



CLOSED LOOP DRY FLUID COOLERS

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I-R CLOSED LOOP - DRY FLUID COOLERS

SIZING CONSIDERATIONS

Several important operating data points must be known before a proper selection can be made.

HEAT LOAD

The heat load in BTU/HR is the most important condition affecting the selection of an I-R cooler. There are several ways to determine this heat load. The easiest and most accurate is:

- A. If the cooler is going on an I-R Rotary or Reciprocating compressor, the heat load information can be taken from the engineering data in the price book.
- B. Rotary and Reciprocating compressors: If the cooler is being used on a competitive compressor or the unit is not listed in the price book, take the compressor BHP X 2545 = heat load in BTU/HR. This assumes the entire HP is converted into heat and this heat is transmitted to the coolant. It would include the load on intercooler, cylinders, oil coolers and aftercoolers.
- C. Centrifugal compressors: Heat load information must be taken from a Whimsy or performance run. Heat load and temperature rises from the

intercoolers, aftercoolers and oil cooler must all be considered.

COOLANT FLOW RATE

The coolant flow rate determines the heat rise through the compressor. The higher the heat rise the lower the flow. The lower the heat rise the higher the flow. The heat rise can be adjusted by opening or closing the throttling valve at the coolant pump discharge.

COOLANT TEMPERATURES

It is vital to know the coolant temperature going to and from the equipment. In order to properly select the desired coolant temperature it is necessary to look at the entire air system. If there is an air dryer in the system, what is the maximum air temperature that the dryer can stand? What is the CTD of the compressor aftercooler? By subtracting the CTD from the maximum air temperature to the dryer, you can determine the required coolant temperature to the compressor.

NOTE: The I-R fluid cooler is a dry type cooler. It can only achieve coolant temperatures 5° to 10° above the ambient air temperatures. If coolant temperatures closer to or below ambient air

temperatures are required, a TRIM COOLER must be used. The trim cooler will require an external water source. (City water, river water, etc.)

GLYCOL SOLUTION

In areas where ambient temperatures will go below freezing, a glycol solution must be used to prevent freezing. Normally a 40% glycol solution will protect to minus 15°F.

ALTITUDE

If a cooler is being installed at elevations above 1000 feet, modification must be made to the cooler to compensate for the lighter air passing through the coils. Contact Product Management for application above 1,000 feet.

CAUTION

CONSULT DAVIDSON PRODUCT MANAGEMENT PRIOR TO THE SALE OF AN INGERSOLL-RAND COOLER IF YOU HAVE ANY QUESTIONS.