

Herose – Cryogenic and Liquefied Natural Gas Valves Manufacturer

a report by
Herose GmbH

Herose is the leading global manufacturer of valves for cryogenic applications and related services. With experience gained in the development and manufacture of valves for over 130 years, Herose strives to provide customers with technical solutions over-and-above industry standards.

The product range currently includes cryogenic safety valves, cryogenic globe, check and gate valves, control valves, emergency shut-off valves and complete fill systems for cryogenic storage vessels. The range has been enhanced by the recent fire-safe certification accredited to our cryogenic valves for liquefied natural gas (LNG) and similar hazardous applications. This range also includes bellow-sealed change-over and safety valves. Today Herose is working with the industrial gas industry to introduce a range of valves that reduce the time taken to fill cryogenic storage vessels from trailers allowing the industry to maximise asset value. This will allow the industry an additional day use of capital equipment each week.

Herose also manufactures safety valves for use in many industrial applications, including valves for trains and trailer silo applications, where Herose has learned much of its technology from valves being installed in vibrating applications. This range of safety valves has unique features, some of which Herose has introduced into its other valves.

Cryogenic Safety Valves

Cryogenic safety valves are installed for the protection against over-pressurisation in tank containers and pipelines used for the storage, distribution and transport of liquefied gases such as oxygen, nitrogen, argon, carbon dioxide, helium, hydrogen and others at temperatures as low as -270°C (-454°F).

This safety valve range includes bronze, stainless steel and bellow-sealed valves, with over 200,000 manufactured each year at their factory in Bad Oldesloe in the north of Germany. Herose continues to work with its global customer base and has made a large investment in its research and development department allowing the development of safety valves that will give extended operating life in high-pressure applications. This new range will also have the same global approvals that Herose has in place today for its other products allowing, it to be a true player in this global business. The listing of approvals held at the company not only includes those for the newer European Member States but also ASME, CRN, GOST-R, GOST-U, China (Chinese Safety License) and many others.

Having the appropriate approvals and agreements with the major industrial gas companies globally has only been possible by having a range that exceeds user expectations. Before commencing on its global expedition, Herose worked with one of the global industrial gas companies; their safety valves successfully passed an endurance test of over 144,000 warm cycles and 2,000 cycles under liquid gas conditions to

Figure 1: Cryogenic Globe Valve Range



Figure 2: Cryogenic Safety Valve Range



prove the valves would exceed life expectations on static and transport applications. To date, this customer has been using Herose valves with trouble-free operation in over 35,000 applications for almost 10 years. The performance achieved in using the Herose products has allowed the user to work with the country Health and Safety Executive to extend the operating life of all valves in service. The financial benefits to the user are greater than the cost of the original valves. The recent introduction of the bellow-sealed safety valve takes Herose into new applications and new fields.

This package is completed by the inclusion of their globe and ball change-over valves, which are available in bronze, stainless steel and bellow-sealed options. Complementing the safety valves, this allows the safety packages to be used in many different applications, including their use in helium and hydrogen.

Cryogenic Shut-off Valves and Systems

Herose manufactures a comprehensive package of cryogenic globe and

Figure 3: Globe Valve Type 03341 During Fire-safe Test acc. to EN ISO 10497



gate valves in bronze and stainless steel that are used on vessel, trailer and plant applications. In addition to the manual valves, these are also available as emergency shut-off valves for plant protection and control valves for maintaining pressure or flow of liquid gases for plant applications. As an option, these valves can also be electropolished, taking the valves into the electronic clean environment where ultra-high-purity gases are used. To complement this range, a full range of check valves is also available.

This expansive range of cryogenic valves from one manufacturer enables the customer base to have one source for all of their total cryogenic gas storage business valve requirements from bulk vessel to containers to trailers to plant.

Herose has held supply agreements for this range of valves within the industry for almost 10 years, helping the user to minimise costs, achieve standardisation whilst simplifying the supply chain.

Liquefied Natural Gas Valves

LNG is easily transported internationally; it has become a more suitable alternative to natural gas. Due to the smaller volume of LNG (liquid having only 1/600 volume of the natural gas), it offers a large advantage when having to be stored or transported globally. LNG is transported in special carriers over the oceans to meet the demands of the countries where energy is in great demand today. After reaching land it will be either re-gasified for immediate use or shipped to satellite LNG plants similar to industrial gas storage facilities. Herose's product range of stainless steel LNG valves is fire-safe accredited and approved according to EN ISO 10497. This approval was granted after extensive tests to prove the unique sealing method used by Herose in this range of valves.

The fire-safe approval ensures that the valves remain tightly closed, protecting plant, personnel and the local environment should a fire occur. Herose has LNG valves installed in critical applications globally.

Safety Valves for Industrial Applications

Herose's product range of safety valves for industrial application covers the fields of gases, vapours, fluids and refrigerants. A special development is the safety valve for pneumatically drained silo vehicles. Like other valves in the Herose range, this valve is resistant to extreme vibration and environmental conditions – another area where the company has gained knowledge that it has used for the development of other products.

Figure 4: Globe Valve Type 01341 During Cold Shock Test acc. to EN 12567



As an environmentally aware company, Herose strives to ensure excellent sealing characteristics in all its valves, minimising emissions to the atmosphere.

Development and Quality

Herose's success has partly been achieved by its highly qualified staff learning from the fields in which they work and excel. Their engineers are committed to the ongoing development of their valves to find tailor-made solutions for their customer base applications when their existing products fail to meet their requirements. Herose's customers benefit from the Technischer Überwachungs-Verein (TUV)-approved quality systems according to DIN EN ISO 9001:2000, PED 97/23/EG, AD 2000, TPED 99/36/EG. The efforts made in the development and design of the Herose range is seen by the fact that the complaint rate is less than 0.03% of the total valves manufactured (fewer than three valves per 10,000 manufactured). Herose prides itself in exceeding customer expectations. ■

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