



Certificate No:
TAF00001M0

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Equivalent Sprinkler System

with type designation(s)
XFlow

Issued to
Survitec Fire Solutions Poland Sp. z o.o.
Doluje, Poland

is found to comply with
DNV GL rules for classification – Ships
DNV GL rules for classification – Offshore units
DNV statutory interpretations DNV-SI-0364 – SOLAS interpretations, Edition July 2021

Application :

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

Issued at **Hamburg** on **2021-09-27**

This Certificate is valid until **2024-04-24**.

DNV local station: **Katowice CMC**

for **DNV**

Approval Engineer: **Frank Poetsch**

.....
Olaf Drews
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2021-03

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Product description

"XFlow"

is an automatic, low pressure sprinkler system composed of sprinkler heads, stainless steel pipes, sections valves, alarm panel, flow indicator, strainers, water mist and pilot pumps, pressure tank and back up cylinders filled with nitrogen.

The system is to be designed in accordance with the "Principal Requirements for the System" in IMO Res.A.800(19) as amended by IMO Res.MSC.265(84).

Only the sprinkler heads are type approved by this certificate. Other components are to be approved and/or certified case by case.

The water mist sprinkler heads are manufactured by Survitec Fire Solutions Poland Sp. z o. o.

Application/Limitation

Approved for use as an automatic water sprinkler system for accommodation areas, public spaces, service spaces and store rooms.

Installation shall be in accordance with table 1, appendix 2, IMO Res. MSC.265(84):

Application	Nozzle model	Max. spacing / coverage [m]	Max. distance to bulkhead [m]
Cabin, < 12 m ² ⁽¹⁾	NF-CA12	Centred	4.0
Cabin, < 26 m ² ⁽¹⁾	NF18A-CA26	Centred	6.5
Corridor ⁽²⁾	NF-CO46	4.6	0.75
Public space (h < 2,5 m)	NHP-18B	4.2	2.1
Public space (h < 2,5 m)	NF-18B-OP25	4.9	2.45
Public space (h < 5 m) ⁽³⁾	NF-18B-OP50 F2	4.9	2.45
Public space (h < 5 m) ⁽³⁾	NF-18B-OP50 F1.5	5.0	2.5
Storage areas	NF-18A-SS	5.0	2.5
Note: 1) Cabin area is gross area, including wet unit 2) Maximum width of corridor should not exceed 1.5 m 3) Ceiling height of more than 5 meter is subject to case by case approval			

Nozzle Type ⁽²⁾	k-factor [lpm/bar ^{1/2}]	Min. pressure [bar]	Flow [lpm]	Drawing No.
NF-CA12	14.5	4.0	29.0	30037009
NF18A-CA26	31.3	3.4	57.7	30028731
NF-CO46	27.5	3.8	53.6	30037019
NHP-18B	18.6	4.2	38.1	30036964
NF-18B-OP25	27.9	3.8	54.4	30036981
NF-18B-OP50 F2	29.9	3.4	55.1	30036986
NF-18B-OP50 F1.5	29.9	3.4	55.1	30036986
NF-18A-SS	33.1	3.4	61.0	30028728

For all applications

- Maximum system working pressure is 16 bar.
- All sprinkler heads are to be installed in the ceiling in a pendant (downward) position.
- All sprinkler heads are fitted with a glass bulb of fast response type (JOB F2/F1.5), with nominal release temperature of 57 °C (orange), 68 °C (red), 79 °C (yellow), 93 °C (green) or 141 °C (blue). Based on fire and component testing with sprinkler heads having 57 °C bulb rating, sprinkler heads with orange bulbs shall preferably be applied in all protected spaces, except in rooms with higher ambient temperatures, e.g. galleys and laundries, where bulbs with higher temperature ratings are accepted, but not more than 30 °C above the maximum deckhead temperature (Res. A.800(19), Annex, item 3.21).
- Redundant pump arrangement is subject to approval in each case.
- The pump unit and pressure tank are to be delivered with Society's product certificate. Other system components are to be certified or inspected in accordance with Flag Administration requirements.
- The pump unit and pressure tank shall be installed in a room having ambient temperature between +4 °C and +45 °C.

