

How To Choose A Chiller

Choosing the right size recirculating chiller adds to the economies of its use. The optimum size needed is based on the amount of heat your applications is generating, plus additional power to maintain temperature under varying loads.

Normally the manufacturer of the device you are cooling will supply heat removal information. If information isn't available, here's how to calculate the heat load of your system:

$$\text{Watts} = [\Delta T^\circ \times (K)] / S$$

Where:

ΔT = The difference (Δ) between incoming and outgoing tap water temperature (T) of your instrument. Measure carefully using the same thermometer for both locations. You may measure in Celsius or Fahrenheit.

S = The number of seconds to fill a one liter container.

K = Conversion constant for density and specific heat of water.

Measured in:

$$\text{Celsius: Watts} = [\Delta T^\circ\text{C} (4,186)] / \text{Seconds}$$

$$\text{Fahrenheit: Watts} = [\Delta T^\circ\text{F} (2,326)] / \text{Seconds}$$

Additional Considerations:

1. If ambient temperature of the cooling location is above 20°C, add 1% to the calculated wattage for each 0.5°C above 20°C.
2. If operating at 50Hz, add 20% to the calculated wattage.
3. If line voltage is consistently below rated voltage, or if you work at high altitude, add 10% to the calculated wattage.
4. Future growth cooling needs or variability of heat output of existing unit.

Conversions:

$$\text{BTU's / hr} = (\text{watts}) * 3.413$$

$$\text{Tons} = (\text{BTU's / hr}) / 12,000$$