

CERTIFICATE OF FIRE APPROVAL

This is to certify that

The product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations and with the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer Lorowerk K.H Vahlbrauk GmbH & Co. KG

Address Kriegerweg 1
D - 37581 Bad Gandersheim
Germany

Type PIPE PENETRATION (STANDARD FIRE TEST)

Description Fire Resisting Single Pipe Penetration System (Bulkhead) - Type: "LORO-X, LORO-VAC, LORO-X/VAC, LORO-XD, LORO-XC, LORO- XC/VAC and LORO-VAC-CUNIFE"

Specified Standard IMO Res. MSC.61(67)-(FTP Code) Annex 1 Part 3
IMO MSC/Circ.1120

The attached Design Appraisal Document forms part of this certificate.

This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

Date of issue 18 October 2016 Expiry date 17 October 2021

Certificate No. SAS F160304

Signed



Sheet No 1 of 3

Name S. Abraham
Surveyor to Lloyd's Register EMEA
A Member of the Lloyd's Register Group

Note:

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid Certificate.

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



**Lloyd's
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Document number SAS F160304
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DESIGN APPRAISAL DOCUMENT

Date 17 October 2016	Quote this reference on all future communications SOUTSO/SFS/TA/SA/WP25556212
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ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F160304

This Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

Bauqualitat TÜV NORD, Brandversuchshaus, Hamburg, Germany Fire Test Report No. GV99.25.1, dated 27 September 1999 and GV99.33.1, dated 27 September 1999.

CONDITIONS OF CERTIFICATION

1. When used in conjunction with A-0, A-15, A-30 or A-60 Class bulkheads with the pipe insulated in accordance with the tested arrangements
2. The insulation on pipes is to be 50mm thick for pipes up to 150mm diameter and 90mm for pipes equal to or greater than 150mm
3. Consists of: pipe penetration system with steel/copper pipes passing through a welded steel/copper sleeve. Pipes are joined together with Kautschuk Nitrile-Butadiene seal and are secured in position with steel clamps
4. Range of pipe diameters for penetration types:

Penetration Type:	LORO-X	LORO-VAC	LORO-X/VAC	LORO-XD	LORO-XC	LORO-XC/VAC	LORO-VAC-CUNIFE
Range of Pipe Diameters (mm)	40-250	40-70	40-70	40-150 32-200	32-200	40-70	40-50

5. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype

PLACE OF PRODUCTION

Lorowerk K.H. Vahlbrauk GmbH & Co., KG
Kriegerweg 1
37581 Bad Gandersheim
Germany



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ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F160304



Saji Abraham
Senior Specialist
Statutory Fire & Safety
Southampton Technical Support Office, Marine & Offshore
Lloyd's Register EMEA

Supplementary Type Approval Terms and Conditions

This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).