

**APPLICATION FOR APPROVAL OF VALVES AND FITTINGS**

Applicant HEROSE GmbH AAR No. E149504  
 Description of Device ACTUATED CRYOGENIC GLOBE VALVE  
DN 15 (1/2") TO DN 80 (3")  
 Applicant No. \_\_\_\_\_ Device Ident. No. 01353 Date 2013-02-05

1. Manufacturer HEROSE GmbH  
 Address ELLY-HEGESS-KNAPP-STR. 12 City BAD Oldesloe State Germany Zip 23843  
 2. Test facility TÜV NORD SYSTEMS GmbH Address Große Bahnstraße 31, 22525 Hamburg  
 3. Test date 2009-11-14 4. Observer S. KORN  
 5. Weight or mass of device 15.9-49.6 lb. (7.2-22.5kg)

**TEST PROCEDURE:**

6. Description of prototype testing: acc. to DIN EN 1626 and DIN EN 12 567  
 7. Description of production testing: hydrostatic test 1.5 x PN\*50 and  
Leak tightness test acc. to DIN EN 12266

| 8. Cycles   | Min. Temp.                       | @ Pressure                        | Cycles | Max. Temp.                       | @ Pressure               | Test Medium            | Remarks |
|-------------|----------------------------------|-----------------------------------|--------|----------------------------------|--------------------------|------------------------|---------|
| <u>2000</u> | <u>-320 °F</u><br><u>-196 °C</u> | <u>725 psi</u><br><u>5000 kPa</u> |        | <u>+248 °F</u><br><u>+120 °C</u> |                          | <u>Liquid nitrogen</u> |         |
| Cycles      | Min. Temp.<br>°F<br>°C           | @ Pressure<br>psi<br>kPa          | Cycles | Max. Temp.<br>°F<br>°C           | @ Pressure<br>psi<br>kPa | Test Medium            | Remarks |

  

| 9. Cycles | Min. Pressure               | @ Temp.             | Cycles | Max. Pressure               | @ Temp.             | Test Medium | Remarks |
|-----------|-----------------------------|---------------------|--------|-----------------------------|---------------------|-------------|---------|
|           | psi<br>kPa                  | °F<br>°C            |        | psi<br>kPa                  | °F<br>°C            |             |         |
| Cycles    | Min. Pressure<br>psi<br>kPa | @ Temp.<br>°F<br>°C | Cycles | Max. Pressure<br>psi<br>kPa | @ Temp.<br>°F<br>°C | Test Medium | Remarks |

10. Initial commodity (or commodity type) Cryogenic liquidified gas LNG, ETHYLEN 11. Flow rate (if applicable) N/A gpm ( \_\_\_\_\_ L/min)

| Applicable drawings    | Material               | Drawing Number latest revision | Precedent      |                         |
|------------------------|------------------------|--------------------------------|----------------|-------------------------|
|                        |                        |                                | Drawing Number | Application/Certificate |
| 12. Device application |                        |                                |                |                         |
| 13. Device assembly    | <u>stainless steel</u> | <u>see list of drawings</u>    |                |                         |
| 14. Device details     |                        |                                |                |                         |

15. Quality control statement: According to PED 97/23/EC  
DIN EN ISO 9001:2008

**REVISIONS: 1**

**CERTIFICATION:** The above data is correct and conforms with AAR Specifications for Tank Cars, Appendix A. The devices tested conform with drawings listed above.

By MARC ZAUBITZER Title QUALITY MANAGEMENT

APPROVAL AAR Tank Car Committee  
 Date Approved SEP 30 2015  
 (Signature) on behalf of Tank Car Committee Kenneth B Dorsey

Form AAR 4-5 Revised 12/1/2000 Subject to AAR Service Trial No. ST-461

\* pressure nominal