



Marine & Offshore
Division

Certificate number: 21443/B0 BV

File number: ACI 2000/021/003

Product code: 57511

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

SPRINKLER AND WATER SPRAY SYSTEMS

Heien-Larsen FlexiFOG micro Water Mist Fire Suppression System
in Accommodation and Service Spaces and in Control Stations

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships, Part C, Chapter 4

SOLAS 74 convention as amended, Regulations II-2/7, II-2/9, II-2/10, X/3

IMO Res. MSC.97(73)-(2000 HSC Code) 7

IMO Res. MSC.98(73)-(FSS Code) 8

IMO Res. MSC.44(65)

IMO Resolution A.800(19), as amended by Resolutions MSC.265(84) and MSC.284(86)

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: 24 Nov 2020

For BUREAU VERITAS,
At BV OSLO, on 24 Nov 2015,
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.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Heien-Larssen FlexiFOG micro Water Mist Fire Suppression System

The system consists of the following main components (for information mainly) :

- low pressure pumps unit (minimum 2 pumps - working pressure 9-16 bar) as well as a stand-by pump (Standby pressure in the system: 8 bar),
- pressure tank and nitrogen cylinders,
- sprinkler nozzles (see table hereafter),
- piping (stainless steel, galvanized steel or copper),
- section valves,
- control cabinets.

Nozzle Type	CA01	CO01	PS01	PS02	ST01
K-factor (l/m/bar^{-1/2})	14,14	10,44	11,00	11,50	21,67
Minimum Pressure at the nozzle	8 bar	10 bar	9 bar	9 bar	9 bar

RTI < 50 (Fast response)

Nominal temperature rating : 57, 93 and 141 °C

Only the nozzles are covered by this certificate.

2. DOCUMENTS AND DRAWINGS :

As per the Manufacturer's Design Manual "Design manual E Accommodation Issue 4" dated July 10, 2009 as well as datasheet No. 9008XX-PDS-B "FlexiFOG Water mist nozzle Accommodation".

3. TEST REPORTS :

3.1- Test report n° 071004-15 dated April 21, 2008 as per IMO Resolution A.800(19) as amended by Resolution MSC.265(84) issued by DFL (Danish Fire Laboratories), Denmark (cabin and corridor fire tests).

3.2- Test report n° 090226-34 dated February 26, 2009 as per IMO Resolution A.800(19) as amended by Resolution MSC.265(84) issued by DFL (Danish Fire Laboratories), Denmark (Corridor fire tests).

3.3- Test report n° 081106-24 dated December 1, 2008 as per IMO Resolution A.800(19) as amended by Resolution MSC.265(84) issued by DFL (Danish Fire Laboratories), Denmark (Open Public space and corner fire tests).

3.4- Test report n° 080912-22 dated November 5, 2008 as per IMO Resolution A.800(19) as amended by Resolution MSC.265(84) issued by DFL (Danish Fire Laboratories), Denmark (Shopping and Storage fire tests).

3.5- Test report n° 081013-01 dated November 24, 2008 as per IMO Resolution A.800(19) as amended by Resolution MSC.265(84) issued by DFL (Danish Fire Laboratories), Denmark (Component tests).

3.6- Test report n° 090208-03 dated February 8, 2009 as per IMO Resolution A.800(19) as amended by Resolution MSC.265(84) issued by DFL (Danish Fire Laboratories), Denmark (Component tests).

3.7- Statement dated October 19, 2009 from DFL (Danish Fire Laboratories), Denmark.

4. APPLICATION / LIMITATION :**4.1- Installation requirements :**

Area	Installation requirements	Nozzle CA01	Nozzle CO01	Nozzle PS01	Nozzle PS02	Nozzle ST01
Control stations (Cat. 1)	Max. nozzles spacing Max. distance to wall Max. ceiling height			4.0 m 1.5 m 2.5 m	4.0 m 1.5 m 5.0 m	
Stairways (Cat. 2)	Max. nozzles spacing Max. distance to wall Stairway width Max ceiling height		3.5 m 0.8 m < 1.5 m 2.5 m	4.0 m 1.5 m > 1.5 m 2.5 m	4.0 m 1.5 m > 1.5 m 5.0 m	
Corridors (Cat. 3)	Max. nozzles spacing Max. distance to wall Corridor width Max. ceiling height		3.5 m 0.8 m < 1.5 m 2.5 m	4.0 m 1.5 m > 1.5 m 2.5 m	4.0 m 1.5 m > 1.5 m 5.0 m	
Accommodation spaces and sanitary spaces (Cat. 6, 7 and 9)	Max. nozzles spacing Max. distance to wall Max. ceiling height	1 centered nozzle 2.5 m 2.5 m surf. area <18m ² (*)		4.0 m 1.5 m 2.5 m	4.0 m 1.5 m 5.0 m	
Accommodation spaces with greater fire risk (Cat. 8)	Max. nozzles spacing Max. distance to wall Max. ceiling height			4.0 m 1.5 m 2.5 m	4.0 m 1.5 m 5.0 m	
Main Galleys and Refrigerated chambers (Cat. 11 and 12)	Max. nozzles spacing Max. distance to wall Max. ceiling height			4.0 m 1.5 m 2.5 m	4.0 m 1.5 m 5.0 m	
Store rooms and laundries, workshops, pantries, and other spaces containing flammable liquids (Cat. 13 and 14)	Max. nozzles spacing Max. distance to wall Max. ceiling height					4.0 m 2.0 m 2.5 m

* The maximum surface area excluding the wet room is 18 m²

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

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

5. PRODUCTION SURVEY REQUIREMENTS :

The FlexiFOG micro water mist nozzles are to be supplied by Autronica Fire and Security AS in compliance with the type and the requirements described in this certificate.

This type of product is within the category IBV of Bureau Veritas Rule Note NR320.
BV product certificate is required.

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 the manufacturer'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° 21443/A0 BV issued on 22/12/2009 by Bureau Veritas.

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