

Highlighting innovative design features  
and useful applications information for  
**Thermo Scientific Liquid Temperature Control**

**Thermo**  
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# smart notes

▶ selection



CHILLERS **SIZE vs. COOLING**

**Q** Does a larger fluid reservoir give me more cooling capacity and improved temperature stability?

**A**

**No.** The answer to this question involves three factors. First, the amount of fluid your application requires is not relevant to the reservoir volume because water is added until both the application and the chiller are full. Second, the cooling capacity is determined by the setpoint temperature and compressor size. Third, the temperature stability is determined by how well the flow of the refrigerant in the evaporator is controlled, and by the consistency of the heat load from your application.



# why

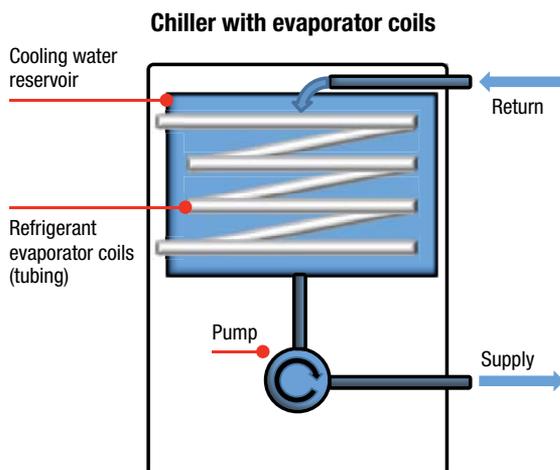
The stability specification of the chiller is ultimately determined by how well the flow of the refrigerant is controlled.

To use an extreme example, it is true that dumping one cup of cold water into a heated swimming pool will have no measurable effect on temperature. However, if a continuous flow of cold water is added to the pool, there will be a temperature shift. In the end, the ultimate stability of the pool temperature is governed by how well the pool heating system maintains tight control of the temperature of the outgoing water and the circulation of the water – not by the size of the pool.

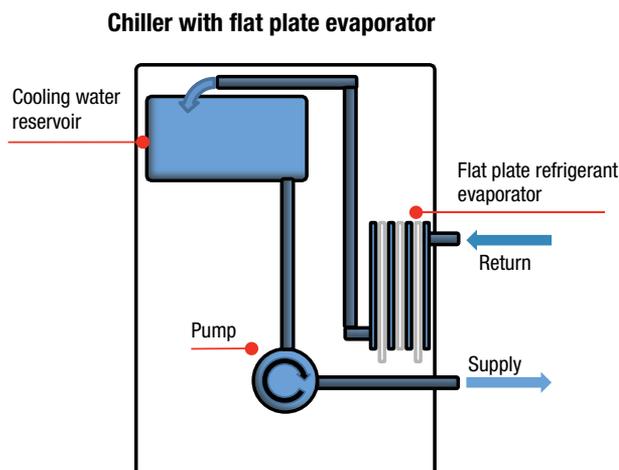
Recirculating chillers perform in the same manner. The ultimate stability of the chiller temperature is governed by how well the control system maintains a tight control of the temperature of the outgoing water and the circulation of the water, not by the size of the reservoir.

In Thermo Scientific™ ThermoFlex chillers, +/- 0.1°C stability is achieved by a fast reaction to changes in temperature using a sophisticated control system (heat removal) and a large selection of pumps (circulation) to match what your application requires.

## The amount of water contained in a chiller varies with the design of the refrigeration assembly.



Older chiller designs that use refrigerant evaporator coils placed in the reservoir typically hold a lot of water because the evaporator coils are bulky and require a large reservoir to hold them submerged in fluid.



Newer designs, like our ThermoFlex chiller that use a low-water volume, flat-plate refrigerant evaporator, take the refrigeration out of the reservoir, allowing it to have a much lower volume.

## Summary

- ▶ Size does not matter. If an application requires 3 gallons per minute delivered at 20°C, there is no difference in stability whether the source of the water holds 3 gallons or 300 gallons.

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**North America:** USA/Canada tollfree: +1 (800) 258-0830; USA: +1 (603) 436-9444 or [info.tc.us@thermofisher.com](mailto:info.tc.us@thermofisher.com)  
**Europe:** Benelux: +31 (0) 76 579 55 55 or [info.tc.nl@thermofisher.com](mailto:info.tc.nl@thermofisher.com); France: +33 (0) 1 60 92 48 00 or [info.tc.fr@thermofisher.com](mailto:info.tc.fr@thermofisher.com);  
Germany: +49 (0) 721 4 09 44 44 or [info.tc.de@thermofisher.com](mailto:info.tc.de@thermofisher.com); United Kingdom: 44 (0) 8706 099 254 or [info.tc.uk@thermofisher.com](mailto:info.tc.uk@thermofisher.com)  
**Asia:** China: +86 (21) 68 65 45 88 or [info.tc.china@thermofisher.com](mailto:info.tc.china@thermofisher.com); India: +91 (22) 27 78 11 01 or [contact.lpg.in@thermofisher.com](mailto:contact.lpg.in@thermofisher.com)  
**Japan:** +81-3-5826-1616 or [info.lpg.jp@thermofisher.com](mailto:info.lpg.jp@thermofisher.com)

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