

Spec item #: HD-01	STATEMENT OF REQUIREMENTS	TCMSB Field #: N/A
Replacement Plate Heat Exchangers (2)		

Part 1: Scope

- 1.1. Contractor shall supply two (2) new sea water / fresh water titanium plate type heat exchanger units in accordance with this Statement of Requirement (SOR) to replace the two American Standard type 1730-4 Plateflow coolers currently fitted onboard the CCGS Terry Fox.

Part 2: References

- 2.1. 642131-01 – American Standard Plate Heat Exchanger
- 2.2. 71-01-01 Rev 14 – Diagram of Central F.W. CIRC and S.W. CIRC Systems

Part 3: Design**3.1. Classification Society Requirements**

- 3.1.1. The heat exchanger unit(s) must be designed in order to meet the Classification Society Requirements for marine service.

3.2. Thermal and Mechanical Parameters

- 3.2.1. The heat exchanger unit must be designed in accordance with the following thermal and mechanical parameters individually to ensure proposed replacement matches performance of the American Standard type 1730-4 heat exchanger(s) currently fitted :
 - 3.2.2. The heat exchanger unit must have a designed working pressure of 9 Bar;
 - 3.2.3. The LT (Low Temperature -Seawater) circuit flow shall be rated for 420 m3/hr;
 - 3.2.4. The HT (High Temperature-Freshwater) circuit flow shall be rated for 420 m3/hr;
 - 3.2.5. Seawater Inlet temperature ranges between 5-12° C and Seawater Outlet temperature ranges between 12-19° C;
 - 3.2.6. Freshwater Inlet temperature is 24°C with an outlet temperature of 8° C;
 - 3.2.7. Pressure of Seawater circuit is 1.8 Bar & pressure of Freshwater circuit is 2.8 Bar;
 - 3.2.8. The indicated heat load/ heat exchange rate of the American Standard type 1730-4 Plateflow cooler is 26,350,000 BTU/hr each. This heat exchange rate cannot be confirmed by Coast Guard but is that supplied with original installation document package. Note: Only 191 of the 246 total capacity of plates were fitted at time of installation and the heat exchanger is rated for 350 m3/hr flow.
 - 3.2.9. Contractor shall be responsible to calculate the required heat exchange rate (BTU/hr) required based off supplied data and vessel site visit. The required heat exchange rate shall be included with bid/proposal. The bid shall clearly show the calculations to determine the required heat exchange rate based off the actual system parameters / performance data fitted onboard.

3.3. Dimensional Parameters

- 3.3.1. The heat exchanger unit must be design in accordance with the following dimensional parameters:
- 3.3.2. The entire heat exchanger unit including the flanged connections must have overall dimensions that will not exceed the following:
 - 1950 mm in length;

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- 900 mm in width; and
- 1950 mm in height.

3.4. **Physical Characteristics**

- 3.4.1. The heat exchanger unit must have the following physical characteristics:
- 3.4.2. The heat exchanger unit must include a cylindrical meshed filter/strainer on the salt water suction inlet. The filter must extend the total length of the plate pack and be constructed of materials for use in salt water. The filter must be easy to remove and clean without dismantling any of the pipework. The filter must be fitted into an extra port machined in the end plate on the opposite side of where the media piping is connected;
- 3.4.3. The heat exchanger unit must be easy to service and clean in-situ. The heat exchanger unit frame must be designed so that the plates can be slid along the frame with ample room to allow cleaning with a pressure washer & scrubbing brush, all within the "footprint" of the unit. Plate gaskets must be made of Nitrile (NBRP) and be of "snap on" type (glue-less);
- 3.4.4. The heat exchanger unit must be equipped with ANSI 150 titanium liners for the Fresh Water and Salt Water pipe connections; and
- 3.4.5. The heat exchanger unit Fresh Water and Salt Water pipe connections diameters must be NPS 8" Flange (Studded) 150 ANSI cw gaskets.

3.5. **Other Requirements**

- 3.5.1. The heat exchanger unit must be a currently supported unit by the OEM manufacture so that spare parts can be readily obtained within short lead times for a period of 15 years minimum;

Part 4: Proof of Performance

- 4.1. Contractor shall confirm proposal meets requirements noted in 3.2 'Thermal and Mechanical Parameters' and 3.3 'Dimensional Parameters'. Vessel is available for site visit at Canadian Coast Guard Base, 280 Southside Rd, St John's, NL between Oct 24-28th. Contractor shall be responsible to obtain all the required information ie, dimensions, flow rates, heat transfer etc to ensure the correct unit is being proposed. Vessel Representative will be available to assist as required.
- 4.2. The Contractor must provide classification society approval certificates from a Transport Canada recognized organization under the Delegated Statutory Inspection Program (DSIP) for any design, manufacturing, and testing of the new heat exchangers.

Part 5: Deliverables

- 5.1. The Contractor must deliver the following:
- 5.1.1. Two (2) titanium plate heat exchangers in accordance with this SOR. Delivery shall be to:
 CCGS Terry Fox
 c/o Technical Stores
 280 Southside Rd, PO Box 5667
 St John's, NL
 A1C 5X1

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- 5.1.2. Provide classification society approval certificates.
- 5.1.3. One complete set of spare plate gaskets and spare connection gaskets.
- 5.1.4. One set of manufacturer's special tools must be provided, c/w illustrated tool list and three (3) copies of illustrated operation and maintenance manuals. One (1) additional copy must be in the French language.
- 5.1.5. Three (3) copies of the manufacturer's model specific illustrated parts manuals plus one (1) additional copy in the French language.