

Design input for Turbine Oil Cooler (PHE) Sizing

Doc no. (HXE/SK/2379)

1	Rated Heat load	2401 KW
2	Oil Flow Rate	216 m ³ /h
3	Oil Outlet Temperature	≤44 Deg C
4	Oil Pressure Drop	0.6 bar (Max)
5	Oil Design Gauge Pressure	10 kg/cm ²
6	Oil Test Gauge Pressure	15 kg/cm ²
7	Oil Grade	ISO VG46
8	Cooling Water Flow Rate	350 m ³ /h
9	Cooling Water Inlet Temperature	38 Deg C
10	Cooling Water Design Gauge Pressure	10 kg/cm ²
11	Cooling Water Test Gauge Pressure	15 kg/cm ²
12	Cooling Water Pressure Drop	1 bar (max)
13	Plate Thickness	0.6 mm
14	Plate Material	SS316
15	Fouling Factor for Cooling Water	0.000088 m ² k/W
16	Fouling Factor for ISO VG46 Oil	0.000176 m ² k/W
17	Connecting Pipe Size of Oil Inlet/Outlet	200 NB
18	Connecting Pipe Size of Water Inlet/Outlet	250 NB
19	Margin over Plate Surface Area	15%

Notes: -

1. For calculation of overall heat transfer coefficient, fouling factor shall be considered as mentioned in point no. 15 & 16, as design condition.
2. Turbine Oil Cooler (PHE) shall be designed to have 15% excess plate surface area over and above designed surface area required for the rated heat load.
3. Material of all the parts of Turbine Oil Cooler (PHE) which is coming in contact of Oil shall be of SS316.
4. Turbine Oil Cooler (PHE) shall be painted as follows:

Turbine Oil Cooler (PHE)	<p>All surface other than stainless steels shall be painted as per below details:</p> <p>Primer Coat: Epoxy base Zinc rich primer paint, 2 Coats, DFT = 70 Microns.</p> <p>Intermediate Coat: Epoxy TiO₂ Pigmented Polyamide Cured Paint, 1 Coat, DFT = 70 Microns.</p> <p>Finish Coat: Aliphatic Acrylic 2 Pack Polyurethane Finish paint, 2 Coats, DFT = 60 Microns.</p> <p>Total DFT minimum: 200 Microns.</p> <p>Colour for final coat shall be Blue (RAL-5012)</p>
--------------------------	--

5. In addition to requirement of spec. HE57075, following items shall also to be supplied along with Turbine Oil Cooler (PHE):
 - a) 4 Nos. Temperature Gauges along with stub (1 No. on each Nozzle). Refer Note 6 for details of Temperature Gauges.
 - b) Counter Flanges along with suitable Nuts, Bolts and Gaskets for Each Nozzle.
6. Details of Temperature Gauges:
 - a) Dial size – 150mm
 - b) Temp range – 0 to 120 Deg C
 - c) Thread connection – M20x1.5
 - d) Mounting: Type A as per spec HE 57018
 - e) Stem length & OD – For Type A as per spec HE 57018
7. Foundation Bolt supplied along with PHE shall be Self-Anchoring type.