# EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
**MEDB00007ZJ**

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV AS under the authority of the Government of Norway.

## This is to certify:

**That the Nozzles for equivalent water-mist fire extinguishing systems for machinery spaces and cargo pump rooms**

with type designation(s)
**Ultra Fog High Pressure Water Mist System, Volume 3815 m3**

Issued to
**ULTRAFOG S.r.l.**
**Viareggio LU**, **Italy**

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2022/1157,**
**item No. MED/3.39. SOLAS 74, Regulation II-2/10 & X/3, 2000 HSC Code 7, FSS Code 7, IMO MSC.1/Circ.1313, IMO MSC.1/Circ.1458 and IMO MSC/Circ.1165 as amended**

Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2027-11-20**.

Issued at **Høvik** on **2022-11-21**

DNV local station:
**Italy/Malta CMC**

Approval Engineer:
**Tessa Biever**

Notified Body
No.: **0575**

for **DNV AS**

**Sverre Olav Bergli**
**Head of Notified Body**

The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.
This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.
Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

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.

## Product description

"Ultra Fog High Pressure Water Mist System, Volume 3815 m³",
is a high pressure water mist system, composed of nozzles, stainless steel piping, section valves, filter and electrical driven pumps.

The system is to be designed according to principal requirements for the system, IMO MSC.1/Circ.1165 as amended.

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

## Application/Limitation

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

The nozzles are to be installed to the following specifications with one layer of ceiling mounted nozzles (including nozzles under every platform):

| **Volume and height of protected spaces** | |
|---|---|
| Maximum ceiling height of protected space [1]: | 10.2 m |
| Maximum volume of protected space [2]: | 3815 $m^3$ |
| The system is to be designed with one layer of ceiling mounted nozzles and one layer of bilge nozzles. Casing and areas under platforms and other similar obstruction shall be protected by additional nozzles. For areas of limited height, nozzles with lower installation height are recommended used. | |
| 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 7515 $m^3$ based on IMO MSC.1/Circ.1385 as average time to extinguishment for the three fires with the longest extinguishing times is less than 10:10 minutes. This volume shall include bilges, casings, etc. | |

| **Ceiling mounted nozzle (Type 202-209-O)** | |
|---|---|
| Maximum horizontal nozzle spacing: | 5.0 x 5.0 m |
| Maximum distance to bulkhead: | 3.5 m |
| Maximum coverage area per nozzle (average): | 25 $m^2$ |
| Maximum height of nozzle above floor level: | 9.9 m |
| Minimum pressure at nozzle: | 60 bar |
| Nozzle orientation: | Downwards |
| Nozzles are to be installed in a downward position and fitted at ceiling level, maximum 300 mm below ceiling. For areas of limited height, nozzles with lower installation height are recommended to be used. | |
| A separate system for the bilges, approved according to IMO MSC/Circ.1165, is to be provided. | |
| Casings and areas under platforms and other similar obstruction shall be protected by additional nozzles. | |
| Nozzles are to be uniformly distributed throughout the space. | |

| **Bilge nozzle (Type 20011110-101 (FOAM))** [4] | |
|---|---|
| Maximum horizontal nozzle spacing: | 3.2 x 6.0 m [3] |
| Maximum coverage area per nozzle: | 9.6 $m^2$ |
| Height of nozzle above the bottom of the engine-room. | 0.7 m |
| Height of bilge plate: | 2.0 m |
| Minimum pressure at nozzle: | 4 bar |
| Nozzle orientation: | Horizontal |
| Notes:<br>3) Example: Spacing between nozzles is 3.2 m along a row and 6.0 m between rows. Nozzles of two adjacent rows to be installed in a staggered pattern with spray direction towards each other covering half the row distance each.<br>4) AFFF foam concentrate approved according to IMO MSC/Circ.1312 is to be applied with 1% admixture to water to the bilge nozzles. | |

Nozzle information:

| Nozzle type | Application | K-factor [lpm/bar$^{1/2}$] | Flow [lpm] | Pressure [bar] | Dwg. no. |
|---|---|---|---|---|---|
| 202-209-O | Ceiling | 2.09 | 16.2 | 60.0 | 931028-202 |
| 20011110-101 (Foam) | Bilge | 2.67 | 5.3 | 4.0 | 20011110-101 |
| Nozzle 202-209-O is made of AISI 303 and aluminium bronze and have a maximum rated pressure of 165 bar.<br>Nozzle 20011110-101 (Foam) is made of AISI 303 and AISI 304 and have a maximum rated pressure of 10 bar. | | | | | |

For all applications:

A. The pumps (or pump unit) shall be delivered with product certificate, whereas other system components are to be inspected in accordance with Class 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 nozzle).
D. Pipes, couplings and other components are regarded as “Class I” 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 documents are to be approved and filed by the Flag State Administration for each project:

a) System arrangement plans including routing of pipes, location of nozzles, 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.

Other documents:

- Gas cylinders, gas pumps, any pipes above DN 50 mm, valves and couplings above DN 100 mm are to be delivered with product certificates (or standards considered by the Flag Administration to be equivalent).
- Documentation for other components (according to EN 3.1B and EN 2.2, as applicable) shall be submitted to the site representative of the Flag Administration.

Installation testing:

- System to be cleaned in accordance with routines outlined in makers installation manual.
- All sections should be tested with full flow through the nozzles.
- 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.
- Foam proportioner shall be tested according to approval.
- Other tests as required by class rules (pressure testing of piping, etc.) and according to maker's manual shall be carried out.

Periodical testing:

- The periodical testing shall comply with instructions from flag administration, statutory interpretations and maker’s maintenance manual.
- At least one section should each year be tested with full flow through the nozzle. The sections tested should be chosen so that all sections are tested within a five-year period.

## Type Examination documentation

Fire test report:
Test report No. BFL 2021/IMO1165/010/A dated 31 August 2022 from Baltic Fire Laboratory, Tuchom, Poland.
Test report No. 150409-153 dated 3 August 2015 from DFL, Svendborg, Denmark.

Component test report:
Test report No. Ex5204 dated 23 July 1999 from UL, Northbrook, USA.
Test report No. 3045656 dated 23 April 2013 from FM Approvals, USA.

Drawings, nozzles:
Dwg. No. 931028-202, Rev. A, dated 5 June 1995 from maker.
Dwg. No. 940808-005, Rev. 2, dated 10 August 1994 from maker.
Dwg. No. 950606-006, Issue 6, dated June 1995 from maker.
Dwg. No. 950606-004, Issue 9, dated May 1996 from maker.
Dwg. No. 950610-034, Issue 2, dated March1994 from maker.
Dwg. No. 200111110-101, Issue 4, dated October 2001 from maker.

Dwg. No. 200111110-001, Issue 5, dated October 2001 from maker.
Dwg. No. 200111110-002, Issue 1, dated October 2001 from maker.
Dwg. No. 200111110-004, Issue 3, dated October 2001 from maker.
Dwg. No. 200111110-005, Issue 3, dated October 2001 from maker.

## Tests carried out

Tested according to IMO MSC/Circ.1165 (fire tests and component tests) and IMO Res.A.800(19) (component tests).

## Marking of product

The nozzles are to be marked with type designation and MED Mark of Conformity (see first page) whereas the pump unit is to be marked with name of manufacturer and type designation.