DNV·GL

Certificate No:
MEDB00000D5

EC-TYPE EXAMINATION CERTIFICATE

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2014/93/EU, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This Certificate is issued by DNV GL AS under the authority of the Government of the Kingdom 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)
AquaMist FOG

Issued to
Tyco Fire Products Research and Development Center
CRANSTON RI, United States

is found to comply with the requirements in the following Regulations/Standards:
Annex A.1, item No. A.1/3.48 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.

Høvik, 2015-11-23
for **DNV GL AS**

This Certificate is valid until
2020-11-19

Notified Body No.: **0575**

Vidar Dolonen
Head of Department

DNV GL local office:
Great Yarmouth

Piotr Orzechowski
Surveyor

NORWEGIAN ACCREDITATION PROD 019

The Certificate is subject to terms and conditions overleaf. Any significant changes in design or construction of the product, or amendments to the Directive or Standards referenced above may render this Certificate invalid. The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended. The Mark of Conformity may only be affixed to the product and a Declaration of Conformity may only be issued when the production/product assessment module referred to in the council directive, is fully complied with.

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Job Id: **344.1-004924-1**
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Product description

"AquaMist FOG "
is a water mist system, composed of nozzles, stainless steel piping, section valves and high pressure pumps.

The system is to be designed according to principal requirements for the system, IMO MSC.1/Circ.1387 and SOLAS Ch.II-2, Reg.10.5.6.

Only the nozzles are type approved by this certificate. Pumps, pipes, valves, couplings and other systems components are subject to case by case approval.

The nozzle is manufactured by Tyco Fire Products Manufacturing Ltd., Stockport, UK.

Application/Limitation

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

Spray Head LPG 87400040	
Maximum horizontal spacing:	3.0 m
Vertical distance from object:	1.0 m – 13.0 m
Minimum operation pressure:	100 bar (at spray heads)
Nozzle type:	LPG 87400040 (4 micronozzles)
Nozzles are to cover the area out to minimum 0.75 m outside the periphery of the protected object (see IMO MSC/Circ.913, annex 3.4.2.1).	
The nozzles are to be installed in a pendant (downward) position.	
Single spray heads or single rows are accepted when half spacing is used.	

Nozzle	Drawing no.	k-factor [lpm/bar$^{1/2}$]	Flow [lpm]	Operating pressure [bar]
87400040 (Ø 0.8mm)	87400040 Rev. 4 H2ODK301 (Body) Rev. 4 H2ODK655 (micronozzle body) Rev. 2 H2ODK657 (micronozzle cap) Rev. 2	0.79	7.9	100

For all systems

A. Spray heads are to be made of stainless steel. The maximum nominal water pressure is 138 bar;
B. The piping to be regarded as class I;
C. 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 (Pt.4 Ch.8 Sec.10, Table 1) shall be applied for new buildings;
D. The pump(s) or the pump unit is to be delivered with a DNV GL product certificate. Other system components are to be inspected in accordance with the DNV GL Rules;
E. Ambient room temperature for pump unit should be between +4 °C and +45 °C.

The following documents are to be approved and filed by the Flag State Administration:

i. System arrangement plans including location of spray heads, sections valves, release stations and pump-unit (including water supply specifications);
ii. Documentation of power supply and control system;
iii. Specification of pipes, electrical motor, valves, pumps and associated components;
iv. Pressure drop calculations and water capacity calculations;
v. Arrangement of interface to fire detection and alarm system (where applicable);
vi. Manual with operating, test and maintenance instructions.

Installation testing:

- At least one section should be tested with full flow through the spray heads;
- 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;
- System to be cleaned in accordance with routines outlined in makers installation manual;
- 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.

Periodical testing:

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

Type Examination documentation

Fire Test Report:

- NBL F06131 dated 16 February 2010 from SINTEF, Norwegian Fire Research Laboratory, Trondheim, Norway.

Component Test Reports:

- 228751 dated 26 January 2010 from BRE Global, Watford, Herts, UK.
- 255356 dated 5 February 2010 from BRE Global, Watford, Herts, UK.
- Assessment report Ref. MC1095-LPG-TWIMC dated 4 November 2010 from BRE Global, Watford, Herts, UK.

Drawing Nos.:

- 87400040 Rev. 4 dated 16 February 2015
- H2ODK301 (Body) Rev. 4 dated January 2012
- H2ODK655 (micronozzle body) Rev. 2 dated December 2011
- H2ODK657 (micronozzle cap) Rev. 2 dated December 2011

Manual for the Installation, Maintenance and Use of Water Mist Pumping Systems (DOC: MUAG11ES00) from manufacturer.

Design manual (reference: MDAG07IN02) from manufacturer.

Tests carried out

Tested according to IMO MSC/Circ. 913 (fire tests) and relevant parts of IMO Circ.1165 (component tests).

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 and type designation

Mark of Conformity

The manufacturer is allowed to affix the Mark of Conformity according to Article 11 in the Council Directive 96/98/EC on Marine Equipment and shall issue a Declaration of Conformity, only when the module D or E or F of Annex B in the same directive is fully complied with.

Module D: The quality system for production and testing shall be approved by the Notified Body.

Module E: The quality system for inspection and testing shall be approved by the Notified Body.

Module F: Compliance of the products to type as described in this EC Type-Examination Certificate must be verified by the Notified Body who also shall issue a Certificate of Conformity.