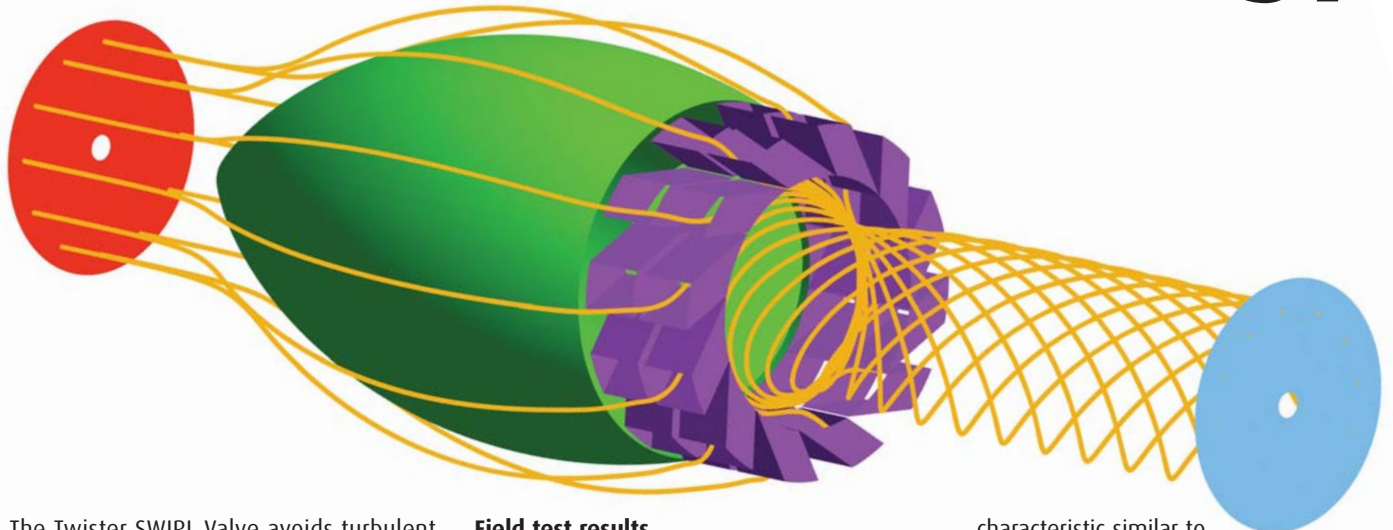


Twister SWIRL Valve™ – a new gas processing product which improves the separation of two-phase flow across a pressure reduction valve, such as a choke valve, Joule Thomson (JT) valve or control valve. This in turn significantly improves the separation efficiency of downstream separators

Twister BV introduces SWIRL valve technology



The Twister SWIRL Valve avoids turbulent mixing of fluids. Valves are used in the oil and gas industry to control pressure, temperature and flow. In many cases fluids will expand in the valve, once sufficient pressure drop is created over the valve. This throttling process normally results in a flashed liquid or a condensed gas, which needs to be separated afterwards.

It is expected that this SWIRL Valve technology will be effective in flow debottlenecking of existing separator trains, whilst also minimising liquid carry-over and/or gas carry under, reducing chemical losses and enabling significantly higher liquid recovery.

The improved separation efficiency of the Twister SWIRL Valve can be used to either increase the flow capacity of existing JT-LTS plants, or to reduce the pressure drop required for JT cooling, or to lower the hydrocarbon dew point, and also to reduce glycol carry-over. SWIRL Valves can be applied for all Joule Thomson expansion gas flows.

Field test results

A Twister SWIRL Valve was installed and operated in a JT-LTS plant in September 2008 replacing an existing JT valve. The LTS or cold separator utilises a state-of-the-art separator internal (type: SMSM).

The installation was completed within one day, with minimal disruption. The export gas quality was monitored for two months utilising an online hydrocarbon dew point analyser and a mobile GACOM unit, which measured the liquid drop-out at -3°C and 27 bar.

These measurements demonstrated that by using the SWIRL Valve as a JT choke:

- ▶ The HC dew-point was reduced by 7°C at design capacity.
- ▶ The flow rate was increased by 20% of max. flow capacity.
- ▶ The cold separator temperature was increased by 5°C, indicating that the pressure drop over the JT valve could be reduced by 20%.
- ▶ The SWIRL Valve noise level was 70dB(A) at design capacity.
- ▶ The SWIRL Valve had a linear control

characteristic similar to other traditional cage valves.

The Netherlands-based Twister BV Company was launched by Shell Technology Ventures in April 2000, and holds significant experience in natural gas processing technology development, plant delivery and operational support. Their main product line is the Twister Supersonic Separator which produces gas at supersonic velocities, extracting water & hydrocarbon liquids. Compared to conventional technologies, the Twister process requires no chemicals and hence reduces exposure to hazardous gas emissions. It has no moving parts, permits near instant start up and allows considerable cost reduction, particularly for offshore installations. Additional details are available on the company website www.TwisterBV.com

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