Schlumberger

Sand Receiving and Cleaning Systems

Efficient, compact, and robust solutions for postseparation treatment

APPLICATIONS

- Production separation to accommodate
  - Overboard disposal
  - Solids reinjection
  - Shipment to shore

ADVANTAGES

- Operates without need for a slurry pump
- Controls and limits sand concentration independently of the amount of sand in the accumulator
- Prevents blockage problems during the clean and discharge functions and maximizes plant availability
- Reduces oil-in-water as well as oil-in-sand content to meet all discharge specifications
- Improves operational efficiency through simple, reliable, and flexible operation that can be easily automated

Schlumberger offers a range of CYCLOTECH* cyclonic separation technologies that clean sand to such low oil concentrations that the cleaned material can be pretreated prior to shipment to shore or reinjected into the reservoir. Sand receiving and cleaning systems include

- CYCLOTECH MC Series* desanding hydrocyclone technologies, which provide particle separation down to 5 um. Its standard construction materials are engineering-grade aluminum oxide ceramic or reaction-bonded silicon carbide for ultimate wear resistance.
- an integrated conical-bottomed solids accumulator, which collects and processes sand. The accumulator can be sized to provide any solids holdup requirement and has a conical bottom to maximize solids removal efficiency.
- CYCLOTECH Sandscape* solids conveyance and concentration control system, which draws solids in a controlled concentration from the bottom of the accumulator and boosts the pressure to allow the slurry to be routed back to the desanding hydrocyclone inlet. The Sandscape system is located externally to the accumulator. The motive fluid is normally a higher-pressure water source. Materials of construction are typically carbon steel or stainless steel outer housing with replaceable high-wear-resistance, reaction-bonded silicon carbide cartridge-style internals.

Cleaning function

Removing oil from sand to a volume less than 0.5% is enabled by

- attrition between the sand and the inner cyclone wall generated by the high-intensity shear forces of MC Series technologies
- attrition between the sand and Sandscape system internals generated by the high-pressure, high-velocity, clean water motive fluid flow.

Removing oil from water to a volume less than 30 mg/L is enabled by

- displacing oily water with clean flush water as recirculation progresses; the oily water is removed from the system via the desanding hydrocyclone overflow and routed to the produced water treatment system
- recirculating solids in increasingly cleaner water; samples can be taken during the recirculation cleaning cycle to ensure that the solids and associated water meet the required specifications prior to disposal.

Sand receiving and cleaning technologies are built using robust, engineering-grade materials for enhanced reliability.

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Disposal options

For at-sea disposal, the Sandscape system pumps solids at a controlled concentration to an overboard disposal caisson. Additionally, for reservoir reinjection, the system pumps solids to a solids reinjection system. For landfill disposal, Schlumberger offers

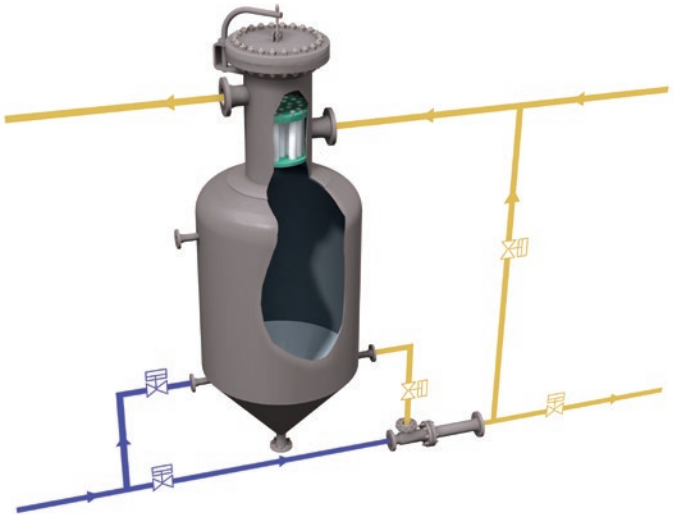
- removable solids accumulator
- capability to transfer to skip for discharge into a standard mud box or cuttings skip
- dedicated solids collection bin, which allows further dewatering of the removed solids slurry prior to the bin's transportation for emptying or further disposal.

New-build systems

CYCLOTECH technologies for sand receiving and cleaning form an integral part of Schlumberger produced water and sand management capabilities. These technologies can range from fully automated packaged systems to stand-alone vessels that can accommodate most pressures and temperatures.

Technical viability testing

MC Series technologies can determine the separation performance of different separation models on live fluids. These compact technologies require no utilities and come complete with all required valving, instrumentation, and hosing. Additionally, Schlumberger experts in produced water and sand management can perform full-particle characterization analysis of the existing produced water treatment in a process that includes particle-size distribution, average solids concentration, and oil-in-solids analyses.



If the sand is to be disposed to sea or reinjected back into the reservoir, the Sandscape system will simply pump the solids at a controlled concentration to either an overboard disposal caisson or a solids reinjection system.

slb.com/solids-management

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