Schlumberger

Voraxial

Impeller-induced cyclonic separator

APPLICATIONS

- Frac-grade water*
- Onsite frac water sourcing
- Solids removal
- Pond management by removing oil and solids
- Water quality improvement prior to saltwater well disposal

BENEFITS

- Lower opex from reliable, high-rate operation without requiring multiple passes or booster pump assist
- No emulsification of oils to eliminate need for future treatments
- Time-saving plug-and-play performance

FEATURES

- Compact units with a small footprint
- Treatment of a wide range of flow rates and components without continuous adjustment
- No performance impairment from slugging flow
- Nonclogging impeller design

Voraxial* impeller-induced cyclonic separator provides instantaneous, continuous, concurrent separation of water, oil, and solids at a wide range of flow rates to bring new efficiencies to oilfield water sourcing and management.

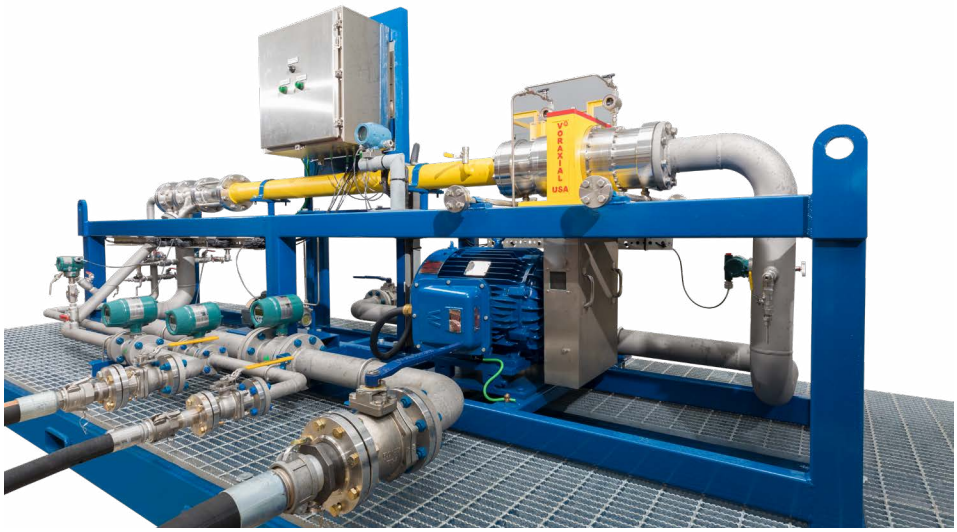
This innovative inline water treatment process cleans water from varying sources by separating out oil even with some entrained gas and solids with different specific gravities. Voraxial seperators significantly outperforms conventional centrifuge or hydrocyclone separation, which requires a booster pump to counter its performance-constraining pressure drop and must use multiple units and multiple passes for the separate removal of oil and solids from the liquid.

How it works

Instead of employing a conventional hydrocyclone to convert the incoming liquid velocity into rotary motion for separating heavy and light components, Voraxial impeller-induced cyclonic separator uses a unique no-shear, nonclogging impeller to induce radial and axial flow for three-way separation of water, oil, and solids. This simultaneous separation during continuous flow means that only one pass is required through the unit, and there is no associated pressure drop.

Treatment output up to 120,000 bbl/d

With separators capable of ratings up to 250-psi gauge pressure and 250 degF, Voraxial separator's consistent, simultaneous two- or three-way separation for onshore and offshore applications does not require continuous adjustment for fluctuations in the inlet oil, suspended solids concentration, or flow rate or any combination of these inputs. Three standard sizes of compact and mobile units are available to process volumes from 20 to 5,000 galUS/min for a reliable high-rate output up to 120,000 bbl/d.



The Voraxial impeller-induced cyclonic separators uses a unique no-shear impeller to induce radial and axial flow for three-way separation of water, oil, and solids.

Voraxial

Specifications			
Model	**Voraxial Separator 2000**	**Voraxial Separator 4000**	**Voraxial Separator 8000**
Inlet flow range, galUS/min	20–60	100–500	1,000–5,000
Min. inlet gauge pressure, psi	20	20	20
Design gauge pressure,† psi	100	100	100
Design temperature,‡ degF	140	140	140
Operating gauge pressure, psi	100	100	100
Operating temperature, degF	100	100	100
Construction materials	316L stainless steel (SS)	316L SS	316L SS
End connections	ANSI Class 150 RF flanges	ANSI Class 150 RF flanges	ANSI Class 150 RF flanges
Internals	316 SS low-shear, open-rotor assembly	316 SS low-shear, open-rotor assembly	316 SS low-shear, open-rotor assembly
Valves	316 SS ball valves	316 SS ball valves	316 SS ball valves
Electrical	480 V, 3 phase, 60 Hz, 8 kW	480 V, 3 phase, 60 Hz, 41 kW	480 V, 3 phase, 60 Hz, 82 kW
Power	10 hp, 460 V, 3 phase	50 hp, 460 V, 3 phase	100 hp, 460 V, 3 phase
Bearings	Ceramic deep groove ball type	Ceramic ball type	Ceramic ball type
System inlet connection	2-in ANSI Class 150 RF flange	4-in ANSI Class 150 RF flange	8-in ANSI Class 150 RF flange
Clean water outlet	2-in ANSI Class 150 RF flange	4-in ANSI Class 150 RF flange	8-in ANSI Class 150 RF flange
Solids outlet	2-in ANSI Class 150 RF flange	2-in ANSI Class 150 RF flange	4-in ANSI Class 150 RF flange
Oil outlet	1-in ANSI Class 150 RF flange	1 1/2-in ANSI Class 150 RF flange	4-in ANSI Class 150 RF flange
Package weight, t	2.6	3.5	4.86
System integration	Data transfer via Ethernet, WiFi, or edge computing	Data transfer via Ethernet, WiFi, or edge computing	Data transfer via Ethernet, WiFi, or edge computing

† Can be equipped for gauge pressure rating capability up to 250 psi
‡ Can be equipped for operating temperature capability up to 250 degF

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