Antisurge Valves
Advanced technology to ensure maximum safety and reliability in extreme compressor operations and severe service applications

About us
BHGE is a leading global supplier with a large portfolio of products and competences. Control valve manufacturing started in 1960 under the brand of Nuovo Pignone and since then, its technology has been continuously improved. With over 160,000 valves installed worldwide, compliant with the most stringent international standards, the Nuovo Pignone Antisurge valve center of excellence is located in Bari (Italy), with capacity and aerodynamic noise testing facilities. The design and production is certified ISO9001 and ISO/TS29001.

Applications
Nuovo Pignone Antisurge Valves are an integral part of the centrifugal compressor protection system and fit the most severe operating conditions in all market segments, such as:
- Upstream gas re-injection, handling high pressure sour gas with API 6A Valve and Low Emission stem packing system, installed up to 830 bar.
- LNG main refrigerant and boil-off, designed for low pressure drops and high flow rates able to operate in off-design conditions at very low temperature down to -196°C.
- Floating Production and Storage Offloading (FPSO) requiring special compact design and internal material selection necessary for bi-phase flow conditions.
- Fertilizer plant compression services with high pressure and temperatures.
- Compressed air energy storage.
Design Features

- Dynamic response of each valve is tuned and validated at the factory acceptance test. Fast and stable response to step and sinusoidal control signal. Absence of overshooting and very low hysteresis. This allows very reliable and dynamic accuracy that minimizes the compressor «margin to surge» thus enabling the compressor to run in a wider operating range with associated lower operating costs.
- Valve body available with both angle and compact in-line style. Customized inlet and outlet flanges to optimize piping layout.
- Pressure balanced plug to guarantee stability and avoid sensitivity to inlet pressure oscillations.
- Reliable internal leakage class thanks to proper material selection of seals and mating surfaces.
- Cryogenic design with seat tightness test according to BS 6364/ISO 21011, IEC-60534.
- Multistage-multipath labyrinth type trim (VECO) composed by co-axial cylinders machined to form insulated flow paths partialized by a sliding piston plug. The turbulent dissipation of kinetic energy is achieved by contractions, expansions, 90° turns and colliding jets. The resultant acoustic performance allows very low noise and vibration levels even at the highest pressure drops.
- Number and passage areas of stages selected to keep flow kinetic energy below limits that allow vibration free operation and long life of components. Erosion resistance, to liquid droplets and solid particles impingment, is also guarantied.
- For very high pressure design (up to API 20,000) special and proven Double External Balanced design and patented solution for packing leakage according to ISO 15848. Best in class technical solution on injection plants.

Operating Data

- Valve nominal diameter: up to 48" (DN1200)
- Rating Class: up to 20,000 psi
- Temperature Range: from -196°C to 570°C
- Trim Style: Multistage multipath labyrinth type
- Dynamic Performances: <1 s opening on trip. Stable frequency response.
- Rangeability: Up to 1:150
- International Standards: IEC 60534, ANSI B16.34, ASME VIII or API 6A
- PED and ATEX
- CU TR and China product certification
- ISO 15848 fugitive emission certification

Performance Range

Customer Support

BHGE can provide support during the initial engineering phases with feasibility studies of special purpose valves. Full onsite support during installation and commissioning is available to guarantee flawless execution, quick response through ownership of results. Once the systems are installed BHGE can support the continuous improvement of the operability with conversion, modifications and upgrades:
- Valve Trim re-bundle after compressor maintenance.
- Upgrade of stem seal system.
- Improvements of dynamic performance of actuator.

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