

## CYCLOTECH MC Series

### Desanding hydrocyclone technologies

#### APPLICATIONS

- Solids removal
- Produced water desanding
- Produced water reinjection
- Water polishing and sand cleaning

#### ADVANTAGES

- Broad range of solids sizes managed— from 2  $\mu\text{m}$  to 15 mm
- No moving parts for enhanced reliability
- No need for duty or standby operation
- High sand removal efficiency regardless of hydrocyclone diameter
- Robust makeup materials stand up to erosion

CYCLOTECH\* MC Series\* desanding hydrocyclone technologies remove solids from produced water, seawater, and liquid hydrocarbon streams to meet the demanding environmental and physical requirements of the upstream oil and gas industry. The technologies' most common applications are for produced water systems, protection of downstream equipment, and reinjection systems.

#### Principle of operation

MC Series technologies have no moving parts and achieve solid-liquid separation using a pressure drop across the unit. Slurry is directed into the inlet section of the liner via a tangential inlet port. This, together with a narrow cyclone diameter, causes the fluid to spin at high velocity, creating a high-g radial acceleration field.

The denser-phase solid particles are forced outward to the hydrocyclone inner wall. Here, through internal hydrodynamic forces, the solids are ejected from the apex of the cyclone while the liquid exits via an axial port adjacent to the inlet. The separated solids are collected in a solids accumulator, which can be periodically purged on line without interruption to the hydrocyclone operation. This purging eliminates the need for duty or standby operation.

#### Hydrocyclone liner design

Developed in house and now globally used, MC Series technologies undergo rigorous testing in both laboratory and field settings.

The separation efficiency of desanding hydrocyclones is a strong function of the hydrocyclone diameter; the smaller the diameter, the smaller the particles that can be separated, but the lower the capacity of each hydrocyclone.



*CYCLOTECH MC Series technologies are highly compact.*



*MC Series technologies house large numbers of small-diameter desanding hydrocyclones in a single vessel to efficiently remove sand at high flow rates.*

# CYCLOTECH MC Series



*Schlumberger produced water and sand management technologies provide compact, targeted, robust, and flexible solutions that meet discharge requirements for customers' specific applications.*

In MC Series technologies' configurations, large numbers of small-diameter desanding hydrocyclones are installed in a single vessel to achieve sand removal efficiency at high flow rates. In every case, the liner packing is highly efficient, enabling Schlumberger to offer compact vessel designs.

The technologies are built using engineering-grade aluminum oxide ceramics as standard. For highly erosive applications, reaction-bonded silicon carbide — extremely hard-wearing advanced ceramic — is used, providing six times the wear life of aluminum oxide ceramic.

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