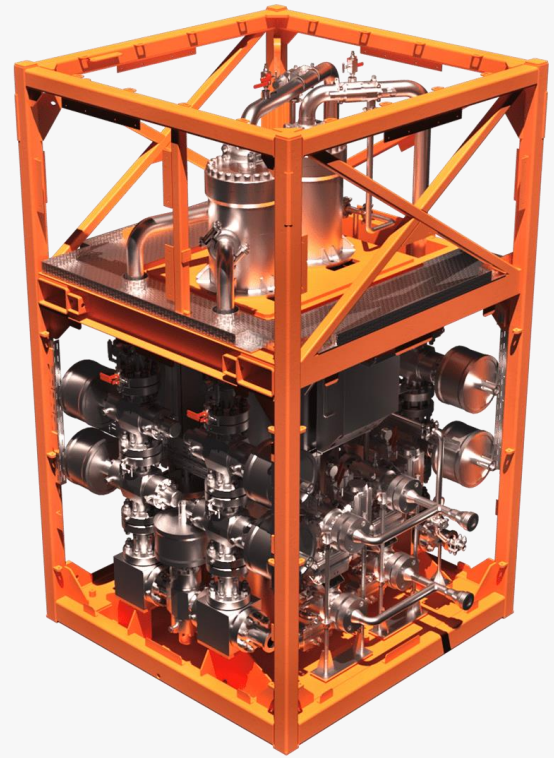


Product Summary

The FourPhase DualFlow unit is intended for use in offshore topside applications where solids could be present at surface from wellbore flow back. The DualFlow unit efficiently removes solids upstream of the production system.

The design criteria for the DualFlow is for a simple installation with minimum interruption, which is achieved using modest dimensions and easy connections. This means that as an independent unit the DualFlow is designed for easy adaptation to the loads and dimensions of existing systems. DNV has validated the DualFlow operation to a separation efficiency of more than 99.8% for solids particles as small as 20 micron contained in an oil & gas process stream (DNV RP A203).

The DualFlow unit deals with well stream problems arising from well flowback during continuous production and interventions such as well clean-up, coiled tubing operations or snubbing. In principle, the separation of particles (such as sand, scale, chalk, proppant etc.) utilizes the centrifugal force that arises when a fluid stream is sent through a cyclone. The kinetic energy of the fluid stream is boosted inside the cyclone vessel. Particle-free liquid moves to the top of the cyclone and is returned to the process or other applications. The particles that have been separated from the fluid are deposited, and weighed, at the bottom of the cyclone and channelled into an accumulator inside the cyclone vessel. Once the accumulator is full, the cyclone is isolated from the flow by means of multiple gate valves, pressure is bled off and particles flushed. Meanwhile, production continues through the other cyclone vessel. After flushing, the DualFlow is re-pressurized and brought back into operation. All solids are flushed to a disposal container, then transported to shore for disposal or re-injected with cuttings.



- Ultra-compact unit with modest 2m x 2m footprint
- Separation of solids down to 20 micron @20k bbls/day
- Inline solids flushing ensures continuous production
- Closed loop solids transportation system for no manual handling
- Dynamic Inlet giving high flexibility regardless of flow, solids size & pressure conditions
- Ground breaking design giving low erosion parameters
- Online data logging system (7th generation), solids weighing, erosion, flow, pressure & temperature monitoring
- High reliability compared to any desander utilizing a rotary motor accelerator at the inlets
- Qualified to DNV RP A203



Technical Specification

SI U.S.

Pressure

Operation Pressure: 1-310 bar (1-4 500 psi)

Design Pressure: 345 bar (5 000 psi)

Capacity

Particle size for 99.8% efficiency: 20 – 10 000 µm

Maximum flow rate (fluid): 3 168m³ (19 926 bbl/day)^(B)

Maximum flow rate (gas): 565 000 Sm³/day (20.0 MMscf/day)^(B)

Maximum sand rate: 200 kg/hrs (440 LB/hrs)^(C)

Dimensions

Height: 3 500 mm (11.5 ft)^(A)

Width: 2 000 mm (6.6 ft)

Depth: 2 000 mm (6.6 ft)

Weight: 10 100 kg (22 300 lb)^(A)

Interfaces

Flowing piping: 3" SCH160

Flanges: Hub, 3IN 25 SCH160

Flanges flushing: Hammerlug 2" FIG 1502

Pressure vessel volume: 211L (1,3 bbl)

Solids capacity per vessel: 100 l (0.6 bbl) holding volume

Temperature

Min operating temp: -28 °C (-18,4 °F)

Max operating temp: +120 °C (+248 °F)

Certification

DNV RP A203 – Validated separation efficiency

PED / API-6a / ASME VIII Div.1 U

NACE MR0175-97

ATEX Zone II / NEC505/UL

NORSOK Z-015

DNV 2.7-3 Lifting Equipment

Materials

Pressure Vessel: Duplex S31803

Inner Liner: Stainless AISI 316

Valves: Duplex S31803 and AISI 316

Pipes: Duplex S31803 and AISI 410

Frame: Carbon steel (S355)

Nuts, bolts: L7 + Standard galvanic 8.8

Seals / Seal rings: Viton / 6MO + PTFE coating

Notes

A) – Max height and weight, lower and lighter versions available

B) - Capacity is dependent on -fluid composition and -ow pressure, pre-job calculations determine limits

C) - Long term continuous production, higher sand rates can be tolerated for shorter durations