

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

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 GL AS under the authority of the Government of Norway.

This is to certify:

That the Fixed water based local application fire fighting systems components for use in category "A" machinery spaces

with type designation(s)
FlexiFOG LoFlow M5

Issued to

Autronica Fire and Security AS
Trondheim, Norway

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

Regulation **(EU) 2017/306,**

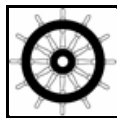
item No. MED/3.48 and Annex B, Module B in Directive. SOLAS 74 as amended Regulation II-2/10 & X/3 and 2000 HSC Code 7

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

This Certificate is valid until **2022-10-31.**

Issued at **Høvik** on **2017-11-01**

DNV GL local station:
Sandefjord



for **DNV GL AS**

Approval Engineer:
Piotr Orzechowski

Notified Body
No.: **0575**

Vidar Dolonen
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 GL 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.



Product description

"FlexiFOG",

is a local application water mist system, composed of spray heads, steel piping, strainers, manual or automatic section valves, test valves, control panel and water supply pump(s).

The system is to be designed according to SOLAS Ch. II-2, Reg.10.5.6 and IMO MSC/Circ. 1387. Only the spray heads are type approved by this certificate. Pumps, pipes, couplings, valves and other systems components are subject to case by case approval.

GW-Sprinkler AS is the manufacturer of the spray heads.

Application/Limitation

The spray heads are to be installed above the protected objects according to the following specifications:

Heights between 0.5 m and 8.0 m	
Maximum horizontal spacing:	3.0 m
Vertical distance from object:	0.5 m – 8.0 m
Minimum operation pressure:	4.0 bar (at spray heads)
Spray heads type :	M5
Spray heads are to be installed out to a position being at the periphery of the protected object (see IMO MSC/Circ.1387, annex 3.4.2.2). The spray heads are to be installed in a pendant (downward) position. Single spray heads or single rows are accepted when half spacing is used.	

Heights between 8.0 m and 14.5 m	
Maximum horizontal spacing:	3.0 m
Vertical distance from object:	8.0 m – 14.5 m
Minimum operation pressure:	9.0 bar (at spray heads)
Spray heads type :	M5
Spray heads are to be installed out to a position being at the periphery of the protected object (see IMO MSC/Circ.1387, annex 3.4.2.2). The spray heads are to be installed in a pendant (downward) position. Single spray heads or single rows are accepted when half spacing is used.	

Spray head	k-factor	test flow	pressure	Drawing no.
M5	4.76 lpm/bar ^{1/2}	14.3 lpm	9.0 bar	900930-PDS-C-LP
Spray heads are to be made of naval brass. Maximum operating pressure is 16 bar.				

For all systems:

- Turbo machinery should also be covered by the system but with gentle application of water. Essential electrical equipment and air intakes should preferably not be directly exposed to the water discharge. Electrical equipment as per DNV GL Rules for ships Pt.4 Ch.8 Sec.10, Table B (or equivalent standard as specified by the Flag Administration) shall be applied for new buildings.
- The pump(s) or the pump unit(s) is to be delivered with a product certificate whereas other system components are to be inspected in accordance with the DNV GL Rules for ships (or equivalent standard as specified by the Flag Administration).
- 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:

- System arrangement plans including location of spray heads, sections valves, release stations and pump-unit (including water supply specifications).
- Documentation of power supply and control system.
- Specification of pipes, electrical motor, valves, pumps and associated components.
- Pressure drop calculations and water capacity calculations.
- Arrangement of interface to fire detection and alarm system (where applicable).
- Design, installation, operation and maintenance manual.

Other documents:

- Documentation for other components (according to DIN 3.1B and DIN 2.2, or equivalent), including qualification of welders and approval of welding procedures (if applicable) is to be submitted to the Flag Administration/Recognized organization in question.

Installation testing:

- At least one section of the local application systems shall be full scale tested when all engines are running.
- Test of manual and remote release of all section valves and start of pumps
- Testing of alarms (SOLAS Ch. II-2, Reg.10.5.6.4)
- Pressure testing of water pipe system to at least 1,5 times maximum working pressure
- Testing of automatic start of system (in case of unattended machinery spaces)
- Other tests as required by DNV GL Rules (pressure testing of piping, etc.) or a similar standard acceptable to the Flag Administration and according to maker's manual shall be carried out
- Other tests according to maker's manual and any required by the authority having jurisdiction

Periodical testing:

- Periodical control and inspection to be in accordance with maker's manual

Type Examination documentation

Fire test report No. NBL10 F01121 and F01135 both dated September 2001 from SINTEF, Norway.

Component test report FM Project ID. 3013524 dated 25 February 2002 from "FM" Factory Mutual Research Corporation.

Full-scale test with engines running: DNV report PUNT-5315525, May 2002.

Heien Larssen type approval manual, dated October 2002.

Authorisation from GW sprinkler dated October 2002.

Tests carried out

The system is tested according to IMO MSC/Circ. 913 (fire test) and IMO MSC/Circ.668 and IMO MSC/Circ.728 (component tests of spray heads).

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, address and type designation.