



Sizing of Coolers

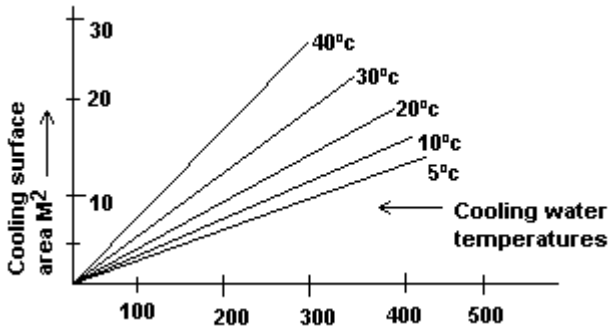
Sizing of coolers or heat exchanger is an important activity in improving reliability of lubricated and hydraulic systems. Fair to say, that fixing a proper heat exchanger with the required surface area is one of the most important critical parameter that would prevent random failures in the plant.

Size of cooler influenced by:

- a) Lubricating/hydraulic oil circulation rate
- b) Lubricating/hydraulic oil pressure and viscosity (or grade)
- c) Maximum allowable pressure drop across cooler
- d) Inlet lub/hydraulic oil temp to cooler
- e) Outlet lub/hydraulic oil temp from cooler
- f) Cooling medium (sea water, river water, town water etc.)
- g) Cooling medium pressure
- h) Cooling medium outlet temp to cooler
- i) Cooling medium circulation rate available

The important matter is to be able to calculate the required surface area of the cooler:

Guide to the cooling surface area required for a desired dissipation rate at various cooling water temperatures.



X axis gives the amount of energy to be removed from the system (in terms of watts). Y axis gives the required surface area. Estimate the amount of dissipative energy in the system to be eliminated.

Guidance on Material of construction

Component	Suitable material	Remarks
Shell	C.I. Al, Gun metal, M.S	Contact with oil
Header	C.I. Gun metal, Bronze	With water but corrosion less important. thk sec
Tubes	90/10 Copper Nickel, 68/30/1/1 copper, nickel, titanium	Risk of corrosion important
Plates	"	"

If we would like to avoid the risk of corrosion and frequent maintenance then plate type heat exchanger is the most suitable.

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