

CYCLOTECH WDC Series

Wellhead desanding cyclone technologies

APPLICATIONS

- Proppant removal from oil and gas condensate developments
- Well cleanup operations
- Well startup operations
- Underbalanced drilling operations

ADVANTAGES

- Improved reliability through protecting chokes, flow lines, and manifolds from erosion as well as downstream equipment from erosion, corrosion, and blockage
- Reduced production separator sand jetting requirements
- Increased production above sand-free rates

CYCLOTECH* WDC Series* wellhead desanding cyclone technologies can be applied to a wide range of gas/liquid ratios. Deploying WDC Series technologies enables determining the potential range of actual wellhead flowing conditions, designing the cyclone geometry to suit, and predicting separation performance and cyclone pressure drop.

Principles of operation

WDC Series technologies have no moving parts and separate solids from multiphase well streams by density differential, using only a small pressure drop across the cyclone. A solids-laden multiphase flow is directed into the inlet section of the cyclone via a tangential inlet port. This causes the fluid to spin at high velocity, creating a high-g radial acceleration field. The dense-phase solid particles are forced outward to the hydrocyclone inner wall. There, through internal hydrodynamic forces, solids are ejected from the apex of the cyclone while the rest of the multiphase flow exits via an axial port that is adjacent to the inlet. The separated solids are collected in a separate solids accumulator, which can be periodically purged on line without interrupting the hydrocyclone operation. This eliminates the need for duty or standby operation.

Selection

Unlike conventional solid-liquid cyclones, fit-for-purpose WDC Series technologies accommodate the gas phase to ensure that the presence of gas improves, rather than depresses, the separation performance. Schlumberger has combined physical testing with computational fluid dynamics (CFD) modeling and simulation to optimize the WDC Series technologies' range of geometries and to predict key performance and sizing parameters of pressure drop and separation performance.



WDC Series technology.

CYCLOTECH WDC Series

System design

Standard WDC Series technologies can operate upstream or downstream of the choke to 15,000 psi. The technologies can be manually or fully automated for operation on remote platforms. Materials of construction for the technologies' cyclone inserts are typically duplex stainless steels, which are either surface-hardened or tiled with reaction-bonded silicon carbide, an extremely hard-wearing, advanced ceramic.

Separated sand handling

Schlumberger offers collection, depressurization, transfer, cleaning, and low-pressure sand disposal in addition to continuous sand removal using CYCLOTECH Sandscape* solids conveyance and concentration control system.



Single-insert design that protects the pressure housing from the incoming sand-laden, high-velocity flow.

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