

GAS LIQUID SEPARATION

Cyclonic Bulk Gas Liquid Separation



ePROCESS GAS LIQUID CYCLONES (GLC) AND AXIAL FLOW CYCLONES (AFC) PROVIDE COST EFFECTIVE AND EFFICIENT COMPACT GAS LIQUID SEPARATION. GLC'S ARE USED EITHER EXTERNAL OR INTERNAL TO PRODUCTION SEPARATORS OR OTHER GRAVITY BASED SYSTEMS, WHEREAS THE AFC'S ARE ONLY USED EXTERNALLY.

Multiphase fluids enter the top of a GLC tangentially and rotate from the action of the centrifugal forces. The heavier liquids are forced to the wall of the cyclone, and travel down to the underflow outlet, while the lighter gas phase migrates to a central core and migrates in the opposite direction and exits the overflow.

Multiphase fluids enter the base of an AFC and rotate from the action of centrifugal forces. Stationary helical vanes force the heavier liquids to the wall of the cyclone, and the lighter gas phase migrates to the centre. Dry gas is separated and directed to the outlet stream, and the remaining partially degassed multiphase stream continues axially through the separator.

In Topsides applications the separated gas phase will be recovered via an elbow or crossover line, whereas Downhole, the dry gas will be directed to the tubing-casing annulus.



GAS LIQUID SEPARATION

A powerful use of cyclonic gas liquid separation is during 'Partial Processing' applications. Here an effective upstream 'plug-in' process occurs, extending the operating envelope of existing equipment.

We "Partially Process" or partially separate upstream the significant constraining phase, which is either gas or water. Gas constrained systems are efficiently debottlenecked with this operating philosophy.



APPLICATIONS

- Conventional separator Debottlenecking;
- Compact Degassing and Partial Processing;
- Multiphase Metering;
- Surface gas scrubbing;
- Downhole gas liquid separation for gas lift operations and optimal ESP operations.

BENEFITS

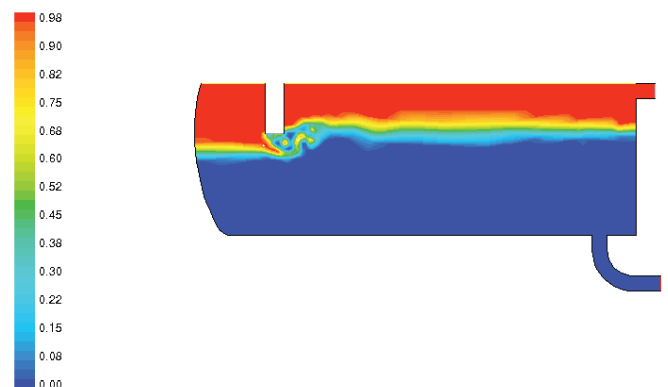
- No moving parts, with low capital and operating costs;
- Very compact in size and weight;
- Foam free gravity separator operation;
- Insensitive to motion, and is highly flexible in retrofit and debottlenecking applications.

OPERATIONS

- Highly flexible separation operation, where either gas scrubbing or degassing is the primary separation objective;
- The GLC provides an accurate gas liquid separation with dry gas and less than 1% by volume gas carry under into the liquid stream;
- For gas scrubbing the AFC typically provides no liquid carry over when less than 60% of the inlet gas is removed, and for degassing operations typically no liquid carry over will occur when less than 80% of the inlet gas is removed;
- Pressure drops are typically 5 to 20 psi for the GLC, and 50-80 psi for the AFC;
- Typical sizes for the GLC are 1 to 6 inches diameter by 1 to 4 ft long. AFC sizes are 4 to 10 inch diameter by 6 to 20 ft long;



LP Separator V-2003
Contours of Volume fraction of gasoil-liquid (Time = 7.323e+01)



Feb 21 2000. FLUENT 5.3 (2d, segregated, ke, unsteady)