PRESS RELEASE

Energas introduces new Mokveld Typhoon Valve System

[Johannesburg, 09 April 2018]: *After more than a decade of development and testing in diverse applications, Mokveld's Typhoon Valve System is now ready for commercial use. The technology is also now available locally through Mokveld's distributor in South Africa, Energas Technologies, a leading supplier of high-end and specialised equipment to the oil and gas industries in Southern Africa.*

In line with its objective to provide the gas and oil industry with expert knowledge and highly advanced engineered valve systems for critical control and safety applications, Netherlands-based Mokveld has designed and developed a low shear control valve technology that reduces shear forces significantly. Following a stringent development and testing phase in accordance to DNV RP A-203, the Typhoon Valve System is now ready for commercial application, and Energas Technologies has announced the availability of the innovative technology in the local market, effective October 2017.

Typical applications in oil production include level control, produced water and production choke valves. Laetitia Botha, Energas Technologies Product Engineer, says incorporation of the low shear Typhoon Valve System in the design of oil production systems provides opportunities to reduce capital expenditure on field developments or increase production rates and extend the production lifetime of a mature field.

Understanding the tech

Crude oil is seldom produced alone; the hydrocarbons are generally mixed with formation water. Some of these hydrocarbons consist of light molecules, others are heavier. The phases of the hydrocarbons depend on both pressure and temperature and may contain amounts of free hydrocarbon gas.

The formation water may be produced as free water, or as an emulsion. The emulsion is a dispersion of water droplets in the oil or oil droplets in water. Separation of free water from the oil can be relatively quick, while separation of water from the emulsion is harder to accomplish due to the higher viscosity of an emulsion.

Conventional valves and pumps introduce high shear forces on the liquid mixture, sometimes resulting in the formation of a more complex or tighter (smaller droplets) emulsion. The Typhoon Valve System is a low shear control technology developed to reduce the shear forces imposed on the mixture.

Emulsification and droplet breaking in petroleum phases are directly coupled to shear forces in throttling valves. The greater the shearing, the smaller the droplets and more difficult the subsequent process of separating the oil from water," explains Botha.

"Shear forces are a function of the volume involved in energy dissipation in the valve. The Typhoon Valve System significantly reduces shear forces by increasing the volume involved

in energy dissipation by means of the axial cyclonic flow pattern through the system," she adds.

Key benefits

The process and economic benefits of the Typhoon Valve System are multiple and proven. The key benefit is the improved separation efficiency due to the low shear force technology. The Typhoon Valve System deals with the cause of the separation issues by reducing emulsification and shear forces exerted on the fluids. Due to this permanent reduction in shear, the valve has a lasting positive effect on separation, regardless of changes to the composition of the well stream over the field's time.

Meanwhile, if used as a choke valve in petroleum process streams, the Typhoon Valve System will improve the efficiency of downstream separation without resorting to chemicals or additional treatment processes. Due to cleaner production capabilities, an oil water reduction of 30-80% is achievable.

Other design benefits of the Typhoon Valve System include:

- Availability – erosion resistant materials in the cyclonic flow area reduce erosion to improve operational lifetime
- Accurate control – linear inherent characteristics allow optimum control for liquid level systems and flow control processes
- Compact – as a result of the low actuation force requirement, small actuators can be used; combined with a compact body design this minimises the installation's footprint

Proven capabilities

The benefits of the Typhoon Valve System have been documented during different field trails at Statoil's Oseberg C and Troll C which resulted in full-scale technology approval qualified to TRL 6.

The system installed on the Statoil operated Troll C platform controlling well fluids from the Fram Vest field. Operating at the most challenging conditions for which the unit is designed, the Typhoon Valve System showed an impressive 60% improvement in the produced water quality (OiW) in comparison to the conventional choke valve that is installed in parallel with the unit.

Combined with the previously obtained improvements of 60-90% water quality during the prototype test and the 45% improvement in water quality during the pilot test on Statoil's operated Oseberg C platform, the Typhoon Valve System's patented technology to reduce shear forces on dispersed liquids is unquestioned and unparalleled.

Mokveld's Angle Typhoon Valve System at Oceberg C

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About Energas Technologies:

Energas Technologies has been a leading supplier of high-end and specialised equipment to the oil and gas industries in Southern Africa since 2001 and is the distributor for Mokveld in South Africa.

The company's core focus is to support and supply equipment to the natural gas industry and its products find application from the gas well, through the distribution network right up until the end user. Applications include, next to the Mokveld axial valves, pressure reduction and metering stations, pipeline ball valves, HDPE pipes and fittings, pig launching and receiving stations to domestic metering and regulating units. Energas can provide complete skid-mounted high pressure reduction and metering stations with gas-fired or electric heaters.

Energas Technologies offers a range of new products from its supplier, HTT energy GmbH in Germany. Products include fired heaters, indirect heating and cooling units from -80°C to 400 °C, and heat recovery products.

Energas' secondary focus is on liquid storage tank protection equipment, such as conservation vents, flame arresters and emergency vents. Its products, such as valves, filters, flange insulating kits and process heaters, also find application in other industries, such as liquid pipelines, petrochemical and chemical industries.

Energas Technologies is a member of Southern African Gas Association NPC, 26% black-owned and recently obtained its ISO 9001 accreditation.

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