Certificate No: LR2471300SF
Issue Date: 11/06/2024
Expiry Date: 10/06/2029

Certificate Of Fire Approval

This is to certify that the product(s) detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations for use on offshore units classed with Lloyd's Register, and for use on offshore units and onshore facilities when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer	**GW Sprinkler A/S**
Address	Kastanievej 15, Glamsbjerg, DKK-5620, Denmark
Type	WATER SPRAY SYSTEM COMPONENT
Description	Fixed Fire Extinguishing System Component – Deluge Water Spray Nozzle – Type: “GW Fyrhed Nozzle (Open) High Velocity”, models: C, L, D, E, F, G, WM, WL, WD, WE and WF
Trade Name	GW Fyrhed Nozzle (Open) High Velocity
Specified Standard	Performance testing in accordance with FM Approval Standard: “Class 2021 & 2025 (February 2010) - Automatic and Open Water-Spray Nozzles for Installation in Permanently Piped Systems”

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register North America, Inc. of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document and its supplementary Type Approval Terms and Conditions form part of this Certificate.

This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

Bruce McDonald

Global Fire & Safety Manager to Lloyd's Register North America, Inc.
A member of the Lloyd's Register group

1330 Enclave Parkway, Houston, Texas, 77077,
United States

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DESIGN APPRAISAL DOCUMENT

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR2471300SF

The undernoted documents have been appraised for compliance with the relevant requirements of International Conventions, and this Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

Factory Mutual Research, Massachusetts, USA; Approval Report No: 3051437 dated 3rd November 2015 and related FM Project Data Record 3051437 dated October 2014 - September 2015.
Nozzle data sheet: WS 015 1003 C, dated 26th March 2015.

CONDITIONS OF CERTIFICATION

1. Suitable for use in general water spray applications and also suitable for use in SOLAS defined systems subject to the nozzle being included any systems which are fully compliant with relevant Regulations and MSC Circulars. These nozzles are also suitable for use in naval vessels subject to approval by the certifying naval authority.
2. Restricted for applications where the water spray nozzles are used as an integral part of fixed water spray fire extinguishing systems outside the scope of statutory regulations only, such as for boundary cooling or other applications acceptable to the final Project Authority. Additional testing and approval will be required in order for the nozzles to be accepted for statutory applications (for example, fixed water spray fire extinguishing systems for machinery spaces, cargo pump rooms, accommodation spaces, ro-ro spaces, helicopter landing areas etc.).
3. Nozzle characteristics obtained from Type Approval tests are as described in Table 1 below. Fixed water spray systems incorporating these nozzles must be operationally tested at the final installation to ensure the required application rate and coverage is achieved in each case.

Table 1. Obtained Nozzle characteristics.

Nozzle Model	Nominal Spray Angles (degrees)	'K' factor, when tested at 5 bar (73 psi)	
		LPM/bar $^{1/2}$	GPM/Psi$^{1/2}$
C	80	26	1.81
L	55	40	2.77
D	65	49	3.41
E	80	65	4.52
F	85	89	6.15
G	90	104	7.17
WM	115	21	1.46
WL	115	26	1.81
WD	120	47	3.27
WE	125	57	3.97
WF	115	78	5.43

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4. Working pressures: up to 5 bar (73 Psi).
5. Nozzle Materials: Brass, Nickel, Aluminium Bronze, Stainless Steel, SMO and Titanium.
6. Application in each case to be approved by Lloyd's Register at the design stage. All other system components to be approved for the operating pressures, suitability for the service and system specifications in accordance with Lloyd's Register's Rules and Regulations.
7. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype.
8. The certificate holder is solely responsible for the products supplied under this Certificate and to ensure that their products are fully compliant with the relevant statutory regulations and designed, manufactured and installed to the same quality and specifications as the prototype tested, including components that are designed and manufactured by third parties.

PLACE OF PRODUCTION

GW Sprinkler A/S
Kastanievej 15
DK-5620 Glamsbjerg
Denmark

Bruce McDonald
Global Fire & Safety Manager
Lloyd's Register Americas

Supplementary Type Approval Terms and Conditions

This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s)

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