



Marine & Offshore
Division

Certificate number: 19003/C0 BV

File number: ACI 2000/021/001

Product code: 5561H

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
NØTTERØY - NORWAY

for the type of product

WATER-BASED FIRE EXTINGUISHING SYSTEMS
Flexi FOG Water Mist Total Flooding System

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships, Part C, Chapter 4
IMO MSC/Circ.1165

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: 21 Apr 2022

For BUREAU VERITAS,
At BV OSLO, on 21 Apr 2017,
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 & Offshore 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 :

"FlexiFOG Water mist total flooding system"

Main components of the system are the following:

Control Panel

Zone valves

FlexiFOG local manual release

FlexiFOG M2, M5 and B1 water mist nozzle (material: SnNi)

Nozzle type	Maximum operating pressure (bar)	Minimum operating pressure (bar)	K-factor (l/min/bar ^{1/2})
M2	16	10.45	1.80
M5	16	10.45	4.76
B1	16	10.5	2.80

Water pump (+ one redundant)

AFFF foam tank

AFFF foam pump (+ one redundant)

AFFF foam proportioner

AFFF foam isolation valve

Visual and audible alarm

2. DOCUMENTS AND DRAWINGS :

2.1- As per the Manufacturer's drawing N° 901110-PID-TF-TP-JOCKEY-A and datasheets N° 900950-PDS-A, N° 900930-PDS-D-TF and N° 900940-PDS-D.

2.2- As per the Manufacturer's Design Manual and Technical description Rev H dated 24.10.2011.

3. TEST REPORTS :

3.1 - Test report n°NBL F06118 dated November 10, 2006 as per IMO MSC/Circ.1165 issued by SINTEF, Norway.
Test report n°070601-012 dated July 31, 2007 as per IMO MSC/Circ.1165 issued by DFL, Denmark.

3.2 - Test report N° 71205-016 dated March 31, 2008 as per IMO MSC/Circ.1165 issued by DFL, Denmark

3.3 - M2 and 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.

3.4 - B1 water mist nozzle manufactured by VID Fire-Kill ApS in Denmark, test report N°090109-02 dated 19.1.2009 issued by DFL, Denmark.

4. APPLICATION / LIMITATION :

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

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

4.3 - The Manufacturer's instruction manual should be kept on board.

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

4.5 - The following component(s) shall comply with the requirements of the relevant Bureau Veritas rules and be type approved:
- 1% AFFF Foam concentrate

4.6- Installation criteria for nozzles :

Bilge			
Nozzle	Type	B1 (*)	M5 (*)
	k factor (l/min.bar^{-1/2})	2.80	4.76
	Min. pressure (bar)	10.5	10.45
Installation	Spacing (m)	1.5 x 4.0 m	2 x 3.9 m
	Location	Between 0.3 m and 0.6 m from tank top	Between 0.3 m and 0.6 m from tank top
	Max. bilge height (m)	1.00	1.00
	Max. distance from the wall on the side of the nozzle (m)	0.75	1.00
	Nozzle orientation	Horizontal	Horizontal

(*) Nozzles shall be installed so that first nozzle is B1 and next nozzle is M5.

Machinery spaces and Pump rooms		
Nozzle	Type	M5
	k factor (l/min.bar^{-1/2})	4.76
	Min. pressure (bar)	10.45
Installation	Spacing (m)	Square grid 3 x 3m
	Location	Ceiling mounted
	Max. ceiling height (m)	10.1
	Max. distance from the ceiling (m)	0.1
	Max. distance from the wall (m)	2.4
	Nozzle orientation	Vertical

4.7 - Bilge nozzles are required for all systems. These nozzles may be part of the main system or a separate bilge protection system.

4.8 - 1% AFFF foam activated after 7 minutes of activation of the system (capacity designed for 23 min operation of largest enclosed space). The activation of the foam after 7 minutes to be controlled by a timer function in the control system.

4.9 - Capacity of fresh water tank shall be sufficient for 30 min operation of largest enclosed space.

4.10 - Maximum net volume of protected enclosure excluding bilge : 3323 m³ (when based on the scientific methods to be developed by the Organization, a larger volume may be permitted, but in no case more than twice the tested volume).

4.11 - Unless the additive has been approved considering adverse health effects to exposed personnel, FlexiFog Water mist total flooding system shall only be activated when the protected space is unoccupied.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1. - The "*FlexiFOG Water mist total flooding systems*" are to be supplied by "*Autronica Fire and Security AS*" in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3. - "*Autronica Fire and Security AS*" has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - "*Autronica Fire and Security AS*" has declared to Bureau Veritas the following production site(s)::

Autronica Fire and Security AS
Stalsbergveien 9
3128 Nøtterøy
NORWAY

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-It is *Autronica Fire and Security AS*'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2- This certificate supersedes the Type Approval Certificate N°19003/B0 BV issued on 09/02/2012 by the Society.

*** END OF CERTIFICATE ***