DNV·GL

Certificate No:
TAF000014D

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Class A and B Penetration

with type designation(s)
A-60 Class Pipe pentrations through circular sleeve with GPG Marine Mortar sealing system

Issued to
Firesafe Energy AS
Lørenskog, Norway

is found to comply with
DNV GL rules for classification – Ships
DNV GL offshore standards
DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations

Application :

Approved for use as penetration system in A-60 in steel bulkheads/decks.

This certificate is recognized by Transport Canada.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Issued at **Høvik** on **2019-04-26**
This Certificate is valid until **2024-04-25**.
DNV GL local station: **Oslo Maritime and CAP**

Approval Engineer: **Tessa Biever**

for **DNV GL**

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.

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Product description

'A-60 Class single pipe pentrations through circular sleeve with GPG Marine Mortar sealing system'

Penetration composed of a 10 mm thick circular steel sleeve symmetrically welded to steel bulkhead/deck.

The bulkhead is insulated with two layers of 30 mm SeaRox SL620 (manufactured by Rockwool with nominal density of 100 kg/m^3), the deck is insulated with 50 mm SeaRox SL620 (manufactured by Rockwool with nominal density of 100 kg/m^3).

All deck and bulkhead penetrations are sealed with GPG Marine Mortar (GPGM Mortar) which is a powder mainly consisting of plaster, perlite and glass fibre. To be mixed with water to obtain desired consistency (see data sheet for correct mixing ration for application). The density of GPGM Mortar is 701 kg/m^3.

See below table for penetration details:

Name	Sleeve length [mm]	Outer Sleeve Dimensions [mm]	Filling	Use	Sleeve insulation	Remarks
PG18	125	Ø486	Single steel pipe Ø406.4 mm	deck	Sleeve and pipe insulated with approved A-60 insulation covering the GPGM inside sleeve and pipe. The pipe is insulated with 1200 mm on both below and above the deck	The total space between sleeve and pipe is filled up with GPGM Mortar.
PG19	125	Ø56	Single steel pipe Ø6 mm	deck	Sleeve and pipe insulated approved A-60 insulation covering the GPGM inside sleeve and pipe. The pipe is insulated with 1300 mm on one side and 700 mm on the other side.	The total space between sleeve and pipe is filled up with GPGM Mortar.
PG79	125	Ø486	Single steel pipe Ø406.4 mm	bulkhead	Sleeve and pipe insulated with approved A-60 insulation covering the GPGM inside sleeve and pipe. The pipe is insulated with 1240 mm on both below and above the deck	The total space between sleeve and pipe is filled up with GPGM Mortar.
PG 80	125	Ø56	Single steel pipe Ø6 mm	bulkhead	Sleeve and pipe insulated approved A-60 insulation covering the GPGM inside sleeve and pipe. The pipe is insulated with 1300 mm on one side and 700 mm on the other side.	The total space between sleeve and pipe is filled up with GPGM Mortar.

For further details see drawings in the test reports listed under Type Approval documentation below.

Application/Limitation

Approved for use as penetration system in A-60 in steel bulkheads/decks. Other applications are subject to case-by-case approval.

Approved for use in class A-0, A-15 and A-30 when the penetration system is insulated as A-60 and in addition the division is to be insulated with A-60 insulation at least 200 mm around the penetration.

The insulation material used has to be type approved.

Watertightness and gastightness is not covered in this certificate.

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

Type Examination documentation

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

Test report Nos.:
- 150072-06A (A-60, steel deck) dated 2017-12-18
- 150072-08B (A-60, steel bulkhead) dated 2018-09-14

Both from RISE, Trondheim, Norway.

Tests carried out

Tested in according to IMO 2010 FTP Code part 3.

Marking of product

The product or packing is to be marked with name of manufacturer, type designation and fire technical rating.

Transport Canada Approval

Based on the procedures laid down in the Transport Canada Publication entitled "Approval Procedures for, Life Saving Equipment and Structural Fire Protection Products (TP 14612)", DNV GL confirms that the product/s listed in this certificate is/are in accordance with Transport Canada's requirements.

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 Programme DNVGL-CP-0338, Section 4.