

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Water and Foam Monitor**with type designation(s)
LMFM-80S and LMFM-100S

Issued to

Tianjin Lucky Ocean Marine Equipment Co., Ltd.
Tianjin, 030, Chinais 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 **Høvik** on **2019-12-06**This Certificate is valid until **2024-12-05**.for **DNV GL**DNV GL local station: **Dalian**Approval Engineer: **Nanna Martine Jacobsen**

Mårten Schei-Nilsson
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.



Product description

"LMFM-80S" and "LMFM-100S",

self-oscillating water and foam monitors consisting of branchpipe (non-aspirating) and turret made of stainless steel (AISI 316L). The monitors may also be manually operated. 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 monitors are approved for installation on ships and offshore vessels.

Monitor type:	LMFM-80S*	LMFM-100S*
Capacity [lpm]	1100-3800**	1720-6350**
k-factor [lpm/bar ^{0.5}]	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	self-oscillating	-80° - +75°
	manually operated	-80° - +75°
Rotation	self-oscillating	30°, 50°, 70°, 100°
	manually operated	360°
*The capacity and throw length are variable of number of turns (turn disk inside) and pressure using water only.		
**To maintain this capacity value and k-factor on the nozzle, monitor should be supplied with additional 50 lpm for oscillating function.		

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.

Test Report No. LM-29190429, dated 29 April 2019 from the maker witnessed by DNV GL.

Test Report No. LM-29190620, dated 20 June 2019 from the maker witnessed by DNV GL.

Drawing No. LM-D-LMFM-80S-DR, dated 18 February 2019 (LMFM-80S) from the maker.

Drawing No. LM-D-LMFM-100S-DR, dated 18 February 2019 (LMFM-100S) from the maker.

Installation Manual No. LM-D-LMFM-005, dated 18 February 2019 from the maker.

Operation Manual No. LM-D-LMFM-007, dated 18 February 2019 from the maker.

Maintenance Manual No. LM-D-LMFM-002, dated 18 February 2019 from the maker.

Tests carried out

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



Job Id: **262.1-031024-1**
Certificate No: **TAF00001BY**

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.

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.