



MARINE DIVISION

Certificate number: 12508/C0 BV

File number: ACI 2000/021/002

Product code: 5580I

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**Autronica Fire and Security AS, Division Maritime**  
SPIKKESTAD - NORWAY

*for the type of product*

### FIXED LOCAL FIRE EXTINGUISHING SYSTEMS

Water mist local protection system, for Machinery spaces of category A  
FlexiFOG Lo-Flow M5

#### Requirements:

Bureau Veritas Rules for the Classification of Steel Ships Part C, Chap 4, SOLAS 1974 Convention as amended, Regulations II-2/1, II-2/10, X/3, IMO Resolution MSC.97(73)-(2000 HSC Code) 7, IMO MSC/Circ.913 - IMO MSC/Circ.1387

*This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 02 Jan 2018**

**For BUREAU VERITAS,**

At BV OSLO, on 02 Jan 2013,

Rune MARSTEIN

*Rune Marstein*



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION :

**"Water mist local protection system, for machinery spaces of category A - FlexiFOG Lo-Flow M5".**

The system is a water mist local protection system, composed of spray heads, steel piping, strainers, manual or automatic section valves, test valves, control panel and water supply pump(s) (capacity designed for protecting the maximum area for 20 minutes).

- **FlexiFOG M5 water mist nozzle (material: SnNi):**

Nozzle type	Maximum operating pressure (bar)	Minimum operating pressure (bar)	Capacity at minimum operating pressure (l/min)	K-factor (l/min/bar <sup>1/2</sup> )	Height above object (m)
M5	16	4	10	5	0.5-8
M5	16	9	15	5	8-14.5

### 2. DOCUMENTS AND DRAWINGS :

2.1 - As per the Manufacturer's drawings n° 009290\_Data\_Sheets\_FlexiFOG\_M5\_LP.

2.2 - As per the Manufacturer's design, installation, operation and maintenance manual n° 009210\_Installation\_FlexiFOG\_M5\_LP, n° 009270\_Operation\_FlexiFOG\_M5\_LP dated October 18, 2002 and n° 009250\_Maintenance\_FlexiFOG\_M5\_LP, dated October 22, 2002 issued by Heien-Larsen AS.

### 3. TEST REPORTS :

3.1 - Test report n° NBL10 F01121 dated September 5, 2001 and NBL10 F01135 dated September 27, 2001 as per IMO Resolution MSC/Circ. 913 issued by SINTEF, Norway.

3.2 - **M5 water mist nozzles** manufactured by GW Sprinkler AS, Denmark: test report n° 3013524 dated February 25, 2002 as per IMO Resolution MSC/Circ. 668 and MSC/Circ. 728 issued by Factory Mutual Research, USA.

3.3 - Test on IP 22 Generator: Test report n° 1759 dated May 30, 2002 issued by Heien Larsen.

### 4. APPLICATION / LIMITATION :

4.1 - 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

4.2 - The arrangement of the system, the specifications of pumps, pipes and other components, the hydraulic calculations, the wiring diagrams, and the service manual are to be submitted for each ship application.

#### 4.3 - **Installation:**

Ceiling nozzle		
<b>Nozzle</b>	<b>Type</b>	M5
	<b>k factor (l/min/bar<sup>1/2</sup>)</b>	5
	<b>Droplet size</b>	247 µm at 12 bar
<b>Installation</b>	<b>Spacing</b>	Square grid 3 x 3 mm
	<b>Location</b>	Multiple level of machinery space
	<b>Max. ceiling height (m)</b>	14.5
	<b>Nozzle orientation</b>	Vertical

4.4 - The system can be used on IP 22 emergency generator.

4.5 - To be used and maintained in accordance with the manual(s) for installation, use and maintenance.

4.6 - The fitting aboard to be the same as used for the test.

**5. PRODUCTION SURVEY REQUIREMENTS :**

5.1 -The FlexiFOG M5 are to be manufactured, examined and tested by Autronica Fire and Security AS, Division Maritime in accordance with the type described in this certificate and Bureau Veritas Rules for the Classification of Steel Ships.

5.2 - Arrangements shall be made for a Society's Surveyor to attend the relevant tests and examinations at manufacturer's works or to perform the relevant audits when an alternative survey scheme (BV Mode I) has been agreed. Relevant Bureau Veritas certificate will be issued after satisfactory completion of the procedure.

**6. MARKING OF PRODUCT :**

The product or packing is to be marked with manufacturer name, type, designation and fire-technical rating.

**7. OTHERS :**

7.1 - This approval is given under the understanding that the Manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper methods of fitting and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval certificate N° 12508/B0 BV issued on 03/01/2008 by Bureau Veritas.

**\*\*\* END OF CERTIFICATE \*\*\***