- G. Only stainless steel piping or piping of equivalent corrosion resistant material is to be applied and a system filter shall be provided for each pump unit (to avoid clogging of sprinklers). Primary water supply shall be fresh water of potable quality.
- H. Pipes, couplings and other components are regarded as "Class III" piping.

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

- i. System arrangement plans including location of sprinklers, pipes, sections valves, control system and pump-unit.
- ii. Specification of pipes, valves, electrical motor, pumps, pressurised tank(s) and associated components (including water supply specifications).
- iii. Pressure drop calculations and water capacity calculations.
- iv. Arrangement of power supply and control system.
- v. Manual containing installation, operation and maintenance instructions.

Installation testing:

- The system is to be cleaned in accordance with routines outlined in the maker's system manual.
- Only water complying with maker's specification shall be used in the system. This includes testing and flushing operations.
- Not less than 2 sprinkler heads in each section shall be tested. Testing may be limited to 10 sections, i.e. 2 x 10 sprinkler heads if it is successful.
- Automatic start and stop of pumps.
- Automatic change over from main to emergency electric supply.
- Other tests as required by Flag Administration (pressure testing of piping, etc.) and according to maker's manual shall be conducted.

Periodical testing:

- The periodical testing shall comply with instructions from Flag Administration, and maker's maintenance manual.
- Water to be sampled annually from sprinkler tank, pump unit and from a representative number of sections and be assessed against the manufacturer's water quality guidelines.
- Not less than 2 sprinkler heads shall be tested annually. Further testing will be required in case of failure(s) or for systems older than 5 years.

Type Approval documentation

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

System Manual:

Doc. No. DIOM-03-02, XFlow Accomodation System Standard Class Approval Manual -NF and NHP nozzles dated 5 August 2009 from maker.

Fire performance test reports:

No. F06127 dated 2006-11-23 from SINTEF, Trondheim, Norway
No. 107534 dated 2011-12-05 from SINTEF, Trondheim, Norway
No. 107559 dated 2012-05-24 from SINTEF, Trondheim, Norway
No. 107559 dated 2012-10-02 from SINTEF, Trondheim, Norway

Assessment report:

No. 107559 dated 2012-02-16 from SINTEF, Trondheim, Norway

Component test reports:

No. 3016919 dated 2005-04-15 from FM Approvals, USA
No. P604791 dated 2006-12-13 from SP, Borås, Sweden
No. P605067 dated 2006-12-21 from SP, Borås, Sweden
No. KMoo P8 01597-01 dated 2008-04-28 from SP, Borås, Sweden
No. P801597-03A dated 2008-04-18 from SP, Borås, Sweden
No. P801597-02B dated 2008-05-08 from SP, Borås, Sweden
No. P801597 dated 2008-05-20 from SP, Borås, Sweden
No. PX28085 dated 2013-02-05 from SP, Borås, Sweden

Nozzle drawings:

No. 30037009 dated 2012-09-18 from maker (NF-CA12)
No. 30028731 dated 2008-05-04 from maker (NF18A-CA26)
No. 30037019 dated 2012-09-18 from maker (NF-CO46)
No. 30036964 dated 2012-09-13 from maker (NHP18B)



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No. 30036981 dated 2012-09-14 from maker (NF18B OP25)
No. 30036986 dated 2012-09-14 from maker (NF18B-OP50)
No. 30028728 dated 2008-05-05 from maker (NF18A-SS)

Tests carried out

Fire performance test in accordance with IMO Res. A.800(19) as amended by IMO Resolution MSC.265(84).

Component test in accordance with IMO Res. A.800(19) as amended by IMO Resolution MSC.265(84).

Marking of product

The sprinkler heads are to be marked with the name of manufacturer and type designation whereas the pump/control units are to be marked with the name of manufacturer.

Periodical assessment

The DNVGL 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 the procedure described in the Class Program DNVGL-CP-0338, Section 4.