

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of Norway.

This is to certify:

That the Sprinkler systems components for accommodation spaces, service spaces and control stations equivalent to that referred to in SOLAS 74 Regulation II-2/12

with type designation(s)
X-Mist® System

Issued to

Tanktech Co., Ltd.
Busan, Republic of Korea

is found to comply with the requirements in the following Regulations/Standards:

Regulation **(EU) 2017/306**,
item No. MED/3.9. SOLAS 74 as amended, Regulation II-2/7, II-2/9, II-2/10 & X/3, HSC
Code 7, FSS Code 8, IMO MSC/Circ.912 and IMO Res. A.800(19) as amended

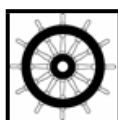
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2022-10-16**.

Issued at **Høvik** on **2017-10-17**

DNV GL local station:
Gimhae Station

Approval Engineer:
Nathaniel Frithiof



Notified Body
No.: **0575**

for **DNV GL AS**

Vidar Dolonen
Head of Notified Body



The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.



Product description

"X-Mist® System", is an automatic fast response low-pressure water mist system of wet pipe type. The system is composed of sprinkler heads, stainless steel piping, sprinkler valves, control system, strainers, pumps and a pressure tank.

The system is to be designed in accordance with the "Principal Requirements for the System" as defined in IMO Res. A.800 (19) and as amended by IMO Resolution MSC.265(84). Only the spray heads are type approved by this certificate. Other components are to be approved and/or certified case by case.

The spray heads are produced by TANKTECH CO., LTD.

Application/Limitation

Approved for use as an automatic water sprinkler system for accommodation areas, public spaces, service spaces and store rooms.

Installation shall be in accordance with table 1, appendix 2, IMO Res. MSC.265(84):

Application	Nozzle model	Max. spacing / coverage [m]	Max. distance to bulkhead [m]
Cabins, < 12 m ² ¹⁾	CAB-18.5	3.0	centred
Corridor ²⁾	COR-14.1	3.0	1.5
Public space (h < 2.5 m)	PUT-14.1	3.0	1.5
Public space (h < 5.0 m) ³⁾	PUF-14.1	3.0	1.5
Storage area	STO-20.3	3.0	1.5
Note: 1) Cabin area is gross area, including wet unit 2) Maximum width of corridor should not exceed 1.5 m 3) Ceiling height of more than 5 meter is subject to case by case approval			

Nozzle model	k-factor [lpm/bar ^{1/2}]	Flow [lpm] @ 8 bar	Drawing
CAB-18.5	18.5	52.3	CAB_18.5_SEC Rev. 0 Dated 13 Dec. 2010
COR-14.1	14.1	40.0	COR_14.1_SEC Rev. 0 Dated 13 Dec. 2010
PUT-14.1	14.1	40.0	PUT_14.1_SEC Rev. 0 Dated 13 Dec. 2010
PUF-14.1	14.1	40.0	PUF_14.1_SEC Rev. 0 Dated 13 Dec. 2010
STO-20.3	20.3	57.4	STO_20.3_SEC Rev. 0 Dated 13 Dec. 2010

For all applications

- Minimum design pressure is 8 bar. Max. system working pressure is 12 bar.
- Sprinkler heads to be installed in a pendant (downward) position.
- All spray heads are comprised of parts made of stainless steel and fitted with at 57°C 2.0 mm or 2.5 mm bulbs. Bulbs with higher temperature ratings, but not more than 30°C over ambient temperature, are subject to approval in each case.
- The pumps (or pump unit) shall be delivered with DNV GL product certificate, whereas other system components are to be certified or inspected in accordance with DNV GL Rules (or equivalent standard as specified by the Flag Administration)..
- Redundant pump arrangement is to be approved on a case by case basis.
- Pipes, couplings and other components are regarded as "Class III" piping.
- The pump unit and section valves shall be installed in a room having ambient temperature between +4°C and +45°C.

The following items are to be submitted for approval for each project:

- System arrangement plans including location of sprinklers, pipes, sections valves, control system and pump-unit.
- Specification of pipes, valves, electrical motor, pumps, pressurised tank(s) and associated components (including water supply specifications).
- Pressure drop calculations and water capacity calculations.

- iv. Arrangement of power supply and control system.
- v. Manual containing installation, operation and maintenance instructions.

Installation

- Water to be in accordance with manufacturer's specification for water quality. No chemicals shall be added to the water, for the purpose of e.g. cleaning, bacterial control, corrosion inhibition, etc., without the acceptance from the Manufacturer.

Installation testing:

- Not less than 2 sprinkler heads in each section shall be tested. Testing may be limited to 10 sections. i.e. 2x10 sprinkler heads if it is successful.
- Automatic start and stop of pumps.
- Automatic change over from main to emergency electric supply
- Other tests as required by DNV GL Rules (pressure testing of piping, etc.) and according to maker's manual (or equivalent standard as specified by the Flag Administration).

Periodical testing:

- The testing shall comply with instructions from flag administration, DNV GL Statutory Interpretations and maker's maintenance manual.
- Full flow test of minimum 2 sprinklers shall be carried out each year. If any sprinkler fail to operate at the minimum operating pressure (pilot pressure), extended testing in accordance with DNV GL Statutory Interpretations, Appendix A to be performed. Select sprinklers shall not recently have been tested/replaced.
- Periodical flushing, control and inspection to be in accordance with maker's system description manual and DNV GL Rules.

Type Examination documentation

Tantech Co., Ltd. Documentation for Type approval Rev.0.

Fire performance and Component testing of sprinkler heads test report:
R1-2009-16-01, issued 18 February 2011 by FILK, Korea.

Tests carried out

Tested according to IMO Res. A.800 (19) and as amended by IMO Resolution MSC.265(84).

Marking of product

The sprinkler heads are to be marked with type designation and Mark of Conformity (see first page) whereas the pump unit is to be marked with name of manufacturer and type designation.