EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB000080T

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 AS under the authority of the Government of Norway.

This is to certify:

That the Penetrations through "A" class divisions: pipe, duct, trunk, etc penetrations

with type designation(s)
KFN type penetration system

Issued to
Shaoxing Lianyi Machinery & Electricity Manufacture Co., Ltd.
Zhuji, **China**

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2022/1157,**
item No. MED/3.26b. SOLAS 74 as amended, Regulation II-2/9, IMO MSC.1/Circ.1276, IMO 2010 FTP Code and IMO MSC.1/1488

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

This Certificate is valid until **2027-12-22**.

Issued at **Høvik** on **2022-12-23**

DNV local station:
Ningbo FIS

Approval Engineer:
Marcin Tobiasz

Notified Body
No.: **0575**

for **DNV AS**

Sverre Olav Bergli
Head of Notified Body

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the "Agreement between the United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment" signed 17 October 2005, and amended by Decision No 1/2019 dated February 22nd, 2019.

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 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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.

Product description

"KFN type penetration system"
consists of circular or rectangular 60 mm long mild steel coaming fitted symmetrically to the division. The coaming is filled with 40 mm deep "NT type light fireproof stuffing" and 10 mm thick "FM type fireproof sealant" on each side of the stuffing layer. The coaming is fully welded to the division.

The distance between pipe and coaming and distance between pipes shall be ≥5 mm.

For further details, see drawings listed under Type Examination documentation.

Application/Limitation

Approved for use as pipe penetration system in class A-0 and A-60 in steel bulkheads and steel deck.

Approved for use in class A-15 and A-30 penetrations shall be insulated as class A-60 and in addition the division is to be insulated at least 200 mm around the penetration. Other applications are subject to case-by-case approval.

Table 1 Approved pipe penetration in A-60 steel bulkhead.

Type	Size [mm]	Pipe material	Pipe diameter (OD) [mm]	Penetration length [mm]	Coaming thickness [mm]	Penetration position	Penetration insulation
Rectangular	30 x 30 - 1056 x 416	Steel	5 - 76	60	3	Symmetric	Partially insulated + 100 mm along pipe(s) on both sides
		Stainless steel	5 -76	60	3	Symmetric	
		Copper	6 - 57	60	3	Symmetric	Fully insulated + 100 mm along pipe(s) on both sides
		Steel	76 - 325	60	3	Symmetric	Partially insulated + 200 mm along pipe(s) on both sides
		Stainless steel	76 - 219	60	3	Symmetric	
		Copper	57 - 267	60	3	Symmetric	Fully insulated + 100 mm along pipe(s) on both sides
Circular	Ø27 - Ø536	Steel	5 - 76	60	2 - 3	Symmetric	Partially insulated + 100 mm along pipe(s) on both sides
	Ø27 - Ø436	Copper	6 - 57				Fully insulated + 100 mm along pipe(s) on both sides
	Ø27 - Ø536	Steel	76 - 480	60	2 - 3	Symmetric	Partially insulated + 200 mm along pipe(s) on both sides
	Ø27 - Ø436	Copper	57 – 368				Fully insulated + 200 mm along pipe(s) on both sides

Table 2 Approved pipe penetration in A-0 steel bulkhead.

Type	Size [mm]	Pipe material	Pipe diameter (OD) [mm]	Coaming length [mm]	Coaming thickness [mm]	Coaming position	Penetration insulation
Rectangular	30 x 30 - 1056 x 416	Steel	5 - 325	60	3	Symmetric	None
		Stainless steel	5 - 219				
		Copper	6 - 267				
Circular	Ø27 - Ø536	Steel	5 - 480	60	2 - 3	Symmetric	None
	Ø27 - Ø436	Copper	6 - 368				

Table 3 Approved pipe penetration in A-60 steel deck.

Type	Size [mm]	Pipe material	Pipe diameter (OD) [mm]	Penetration length [mm]	Coaming thickness [mm]	Penetration position	Penetration insulation
Rectangular	30 x 30 - 1056 x 416	Steel	5 - 76	60	3	Symmetric	Partially insulated + 100 mm along pipe(s) on both sides
		Stainless steel	5 -76	60	3		
		Copper	6 - 57	60	3		

		Steel	76 - 325	60	3	Symmetric	Partially insulated + 200 mm along pipe(s) on both sides
		Stainless steel	76 - 219	60	3		
		Copper	57 - 267	60	3		
Circular	Ø27 - Ø536	Steel	5 - 76	60	2 - 3	Symmetric	Partially insulated + 100 mm along pipe(s) on both sides
	Ø27 - Ø436	Copper	6 - 57				
	Ø27 - Ø536	Steel	76 - 480	60	2 - 3	Symmetric	Partially insulated + 200 mm along pipe(s) on both sides
	Ø27 - Ø436	Copper	57 – 368				

Table 4 Approved pipe penetration in A-0 steel deck.

Type	Size [mm]	Pipe material	Pipe diameter (OD) [mm]	Coaming length [mm]	Coaming thickness [mm]	Coaming position	Penetration insulation
Rectangular	30 x 30 - 1056 x 416	Steel	5 - 325	60	3	Symmetric	None
		Stainless steel	5 - 219				
		Copper	6 - 267				
Circular	Ø27 - Ø536	Steel	5 - 480	60	2 - 3	Symmetric	None
	Ø27 - Ø436	Copper	6 - 368				

The insulation material used has to be approved according to the Marine Equipment Directive and bear the Mark of Conformity.

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

Type Examination documentation

Test report No. FT22044 dated 20 June 2022 from FEFTC, Shanghai, China.
Test report No. FT22045 dated 20 June 2022 from FEFTC, Shanghai, China.
Test report No. FT22046 dated 20 June 2022 from FEFTC, Shanghai, China.
Test report No. FT22047 dated 16 June 2022 from FEFTC, Shanghai, China.
Test report No. FT22066 dated 8 July 2022 from FEFTC, Shanghai, China.

Drawing Nos. from LY2022-KFNG01 to LY2022-KFNG02 dated 18 March 2022 from maker.
Drawing Nos. from LY2021-KFNG01 to LY2022-KFNG48 dated 30 May 2021 from maker.
Drawing No. LY2021-GJ dated 30 May 2021 from maker.

Tests carried out

Tested according to IMO 2010 FTP Code part 3.

Marking of product

The product or packing is to be marked with name and address of manufacturer, type designation, fire technical rating, MED Mark of Conformity and USCG approval if applicable (see first page).

APPENDIX
Additional application/information for Watertightness/gastightness (Not part of the Marine Equipment Directive requirement)

Product description
"KFN type penetration system"
consists of circular or rectangular 60 mm long mild steel coaming fitted symmetrically to the division. The coaming is filled with 40 mm deep "NT type light fireproof stuffing" and 10 mm thick "FM type fireproof sealant" on each side of the stuffing layer. The coaming is fully welded to the division.

For further details, see drawings listed under Type Examination documentation.

Application/Limitation
KFN circular (Ø27 – Ø536) and KFN rectangular (30 x 30 – 1056 x 416):
Approved for penetration in steel bulkheads or decks limited to a pressure of 2.67 bar watertightness and 2.67 bar gastightness (test pressure 4 bar).

Penetration systems are generally not to be used for penetrating boundaries of tanks.

Type Approval documentation
Test report No. SXLY2022052704 dated 27 May 2022.

Tests carried out
Pressure tested according to Class Programme DNV-CP-0165.