

# Voraxial

## Impeller-induced cyclonics

### APPLICATIONS

- Frac-grade water\* on demand
- Onsite frac water sourcing
- Solids removal
- Pond management by removing oil sheen 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 requiring adjustment
- No performance impairment from slugging flow
- Nonclogging impeller design

Voraxial\* impeller-induced cyclonics provides instantaneous, continuous, concurrent separation of water, oil, and solids at very high flow rates to bring new efficiencies to oilfield water sourcing and management.

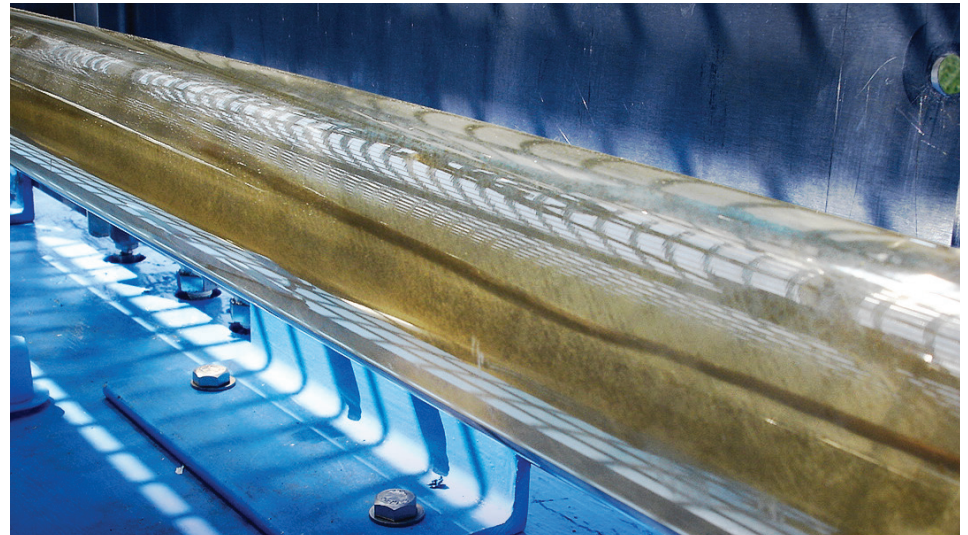
This innovative inline water treatment process cleans water from varying sources by separating out oil with any entrained gas and solids with different specific gravities. Voraxial cyclonics significantly outperforms conventional centrifuge or hydrocyclone separation, which requires a booster pump to 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 cyclonics 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 rated to 250 psi and 250 degF, Voraxial cyclonics's consistent, simultaneous two- or three-way separation for onshore and offshore applications does not require any adjustment for fluctuations in the inlet oil, suspended solids concentration, or flow rate or any combination of these inputs. Four standard sizes of compact and mobile units are available to process volumes from 3 to 3,500 galUS/min for a reliable high-rate output up to 120,000 bbl/d.



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

Specifications				
Model	Voraxial Cyclonics 1000	Voraxial Cyclonics 2000	Voraxial Cyclonics 4000	Voraxial Cyclonics 8000
Temperature rating, <sup>†</sup> degF	250	250	250	250
Pressure rating, <sup>†</sup> psi	250	250	250	250
Flow rate, galUS/min	3–7	20–60	100–500	1,000–3,500
Max. daily output, bbl	240	2,057	17,140	120,000
Diameter of Voraxial cyclonics, in	1	2	4	8
Energy, hp	3	7.5	50	100

<sup>†</sup> Equipment rated to higher temperatures and pressures available on request.