Confirmation of Product Type Approval

Company Name: FARAD SA HEAT EXCHANGERS

Address: 1ST KM MARKOPOULOU AVE. PAIANIA 19002 Greece

Product: Heat Exchanger

Model(s): HTR5-6-10-16/150/500÷2800/A10÷E10-A12÷D12/EN-JIS

HTR5-6-10-16/200/500÷2800/A10÷G10-A12÷F12/EN-JIS

HTR5-6-10-16/250/500÷2800/A10÷I10-A12÷H12/EN-JIS

HTR5-6-10-16/300/500÷2800/A10÷K10-A12÷I12/EN-JIS

HTR5-6-10-16/400/500÷2800/A10÷O10-A12÷M12/EN-JIS

Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	22-2313137-PDA	06-OCT-2022	05-OCT-2027
Manufacturing Assessment (MA)	25-6798949	21-JAN-2025	20-JAN-2030
Product Quality Assurance (PQA)	NA	NA	NA

Tier
5 - Unit Certification Required

Intended Service
Heaters (shell and tube heat exchangers) for Marine Applications, heating fuel oil, lubrication oil and fresh water in the respective piping systems (shell side fluid: fuel oil, lubrication oil or fresh water; tube side fluid: saturated steam or thermal oil).

Description
Shell diameter:

DN150 (168. 3 mm x 7. 11 mm) for model HTR5-6-10-16/150/500÷2800/A10÷E10-A12÷D12/EN-JIS

DN200 (219. 1 mm x 8. 18 mm) for model HTR5-6-10-16/200/500÷2800/A10÷G10-A12÷F12/EN-JIS

DN250 (273. 1 mm x 9. 27 mm) for model HTR5-6-10-16/250/500÷2800/A10÷I10-A12÷H12/EN-JIS

DN300 (323. 9 mm x 9. 53 mm) for model HTR5-6-10-16/300/500÷2800/A10÷K10-A12÷I12/EN-JIS

DN400 (406. 4 mm x 9. 53 mm) for model HTR5-6-10-16/400/500÷2800/A10÷O10-A12÷M12/EN-JIS

Shell Material: SA-106 Grade B

Front and Rear Flat Cover Material: P265GH

U-Tube Tubesheet, gasketed on both sides, of P265GH Material and 20 mm (DN150), 25 mm (DN200

and DN 250), 30 mm (DN300) or 40 mm (DN400) thickness

U-Tubes of P235GH TC1 Material and OD 10x1. 5 for models
HTR5-6-10-16/150-200-250-300-400/500÷2800/A10÷O10/EN-JIS

U-Tubes of P235GH TC1 Material and OD 12x1. 5 for models
HTR5-6-10-16/150-200-250-300-400/500÷2800/A12÷M12/EN-JIS

Tubesheet clamping weld neck flanges: PN16, EN 1092-1: 2007+A1: 2013/11/B2, P250GH Material

Piping system connections hubbed slip-on flanges for welding: EN 1092-1: 2007+A1: 2013/12/B2, PN16, PN10 or PN6 of Material Group 3E1 (VR <=50mm) as per Table 9 and applicable Tables of Clause G. 2 of Annex G of EN 1092-1: 2007+A1: 2013, for models
HTR6-10-16/150-200-250-300-400/500÷2800/A10÷O10-A12÷M12/EN

Piping system connections slip-on flanges: JIS B 2220: 2004, SOP (plate) or SOH (hubbed), 16K, 10K or 5K of minimum Material UTS of 410 MPa and of minimum Yield Strength of 265 MPa (20 deg. C) / 195 MPa (200 deg. C), for models HTR5-10-16/150-200-250-300-400/500÷2800/A10÷O10-A12÷M12/JIS

Number of Passes: 1 (Shell Side) / 2 (Tube Side)

Ratings
Design pressure:

Up to 16 bar for models HTR16/150-200-250-300-400/500÷2800/A10÷O10-A12÷M12/EN-JIS

Up to 10 bar for models HTR10/150-200-250-300-400/500÷2800/A10÷O10-A12÷M12/EN-JIS

