

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Class A and B Penetration**

with type designation(s)

- GEAQUELLO® - System E 950**- Sealing compound E 950**

Issued to

AIK Flammadur Brandschutz GmbH
Kassel, Germany

is found to comply with

DNV GL rules for classification – Ships**DNV GL rules for classification – Offshore units****DNV GL class programme DNVGL-CP-0165 – Type approval – Cable and pipe penetrations****Application :****Approved for use as cable penetration system for ship cables in class A-60 steel bulkheads and decks.****This certificate is recognized by Transport Canada.****For further details see Application/Limitations on page 3 of this certificate.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2017-10-04**This Certificate is valid until **2022-10-03**.for **DNV GL**DNV GL local station: **Magdeburg**Approval Engineer: **Carsten Hunsalz**

Duy Nam Le
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

Sealing compound cable penetration system E950 composed of:

4.5 mm thick and 230 mm long steel sleeve for bulkheads and 205 mm long steel sleeve for decks, 180 mm filling of compound E950 with 25 mm swell strips R 312 or R 380 + E824 impregnation fluid at each end of the sleeve for bulkhead applications and at lower end for deck applications.

Bulkhead penetration:

The coaming is welded symmetrically of the bulkhead.

Insulation details according drawing No. 271.142.890 GZ

Application Bulkhead	Size (mm) (W x H x D) Min.	Size (mm) (W x H x D) Max.	Minimum filling rate (%)	Maximum filling rate (%)	Coaming position in bulkhead	Cables- Maximum Diameter (mm)
Rectangular	102x102x230	800x300x230	0	40	symmetrically	50,8
Oval	210x102x230	210x108x230	0	40	symmetrically	50,8
Round	60Øx230	273Øx230	0	40	symmetrically	50,8

Deck penetration:

The coaming is welded to exposed side or unexposed side of the deck.

Insulation details according drawing No. 271.142.891 GZ and 271.142.892 GZ

Application Deck	Size (mm) (W x H x D) Min.	Size (mm) (W x H x D) Max.	Minimum filling rate (%)	Maximum filling rate (%)	Coaming position in bulkhead	Cables- Maximum Diameter (mm)
Rectangular	90x90x205	800x300x205	0	40	unsymmetrically	50,8
Oval	200x89x205	800x273x205	0	40	unsymmetrically	50,8
Round	89Øx205	273Øx205	0	40	unsymmetrically	50,8

Option: 20mm weather protection with E 292 according approved insulation drawings.

Application/Limitation

Approved for use as a cable penetration system in class A-60 steel bulkheads and 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. In addition the division is to be insulated with A-60 insulation at least 200 mm around the penetration.

Approved maximum cable diameter: 50,8 mm.

Approved for air tightness up to a design pressure of 0.003 MPa (30 mbar)

Approved for water tightness up to a design pressure of 0.25 MPa (2.5 bar)

No more than 40% of the inside cross sectional area of each transit should be occupied by cables.

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

Job Id: **262.1-025837-2**
Certificate No: **TAF00000T7**

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

Type Approval documentation

Test Reports A60 Fire Class:
MPA Dresden No. 20151090, 20151091, 20160631, 20161054 and 20151088

Insulation details:
Drawing no. 271.142.890 GZ, 271.142.891 GZ and 271.142.892 GZ

Pressure tests: GL documents dated 06.03.1992 and certificate 3324584 HH

Tests carried out

Fire Test acc. 2010 FTP Code, Annex 1: Part 3, IMO Resolution MSC.307(88)
Pressure tests with water and gas according to DNVGL-CP-0165 ch. 4.

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 products listed in this certificate 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 DNVGL-CP-0338 Section 4.