

**EC-TYPE EXAMINATION
CERTIFICATE**

Certificate No:
MED-B-10020
Item No:
A.1/3.9
Job Id:
344.1-001681-6

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2013/52/EU, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This Certificate is issued by DNV GL AS under the authority of the Government of the Kingdom of Norway.

This is to certify:

That the Sprinkler systems components for accommodation spaces, service spaces and control stations equivalent to that referred to in SOLAS 74 Regulation II-2/12

with type designation(s)
Heien-Larssen FlexiFOG micro Water Mist Fire Suppression System

Issued to

Autronica Fire and Security AS
NØTTERØY, Norway

is found to comply with the requirements in the following Regulations/Standards:

Annex A.1, item No. A.1/3.9 and Annex B, Module B in the Directive. SOLAS 74 as amended, Regulation II-2/7, II-2/9 & II-2/10, FSS Code 8

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

Høvik, 2014-11-14
for **DNV GL AS**



This Certificate is valid until
2019-09-29

Petter Langnes
Head of Department

Notified Body No.: **0575**

DNV GL local office:
Sandefjord

Silje Helene Waagaard
Surveyor



The Certificate is subject to terms and conditions overleaf. Any significant changes in design or construction of the product, or amendments to the Directive or Standards referenced above may render this Certificate invalid. The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended. The Mark of Conformity may only be affixed to the product and a Declaration of Conformity may only be issued when the production/product assessment module referred to in the council directive, is fully complied with.

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Product description

“Heien-Larsen FlexiFOG micro Water Mist Fire Suppression System”

is an automatic fast response low-pressure water mist system of wet pipe type. The system is composed of sprinkler heads, stainless steel piping, sprinkler valves, control system, strainers, pumps and pressurized back-up tank.

The system is to be designed in accordance with “Principal Requirements for the System” as defined in IMO Res. A.800 (19) and as amended by IMO Resolution 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 sprinkler heads are manufactured by VID ApS, Svendborg, Denmark.

Application/Limitation

Approved for use as an automatic watersprinkler system for accomodation areas, public spaces, service spaces and store rooms.

Installation should be in accordance with table 1, appendix 2, IMO Resolution 265(84).

Protected area	Max. spacing / coverage 1)	Sprinkler
Cabins 2), < 18 m ²	One per room, centred	Nozzle CA01 Bulb: Job 2, 57 deg C
Corridors and stairways	3.5 m spacing, centred 3)	Nozzle CO01 Bulb: Job 2, 57 deg C
Public spaces, ceiling (h < 2.5 m)	4.0 m spacing	Nozzle PS01 Bulb: Job 2, 57 deg C
Public spaces, ceiling (h < 5.0 m)	4.0 m spacing 4)	Nozzle PS02 Bulb: Job 2, 57 deg C
Storage areas	4.0 m spacing	Nozzle ST01 Bulb: Job 2, 57 deg C

- 1) Maximum distance to bulkheads should not exceed 1.5 m for public spaces and 2.0 m for storage. For cabins, the applications do only address the gross area.
- 2) Exclusive wet room unit.
- 3) Maximum width of corridor should not exceed 1.5 m.
- 4) Ceiling height of more than 5 meter is subject to case by case approval.

Sprinkler	Article number (*)	k-factor (lpm/bar ^{1/2})	Flow (lpm)	Pressure (bar)	Drawings (931028- and 940610-)
CA01	116-900800.XX	14.6	41.07	7.91	71211-487B
CO01	116-900810.XX	10.44	33	9.9	71121-475D
PS01	116-900820.XX	11	32.5	9	71213-490C
PS02	116-900830.XX	11.50	34.7	9	80220-525
ST01	116-900840.XX	21.67	65	9	80930-599A

* The suffix xx will be the temperature setting for the bulb (i.e. 57 = 57°C, 68 = 68°C etc)

For all applications

- A. Maximum system working pressure is 16 bars, while the minimum working pressure at the sprinkler heads is 9 bars for all application.
- B. Sprinkler heads to be installed in a pendant (downward) position.



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- C. All nozzles are made of brass, and fitted with Job 2.0 mm, 57 °C (orange code) bulbs. Bulbs with higher temperature ratings, but not more than 30 °C over ambient temperature, are subject to approval in each case.
- D. The pumps (or pump unit) and gas cylinders shall be delivered with DNV product certificate, whereas other system components are to be certified or inspected in accordance with DNV Rules (or equivalent standard as specified by the Flag Administration).
- E. Redundant pump arrangement is to be approved on a case by case basis.
- F. Only stainless steel piping or equivalent fire and corrosion resistant pipes are to be applied (to avoid clogging of sprinklers). Primary water supply shall be fresh water of potable quality.
- G. Pipes, couplings and other components are regarded as "Class III" piping.
- H. 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 approved and filed by the flag administration for 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:

- System to be cleaned in accordance with routines outlined in maker's system description manual
- Not less than 2 sprinkler heads in each section shall be tested. However, the test program may be limited to 20 sprinkler heads in at least 10 sections, if testing is successful
- Automatic start and stop of pumps,
- Automatic change over from main to emergency electric supply
- Other tests as required by DNV Rules (pressure testing of piping, etc.) and according to maker's manual (or equivalent standard as specified by the Flag Administration)

Periodical testing:

- Not less than 2 sprinkler heads shall be tested annually.
- Other tests and inspection to be in accordance with DNV's procedures and maker's manual (or equivalent standard as specified by the Flag Administration)

Type Examination documentation

Autronica Fire and Security As Application for Type Approval Binder No. 1 of 1, Sprinkler system equivalent to that referred to in SOLAS Regulation II-2/10 in accordance with MSC Resolution 265(84).

Danish Fire Laboratories, Fire Performance Test Reports:
071004-15 dated 21 April 2008 (cabin and corridor)
080912-22 dated 5 November 2008 (shopping and storage)
081013-01/02 dated 12 April 2010 (component test)
081106-24 dated 1 December 2008 (public space)
090208-03 dated 8 February 2009 (component test)
090226-34 dated 4 March 2009 (corridor)
090320-35 dated 1 April 2009 (ventilation test)

Statements dated 18 February 2009 from Danish Fire Laboratories (playwood and drawings)
Report from Audit dated 31 March 2009 from DNV Oslo.



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Tests carried out

The sprinklers and other main component in the system are to be marked with type designation and Mark of Conformity (see below) whereas pump / control unit is to be marked with name of manufacturer and type designation.

Marking of product

Tested according to IMO Res. A.800 (19) as amended by MSC Resolution 265(84).

Mark of Conformity

The manufacturer is allowed to affix the Mark of Conformity according to Article 11 in the Council Directive 96/98/EC on Marine Equipment and shall issue a Declaration of Conformity, only when the module D or E or F of Annex B in the same directive is fully complied with.

- Module D: The quality system for production and testing shall be approved by the Notified Body.
- Module E: The quality system for inspection and testing shall be approved by the Notified Body.
- Module F: Compliance of the products to type as described in this EC Type-Examination Certificate must be verified by the Notified Body who also shall issue a Certificate of Conformity.

