SELECTING THE CORRECT CHILLER FOR YOUR APPLICATION

In order to provide proper cooling and optimum equipment performance, a properly sized liquid chiller is essential.

The manufacturer of the water-cooled equipment should be able to supply most of the information required to make the proper chiller selection.

Required Information
- Heat load dissipated into coolant (BTU/Hr or KW/Hr).
- Flow rate (gpm or other convertible unit).
- Minimum required pressure (PSI or other convertible unit).

If the above information is available, refer to the chiller specification sheet for selecting the appropriate chiller.

If not please continue....

Determining Process Heat Load

The following equation is provided for determining the process heat load.

Heat Load (BTU/Hr) =Flow Rate (gph) x weight of coolant (water =8.34 lbs./gal) x specific heat (water:1) x ΔT°F or

Heat Load (BTU/Hr) = Flow Rate (gpm) x ΔT°F x 500

1)   To determine flow rate, using tap water as coolant, insert flow meter in water supply line or measure exact time it takes to fill a container of known volume. Convert results to gallons per hour (GPH) or (GPM)

2)   If using coolant other than water, contact D/F for determining coolant's compatibility with chiller and heat transfer characteristics.

3)   Obtain ΔT°F by measuring the entering and exiting tap water temperatures of your process. The difference is ΔT°F.

Example: measured flow rate =3gpm
                measured water inlet =50°F
                measured water outlet =60°F

                3 gal/min.x 60 min./Hr x 8.34 lbs./gal. x 1 BTU/lb°F x 10=15,012 BTU/Hr

Determining Minimum Required Water Pressure

Although the pressure of the recirculating coolant does not have direct effect on cooling capacity, it is important to consider the pressure drop of a given process when sizing the pump. The pump must be capable of producing the required flow rate while overcoming the pressure drop of the coolant passages.

To determine the required pressure for a given flow rate, install a gate valve and pressure gauge into the process water supply line. Adjust the gate valve to obtain the desired flow rate and register the indicated pressure.

Conversion Factors

F° = C° x 1.8 + 32   1 liter = 0.264 gal
1 watt = 3.41 BTU   1 Bar = 14.5 PSI
1 BTU = .252 K Cal   1 PSI = 2.307 ft./head