DNV·GL

Certificate No:
**TAF00001AV**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Waterbased Fixed Fire Extinguishing System**

with type designation(s)
**XFlow®**

Issued to
## Novenco Fire Fighting A/S
**Odense SØ, Denmark**

is found to comply with
**DNV GL rules for classification – Ships**
**DNV GL offshore standards**
**DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations**

## Application :

**Approved for use as fixed fire extinguishing system for machinery spaces and cargo pump rooms.**

**For further information, see the details under application/limitation on page 2.**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Issued at **Høvik** on **2019-10-30**
This Certificate is valid until **2024-10-29**.
DNV GL local station: **Copenhagen FIS**

Approval Engineer: **Tessa Biever**

for **DNV GL**

**Mårten Schei-Nilsson**
**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.


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Job Id: **262.1-002850-11**
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## Product description

XFlow®,
is a dry pipe water mist system, composed of spray heads, steel piping, manual section valves, strainer, electrical motors and electrically driven pumps.

The system is to be designed in accordance with the "Principal Requirements for the System" in IMO MSC/Circ. 1165.

Only the spray heads are type approved by this certificate. Pumps, pipes, couplings and other systems components are subject to case-by-case approval.

The spray heads are manufactured by Novenco Fire Fighting AS at Gørløse, Denmark.

## Application/Limitation

The spray heads are to be installed to the following specifications with one layer of ceiling mounted spray heads (including spray heads under every platform) and a bilge system:

| **Volume and height of protected spaces** | |
|---|---|
| Maximum ceiling height of protected space [1]: | 6.2 m |
| Maximum net volume of protected space [2]: | 806 $m^3$ |
| Notes:<br>1) Standard casings need in general not to be considered when assessing this height limitation.<br>2) Net volume can be increased to 1612 $m^3$ (height remain at 6.2 m) based on IMO MSC.1/Circ.1385 as extinguishing time is within 10 min. The volume shall include bilges, casings, etc. | |

| **Ceiling mounted spray heads (NHP2-6)** | |
|---|---|
| Maximum horizontal spray head spacing: | 3.0 m x 3.0 m |
| Maximum distance to bulkhead: | 2.0 m |
| Maximum coverage area per spray head (average) | 8.7 $m^2$ |
| Maximum height of spray heads above floor level: | 6.2 m |
| Minimum pressure at spray head: | 9.0 bar |
| Spray head orientation: | Downwards |
| Spray heads are to be installed in a downward position, approximately 0.25 m below the deck head. | |
| Areas under platforms and other similar obstruction shall be protected by spray heads. For areas of limited height, spray heads with lower installation height is recommended to be used. | |
| A separate system for the bilges, approved according to IMO MSC/Circ. 1165, is to be provided. | |
| Spray heads are to be uniformly distributed throughout the space. | |

Spray head information:

| Spray head | Application | k-factor [lpm/bar$^{1/2}$] | Flow [lpm] | Drawing no. |
|---|---|---|---|---|
| NHP2-6 | Ceiling | 4.3 | 12.9 (at 9.0 bar) | 30023783, June 2006 |
| The spray heads are made of Brass coated with SnNi, while some internal parts are made of AISI316 and PTFE. The spray heads has a maximum rated pressure of 16 bar. | | | | |

For all applications

A. The pump or pump unit shall be delivered with DNV GL product certificate, whereas other system components are to be inspected in accordance with DNV GL Rules (or equivalent standard as specified by the Flag Administration).
B. Redundant pump arrangement is to be approved on a case by case basis.
C. Stainless steel piping (or equivalent) and fresh water shall be applied and a strainer of adequate size is to be provided downstream of pump (to avoid clogging of spray heads).
D. Pipes, couplings and other components are regarded as "Class III" piping.
E. The pump unit and section valves shall be installed in a room having ambient temperature between 4 °C and 45 °C.

The following items are to be submitted for approval for each project:

a) System arrangement plans including routing of pipes, location of spray heads, section valves, release stations, pump unit with back-up capacity and water supply;
b) Documentation of power supply and control system;
c) Specification of pipes, section valves, electrical motors, pumps and associated components;
d) Pressure drop calculations and water mist capacity calculations;
e) Design, installation, operation and maintenance manual.

Installation testing:

- System to be cleaned in accordance with routines outlined in maker's installation manual;
- All sections should be tested with full flow through the spray heads;
- Manual release of all section valves and start of pumps shall be carried out;
- Alarms inside protected space and at a manned control stations and switchover to emergency power shall be tested;
- Other tests as required by DNV GL rules (pressure testing of piping, etc.) and according to maker's manual shall be carried out.

Periodical testing:

- Periodical flushing, control and inspection to be in accordance with makers maintenance instruction manual
- At least one section should each year be tested with full flow of water through the spray heads (not the same section each year);

## Type Approval documentation

Certification in accordance with Class Program DNVGL-CP-0338, September 2018.

Fire test reports:
SP Report P502886, August 2005
Assessment comment to SP Report P502886, April 2006.

Component test reports:
FM Approvals, Project 3015383, March 2004
FM Approvals, Project 3025752, September 2006
Novenco, Clogging Test for NHP-2-6, December 2006 (additional test)

## Tests carried out

Tested according to IMO MSC/Circ.1165 (fire tests and component tests).

## Marking of product

The spray head is to be marked with type designation whereas pump / control unit is to be marked with 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 Class Program DNVGL-CP-0338, Section 4.