

MOZLEY Desanding Hydrocyclone

Solids-water separator

APPLICATIONS

- Sand removal from produced water streams
- Oil removal from jetting sand
- Solids collection and disposal
- Solids removal for produced water reinjection
- Sand erosion and buildup prevention
- Sand constrained wells
- Desanding of surface water prior to polishing and injection

ADVANTAGES

- Reduced loading on downstream processing equipment
- Reduced erosion corrosion on piping
- Reduced bacteriological activity
- High efficiencies at low differential pressures
- Inline sand and solids removal and treatment
- 10% size and weight reduction compared with conventional methods
- No moving parts and reduced maintenance requirements through protection of downstream equipment
- Low solids oil content to meet discharge specifications
- Fully automated designs
- Stand-alone systems to operate with existing systems
- Minimized or eliminated requirement for chemicals
- Insensitivity to motion
- Numerous material selections, including polyurethane and steel ceramic-grade options

MOZLEY Desanding Hydrocyclone* solids-water separator efficiently and reliably removes solids from fluid streams. Fully packaged designs are scalable to meet size requirements and can be fully automated to provide efficient, compact, solid-liquid separation capabilities, including solids removal from produced water streams.

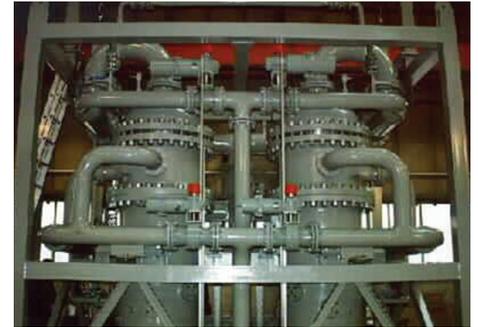
Operating principle and key features

The solids-water separator operates via pressure drop. Fluids are directed along an involute into the desander, which causes the fluid to spin. Strong centrifugal forces are generated by the spinning motion, causing the solids and liquid to separate. The centrifugal force generated in a hydrocyclone varies over its length and may reach a maximum of 2,000 g. Heavier solids are forced outward toward the wall of the hydrocyclone, and the lighter fluids migrate toward the center core. Because of geometric variables and flow patterns, the lighter fluids flow through the overflow, and the heavier solids are directed to the underflow. The result is a process with a retention time of typically 2 to 3 seconds. Hydrocyclones provide simple and effective means of achieving effective separation of solids and sand from produced and other water streams.

For removing solids from a production system, desanders can be utilized either upstream or downstream of a production separator. The typical location is downstream of the production separator on the water outlet and upstream of the water level control valve. The majority of the sand is accumulated in the separator and will travel out with the water stream. This water outlet is located on the bottom center position of the separator to minimize solids buildup.

Performance

MOZLEY Desanding Hydrocyclone separators are available in inlet cylindrical diameter sizes from 0.5 to 30 in, separating 98% of particles from 3 to 108 μm , respectively. Solid volumes of up to 30% can be handled with larger desanders, and up to 1% can be handled with the smaller units.



MOZLEY Desanding Hydrocyclone solids-water separators.

Product range

- The capacities of the 0.5- to 30-in desanders range from 25 to 100,000 bbl/d [3 to 11,924 m^3/d] of water, and although desanders can be operated at high pressure drops, they typically operate at a modest pressure drop of 10 psi [0.07 MPa] from inlet to overflow outlet.
- If a fine solids cut is required at high flow rates, the required number of small desanders are installed in a containing vessel in a multicyclone arrangement.
- CP Series separators are available in 0.5-, 1-, and 2-in cyclone sizes.
- W Series separators are available in 4-, 6-, 10-, 16-, 20-, and 30-in cyclone sizes.

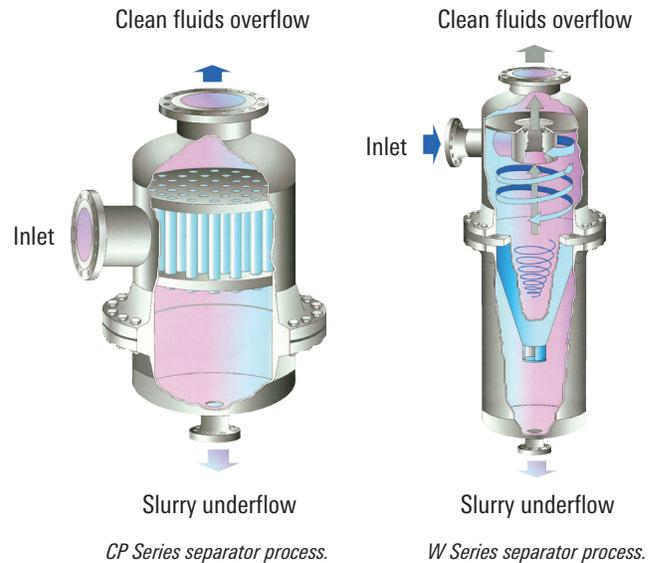
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Applications

- Produced water treatment—Solids accumulate in the bottom of production separators, surge vessels, and freewater knockouts, reducing retention time and contributing to corrosion and erosion problems in piping and vessels. Solids removal in produced water reinjection applications is vital because the reinjection wells can only handle low amounts of solids before plugging starts.
- Filtration systems—Desanders upstream of fine filtration units will result in a significantly reduced loading on the filters, ensuring more efficient and economic operation with reduced downtime.
- Solids cleaning and handling—Produced solids are often oil coated and present an environmental hazard. Desanders in a solids cleaning and handling system return clean processed solids for discharge offshore or local landfills.
- Jet wash systems—Solids-laden water from the production separator is flushed and directed to a desander in a batch-mode operation to remove and separate solids from the production fluids.
- Drilling operations—Desanders are used in conjunction with vibrating screens to separate cuttings from drilling mud or drilling brine.



MOZLEY Desanding Hydrocyclone separators are typically installed within pressure vessels and held in position between tube plates.



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