Twister for Offshore Dehydration

The Twister™ Supersonic Separator efficiently condenses and separates water and hydrocarbons from natural gas in a chemical-free, environmentally-friendly, safe, compact process with minimal operating costs as no moving parts are required in the Twister tube.

Offshore dehydration

Offshore gas fields have traditionally been developed using manned glycol (TEG) dehydration facilities. However, increasing pressure on cost, personnel safety and environment is steadily pushing unmanned concepts, such as Wet Gas Evacuation.

Twister Gas Conditioning technology offers the solution of unmanned operation for offshore dehydration facilities, which is not only a cost-effective solution but also a safe and environmentally friendly alternative, whilst eliminating many of the flow assurance risks and limitations involved with Wet Gas Evacuation. Twister can also save weight and space for offshore facilities – a Twister system comprising a Hydrate Separator and six Twister tubes designed to handle 300 MMscfd has a typical footprint of 3.5 x 3.5 metres.

Figure 1 shows a typical layout developed for an offshore application. Up to six compact Twister tubes, each with a capacity of up to some 3 million Sm³/d (105 MMscfd), can be mounted in a vertical position on a vertical liquid degassing vessel. This compact, low weight arrangement provides a gas conditioning solution for unmanned minimum facilities platforms and is a key enabling technology for de-bottlenecking existing space and weight constrained platforms.
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**What is Twister?**

Twister is a low temperature separation process using supersonic gas velocities, with a performance which can be optimised by improved heat integration using the cold gas exiting Twister, supplemented with air or seawater cooling if required. The inlet separator upstream of the Twister tubes is designed to remove produced liquids and prevents carry-over of slugs and solids. The following issues need to be considered when designing a gas conditioning system based on Twister technology.

- Twister is a fixed actual volumetric flow device. The gas velocity at the throat of the inlet nozzle will always be exactly Mach 1, fixing the flow through the tube. Turndown flexibility can be achieved by adjusting the operating pressure or by taking individual Twister tubes on/off line.
- Twister is a pressure ratio device. For any design pressure, the gas will expand to around 30% of feed pressure mid Twister and recompress to typically 75 - 80% of feed pressure exiting the Twister tube for dewpointing the gas. For NGL recovery applications, the gas will typically expand to around 20% of feed pressure mid-Twister and recompress to around 50 – 65% of the feed pressure when exiting the tube.

For further information: www.TwisterBV.com or email: office@TwisterBV.com