

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Water and Foam Monitor**with type designation(s)  
**VFM-80M and VFM-100M**

Issued to

**VTI Fire Products(Shanghai) Co., Ltd.**  
**Shanghai, China**is found to comply with  
**DNV GL offshore standards**  
**DNV GL rules for classification – Ships**  
**DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations****Application :****The water and foam monitor is approved for installation on ships and offshore vessels.****For max. capacities and working pressures, see page 2 of the certificate under Application/Limitations.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2020-09-29**for **DNV GL**This Certificate is valid until **2025-09-28**.  
DNV GL local station: **Jiangyin NB & CMC**Approval Engineer: **Andrii Pishchanskyi****Olaf Drews**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Job Id: **262.1-034125-1**  
Certificate No: **TAF00001FD**

## Product description

"VFM-80M" and "VFM-100M"

are manually operated water and/or foam monitors consisting of branchpipe (non-aspirating) and turret made of stainless steel (AISI 316L). The fog/jet nozzles are of constant flow type, i.e. flow is the same at both fog and jet settings. The nozzle does not return automatically to maximum spray angle after use.

For further details, see drawings listed under Type Approval documentation below.

Manufactured by Tianjin Lucky Ocean Marine Equipment Co., Ltd., Tianjin, China.

## Application/Limitation

The water and foam monitor is approved for installation on ships and offshore vessels.

Monitor type:	VFM-80M*	VFM-100M*
Capacity [lpm]	1100-3800	1720-6350
k-factor [lpm/bar <sup>0.5</sup> ]	510-1202	830-2008
Working pressure [bar]	4-10	4-10
Rated pressure [bar]	16	16
Throw length (still air) [m]	29-70	37-83
Max Elevation	-60° - +90°	-60° - +90°
Rotation	360°	360°

\*The capacity and throw length are variable of number of turns (turn disk inside) and pressure using water only.

Hydraulic test to 1.5 times working pressure to be documented before delivery.

Works certificate indicating mechanical properties of materials in the monitor and pressure test report is to accompany each product.

Materials are to be in accordance with the DNV GL Rules Part 4, Ch.6, Sec.1 (Pipe of class III).

The specific arrangement of monitors, piping and control equipment is subject to approval in each case.

Each product is to be supplied with its manual for installation, use and maintenance.

## Type Approval documentation

Certification in accordance with Class Program DNVGL-CP-0338, September 2018.

1. Letter of Authorization dated 2020-04-15;
2. Test Report No. LM-29190429 dated 29 April 2019 from the maker witnessed by DNV GL;
3. Test Report No. LM-29190620 dated 20 June 2019 from the maker witnessed by DNV GL;
4. Drawing No. LM-D-LMFM-80M-DR dated 18 February 2019 (VFM-80M);
5. Drawing No. LM-D-LMFM-100M-DR dated 18 February 2019 (VFM-100M);
6. Installation Manual No. LM-D-LMFM-005 dated 18 February 2019;
7. Operation Manual No. LM-D-LMFM-007 dated 18 February 2019;
8. Maintenance Manual No. LM-D-LMFM-002 dated 18 February 2019.

## Tests carried out

The monitor is tested as branchpipe according to EN 13565-1:2003 (discharge/coefficient test, range test, leak test and mechanical test).

## Marking of product

The product is to be marked with name of manufacturer and type designation and according to EN 13565-1:2019, Section 7.



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**Periodical assessment**

DNV GL's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Program DNVGL-CP-0338, Section 4.