Marine & Offshore

Certificate number: 20843/C0 BV
File number: ACM 129/0809/001
Product code: 1320I

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

STERLING THERMAL TECHNOLOGY LTD

AYLESBURY - UNITED KINGDOM

for the type of product

TUBE HEAT EXCHANGERS

DS012 - Tube Heat exchangers

Requirements:
BUREAU VERITAS Rules for the Classification of Steel Ships.
BUREAU VERITAS Rules for the Classification of Offshore Units.

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 24 Jan 2024

For Bureau Veritas Marine & Offshore,
At BV LONDON, on 24 Jan 2019,
Spencer Yule

BUREAU VERITAS SURVEYORS AT PARIS 1828 LONDON INTERNATIONAL REGISTER

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Fin/tube Heat Exchanger type **DS 012** intended for electrical machines cooling.

Design pressure:	8, 10, 12, 16, 18.66, 22 and 26.7 bar.
Working pressure:	from 1 bar to 26.7 bar.
Cooling media:	fresh water or sea water.

2. DOCUMENTS AND DRAWINGS:

- Engineering handbook DS 012 (03.99).

- Drawings:
- DS 012/1 rev. 3 (04.03.99)
- DS 012/2 rev. 4 (04.03.99)
- DS 012/3 rev. 2 (04.03.99)
- DS 012/4 rev. 2 (04.03.99)
- DS 012/5 rev. 1 (04.03.99)
- DS 012/6 rev. 1 (01.11.94)
- DS 012/7 rev. 0 (01.11.94)
- DS 012/8 rev. 1 (08.03.99)
- DS 012/9 rev. 3 (08.03.99)
- DS 012/10 rev. 2 (04.03.99)
- DS 012/11 rev. 0 (04.03.99)
- DS 012/12 rev. 1 (08.03.99)
- DS033 Header Grids Rev D (01.04.16)
- DS050 Tubeplates Rev G (15.10.13)
- DS055 Cover Plates Rev C (04.03.14)
- DS054 Fabricated Headers Rev B (15.10.13)
- DS051 Formed Headers Rev F (14.10.13)

3. TEST REPORTS:

Nil.

4. APPLICATION / LIMITATION:

- These heat exchangers may be used for electrical machines cooling.

- Circulating media: fresh water or sea water
- Cooled media: air

- 304 stainless steel is not to be used for parts in contact with sea water.

Other materials and/or components:

Material \ component	Coverplates	Primary tube plate	Secondary tube plate	Formed header	Fabricated header
Carbon Steel	**X**	**X**	**X**	**X(1)**	**X(2)**
Stainless Steel	**X**	**X**		**X**	
Brass	**X**	**X**	**X**		
Titanium	**X(3)**	**X(3)**	**X(3)**		

X : allowable material for considered component under limitation conditions
(1) : Material quality to be in accordance with table 4 and table 5 of DS054 revB
(2) : Material quality to be in accordance with table 6 and table 7 of DS051 revF
(3) : Under special configuration detailed in 5.1 of DS055 revC, 3.7 of DS050 revG

Carbon Steel :
- Carbon Steel BS EN10025 S235 JR
- Carbon Steel BS EN10025 S275 JR
- Carbon Steel BS EN10025 S355 JR
- Carbon Steel ASTM A516 Gr. 60
- Carbon Steel ASTM A516 Gr. 70

Stainless Steel :
- Stainless Steel ASTM A240 304/304L
- Stainless Steel ASTM A240 316/316L

Brass :
- 90/10 CuNi Plate ASTM B171 C70600
- 70/30 CuNi Plate ASTM B171 C71500

Titanium :
- Titanium Plate ASTM B265 Gr. 2

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The DS012 - Tube Heat exchangers are to be supplied by **Sterling Thermal Technology Ltd** in compliance with the type and the requirements described in this certificate.
5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note NR320.
5.3 - BV product certificate is required.
5.4 - Material Certificates and inspection requirements are to be provided and performed according to NR 216 (Rules on Material and weldings) and NR 467 (Rules for the Classification of Steel Ships, table 39 of Pt C, Ch 1, Sec 10 and table 26 of Pt C, Ch 1, Sec 3.
5.5 - Each heat exchanger is to be hydraulic pressure tested to 1.5 times the maximum design pressure.

6. MARKING OF PRODUCT:

Each heat exchanger should be marked with:
- Manufacturer's name or trade mark.
- Type designation.
- Maximum working pressure.
- Test pressure.
- Society's brand with COI identification number.

7. OTHERS:

7.1 - This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the units at any time and that **Sterling Thermal Technology Ltd, (Aylesbury - United Kingdom)** will accept full responsibility for informing shipbuilders, shipowners or their sub-contractors of the proper methods of use and general maintenance of the units and the conditions of this approval.

7.2 - This certificate is based on the Type Approval Certificate N° 10794/A0 BV from Heat Exchange Industries Ltd.

7.3 - This Certificate supersedes the Type Approval Certificate N° 20843/B0 BV issued on 11/09/2013 by the Society.

***** END OF CERTIFICATE *****