Up to 6 bar for models HTR6/150-200-250-300-400/500÷2800/A10÷O10-A12÷M12/EN

Up to 5 bar for models HTR5/150-200-250-300-400/500÷2800/A10÷O10-A12÷M12/JIS

Design temperature: 160 deg. C (shell side fluid) / 200 deg. C (tube side fluid)

Service Restrictions
1. Unit Certification is 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. Specific piping system plans and seating arrangements are to be submitted for review to an ABS Engineering Office for each application, together with details of pressure relief valves, as applicable. Each chamber of the heaters which can be subjected to an internal pressure greater than its design pressure is to be fitted with a pressure relief valve (pressure relieving device) of suitable capacity according to the requirements of the ABS Rules and the respectively applicable conditions included in, or referred to by, EN 13445:2021.

3. The manufacturer is to submit documentation of fabrication records, including but not limited to material certificates, welding procedure qualification records, welder qualification records, heat treatment reports, non-destructive examination reports and dimensional check reports, as applicable, to the Surveyor. Heaters are to be tested and inspected as per the applicable requirements of the European Standard EN 13445:2021, to the satisfaction of the attending ABS Surveyor.

4. Each heater is to be affixed with a permanent nameplate or marking bearing the manufacturer's name or trademark and the maximum allowable working pressure and temperature.

5. The maximum allowable bolting - up torque and the bolting specification for the bolts of the EN 1092-1/2007+A1:2013/12/B2, PN16, PN10 or PN6, 3E1 (VR <=50mm), nozzles flanges, are to comply with Clause 5.3 and Appendix E.3.4 of EN 1092-1:2007+A1:2013.

6. Corrosion allowance shell side: 1.0 mm, channel side: 0.2 mm, tubes thickness: 0.9 mm.

Comments

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

Notes, Drawings and Documentation
Drawing No. Correspondence, FARAD 29SEP22 - PDA Revalidation, Revision: -, Pages:

Drawing No. Correspondence, FARAD 08SEP22 - Quotation of renewal, Revision: -, Pages: 1

Drawing No. DOC01, Declaration of conformity to EN 13445 (2021), Revision: -, Pages: 1

Drawing No. HTR16 150 500-2800 A-E, Specification Drawing, Revision: 0, Pages: 4

Drawing No. HTR16 200 500-2800 A-G, Specification Drawing, Revision: 0, Pages: 4

Drawing No. HTR16 250 500-2800 A-I, Specification Drawing, Revision: 0, Pages: 4

Drawing No. HTR16 300 500-2800 A-K, Specification Drawing, Revision: 0, Pages: 4

Drawing No. HTR16 400 500-2800 A-O, Specification Drawing, Revision: 0, Pages: 4

Term of Validity
This Product Design Assessment (PDA) Certificate remains valid until 05/Oct/2027 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.

ABS Rules
- Generic Rules for Classification, Materials and Welding and Survey After Construction 2022 - Part 1, Rules for Conditions of Classification 1-1-4/7.7, 1-1-A3, 1-1-A4, which cover the following:

- Rules for Building and Classing Marine Vessels (2022 edition) 4-1-1/7.15, 4-4-1/1.5, 4-4-1/1.13, 4-4-1/3, 4-4-1/5

International Standards
EN 13445: 2021

EU-MED Standards
NA

National Standards
NA

Government Standards
NA

Other Standards
NA

Corporate ABS Programs
American Bureau of Shipping
Print Date and Time: 03-Mar-2026 12:25

ABS has used due diligence in the preparation of this certificate, and it represents the information on the product in the ABS Records as of the date and time the certificate is printed.

If the Rules and/or standards used in the PDA evaluation are revised or if there is a design modification (whichever occurs first), a PDA revalidation may be necessary.

The continued validity of the MA is dependent on completion of satisfactory audits as required by the ABS Rules. The validity of both PDA and MA entitles the product to receive a **Confirmation of Product Type Approval**.

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 prior to the effective date of the ABS Rules and standards applied at the time of PDA issuance. ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. The manufacturer is responsible to maintain compliance with all specifications applicable to the product design assessment. Unless specifically indicated in the description of the product, certification under type approval does not waive requirements for witnessed inspection or additional survey for product use on a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.