DNV·GL

Certificate No:
TAF00000HA

TYPE APPROVAL CERTIFICATE

This is to certify:

That the CO2 System

with type designation(s)
Fixed high-pressure CO2 fire extinguishing system

Issued to
Knaack & Jahn Schiffbau GmbH
HAMBURG, Germany

is found to comply with
DNV GL rules for classification – Ships
DNV GL rules for classification – Naval vessels
DNV GL rules for classification – Yachts
DNV GL rules for classification – High speed and light craft
DNV GL rules for classification – Inland navigation vessels
DNV GL offshore standards

Application :

Approved for use as a total flooding fire extinguishing system for protection of machinery spaces, cargo holds, ro-ro spaces, paint stores and similar spaces.

This Certificate is valid until **2021-12-06**.

Issued at **Hamburg** on **2016-12-07**

for **DNV GL**

DNV GL local station: **Hamburg**

Approval Engineer: **Michael Kämpf**

Antje Fleischhauer
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id:
Certificate No: **TAF00000HA**

Product description

The high-pressure CO_2 system is a total flooding fixed fire extinguishging system for protection of machinery spaces, cargo holds, ro-ro spaces, paint stores and similar spaces.

The system is designed by Knaack & Jahn, Hamburg, Germany.

Application/Limitation

This type approval certificate provides a general acceptance for design, manufacture, supply and installation of fixed high-pressure CO_2 systems on the basis of the documentation specified under the item "Type Approval Documentation".

The system is to be designed in accordance with IMO FSS Code Ch.5 and DNVGL Statutory Interpretations, as amended.

Each system is subject to plan approval and final inspection by a DNVGL Surveyor after completion.

For all applications:

1. All CO_2 cylinders are to be certified according to Pt.4 Ch.7 Sec.1, 5.2. Flexible hoses are to be of approved type.
2. All CO_2 piping upstream of master valve is to be certified in accordance with DNVGL Statutory Interpretations. Section valve(s) to be at least PN100.
3. All connections on high pressure side are to be of approved type. Restrictions apply to threaded connections (Pt.4 Ch.6 Sec.9, 5.2). Use of section valves with threads will be considered on a case by case basis for valves of sizes up to DN25.
4. An automatic time delay unit, with the possibility to override, is to be installed for spaces that are expected to be manned occasionally.
5. The pilot cylinders shall have capacity to operate the system three times even under unfavourable temperature conditions (DNVGL Statutory Interpretations).
6. Welding is to be performed by an approved welding shop.

The following documentation is to be submitted in each case for plan approval:

1. System layout showing operation philosophy and assembly of components.
2. Arrangement plan identifying position of nozzles, routing and dimension of piping and location of the release stations.
3. CO_2 capacity calculations for all protected spaces.
4. Time discharge calculations, as applicable. Isometric drawing are required in case the piping layout does not provide sufficient information.
5. Documentation of visual and audible alarms and specification of automatic time delay unit for spaces required to have such devices (spaces expected to be manned occasionally).
6. Specification and details of CO_2 manifold, including connections.
7. Specification of all components in the system, including CO_2 distribution piping and approvals for the flexible hoses.
8. Arrangements for closing of all ventilation and stopping of fans (can be submitted separately by the yard).
9. Each system is to be supplied with a manual for design, installation, operation and maintenance.

Installation testing:

- Alarms inside protected space and switchover to emergency power to be tested.
- Other tests as required by DNVGL Statutory Interpretations (pressure and tightness testing of piping, etc.) and according to maker's manual to be carried out.

Periodical testing:

- The system should be tested and inspected acc. to IMO MSC.1/Circ.1318. Reference is also made to DNVGL-CG-0058.
- More stringent flag state requirements, if any, prevail.

Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0338, October 2015.

- Drawings and documentation approved with ref.-no. 69309/99 dated 1999-09-15.
- Documentation of commissioned systems reviewed with ref.-no. 87034/01.
- GL TAC 14611-99 HH issued 2011-07-11.

Marking of product

The system is to be marked with the name of manufacturer and type designation.

Periodical assessment

DNV GL's Surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in the Class Programme DNVGL-CP-0338, Section 4.