



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

23-2371868-PDA
04-Apr-2023
03-Apr-2028
Houston ESD - Piping

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

FIRE EATER A/S

located at

VOLUNDSVEJ 17, , DK-3400 HILLEROD, Denmark

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Fixed Fire Extinguishing System
Model: Fire Eater Control Inert series IV8 (Inergen 200 & 300 bar g)
Endorsements:
Tier: 2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 03/Apr/2028 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

John Vincent Ulep
John Vincent Bog-Acon Ulep, Senior Principal Engineer

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

FIRE EATER A/S
VOLUNDSVEJ 17
DK-3400 HILLEROD
Denmark
Telephone: + 45 70 22 27 69
Fax: + 45 70 23 27 69
Email: mk@fire-eater.dk
Web: www.fire-eater.dk

Tier: 2 - PDA Issued

Product: Fixed Fire Extinguishing System
Model: Fire Eater Control Inert series IV8 (Inergen 200 & 300 bar g)
Endorsements:

Intended Service:
Total flooding fixed gas fire extinguishing systems for machinery spaces and cargo pump rooms.

Description:
Total flood Inergen fixed gas fire extinguishing system, equipment comprising of high pressure cylinders, valve assembly, system actuation units, nozzles, electrical components and electronic equipment.

Rating:
Ratings in accordance with Danish Institute of Fire Technology Test Report E-98097-01, dated 8/1999. (1) The minimum design concentration for net volume total flooding of Machinery Spaces and Pump Rooms is 46.2% v/v minimum at the lowest expected minimum ambient operating temperature (not greater than 0 C) and a maximum design concentration of 52% v/v (NOAEL) at 50 C.

Service Restriction:
1. Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
2. Acceptance of the agent (INERGEN, IG541) by the appropriate Flag Administration is required.
3. Detailed P&ID drawings are to be reviewed by ABS at each instance.

Comments:
1. The equipment covered in this PDA includes control boxes and time delay units. However, in each installation, the system arrangement indicating the following details are to be submitted to ABS for review:
(a) The system layout showing operation philosophy;
(b) The manifold(s) design and pipe scantling details;
(c) Capacity calculations and Flow calculations in accordance with requirements of the Danish Institute of Fire Technology Test Report E-98097-01;
(d) Control Panel schematics, wiring diagrams and cable specifications showing cable layout, alarm circuitry and location;
(e) Locations of the principle system components and release boxes;
(f) Dimensions and material of shipyard pipe work;
(g) Control arrangements for the closing of all ventilation and stopping fans within the protected space prior to any discharge.
2. When calculating the net volume of a protected space, the net volume should include the bilge volume, the volume of the casing and the volume of the free air contained within the air receivers that may in the event of a fire be released into the protected space.
3. The objects that should be subtracted from the gross volume of the space include, but are not necessarily limited to; Auxiliary Machinery; boilers; condensers; evaporators; main engines; reduction gears; tanks and trunks isolated from the protected space.
4. 85% of the extinguishing agent is to be discharged in 120 seconds.
5. The distribution piping is to have a minimum wall thickness as per 4-7-3/Table 2 of the 2023 ABS Marine Vessel Rules.
6. Piping sections where valve arrangements introduce sections of closed piping, such sections are to be fitted with a pressure relief valve and the outlet of the valve is to be led to open deck.
7. Appropriate certification as per ABS Marine Vessel Rules 4-6-7/3.5.5 is to be provided for each cylinder, inclusive of main and pilot cylinders, and be made available to the attending Surveyor when the system is to be installed.
8. ABS Certification is to be provided for each manifold and be made available to the attending Surveyor when the system is to be installed.
9. Burst test certificates for the flexible hoses are to be made available to the attending Surveyor for verification.

FIRE EATER A/S

VOLUNDSVEJ 17

DK-3400 HILLEROD

Denmark

Telephone: + 45 70 22 27 69

Fax: + 45 70 23 27 69

Email: mk@fire-eater.dk

Web: www.fire-eater.dk

Tier: 2 - PDA Issued

10. Automatic actuation is not permitted.

11. Alarms are to sound for a period of at least 20 seconds prior to the release of the agent. Alarms are to provide audible and visual warning

12. The system should be supplied by both the main and emergency sources of power, with the emergency power supply being provided from outside the protected space.

13. The facility to ventilate the protected space from a power source other than that within the protected space is to be available. The shipyard/owner is to be advised of this at the earliest opportunity.

14. A warning notice is to be posted at the release station indicating that exposure to the medium is not to exceed three minutes and personnel advised not to enter the space without breathing apparatus and protective clothing until the space has been thoroughly ventilated.

15. The Manufacturer has provided a declaration about the control of, or the absence of Asbestos in this product.

16. This PDA do not Endorse nor Restrict the use of INERGEN in other rooms, e.g., HPU Room, where higher or lower design concentrations may be required. This PDA only addresses the rooms in accordance with in MSC. Circ 848/1267.

Notes/Drawing/Documentation:

Drawing No. ABS List of components, List of components

Drawing No. Ci Manual 2016 FM-UL, Manual

Drawing No. DBI- MSC 776 -848 comparasion, DBI- MSC 776 -848 comparison, Danish Institute of Fire Technology and Security report PF13259 dated September 2008.

Drawing No. DBI_msc_776, DBI_msc_776, Danish Institute of Fire Technology fire extinguishing test according to IMO MSC/Circ. 776, E-98097-01 dated August 1999.

Drawing No. DIC536QMS, ISO 9001:2015 Certificate

Drawing No. IMO test IMT calculation scanned, IMO test IMT calculation

Drawing No. Schematics 2003-12, Schematics

Terms of Validity:

This Product Design Assessment (PDA) Certificate remains valid until 03/Apr/2028 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:

2023 Rules for Conditions of Classification, 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:
2023 Marine Vessels Rules 4-7-1/1, 4-7-2/1.1.1(i) and 4-7-3/3.1

2023 Rules for Conditions of Classification, Offshore Units and Structures, 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:
2023 Mobile Offshore Units 5-2-3/8

National:

NA

FIRE EATER A/S
VOLUNDSVEJ 17
DK-3400 HILLEROD
Denmark
Telephone: + 45 70 22 27 69
Fax: + 45 70 23 27 69
Email: mk@fire-eater.dk
Web: www.fire-eater.dk

Tier: 2 - PDA Issued

International:

IMO MSC/Circ.848 as amended by MSC.1/Circ.1267 dated 4 June 2008;
SOLAS Reg. II-2/10.4 (2020 Consolidated Edition);
FSS Code Chapter 5 (2015 Edition);

Government:

NA

EUMED:

NA

OTHERS:

NA