



Vapour Absorption Cycle

While the majority of airconditioning systems employ the vapour compression cycle, there is an other cooling cycle known as **Absorption Refrigeration**. This system is typically used for certain large applications where some form of heat source is available economically.

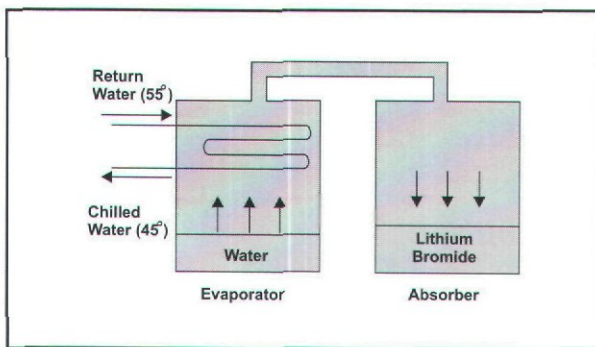


Fig. 33. Absorption Refrigeration concept

As you will see in the diagram alongside, the system consists of an Evaporator and an Absorber. Inside the absorber is a salt solution, usually lithium bromide which, like common salt, has a strong affinity to water. In the low pressure evaporator chamber is *water* and a mist of *water vapour*. The salt solution in the absorber chamber absorbs the water vapour from

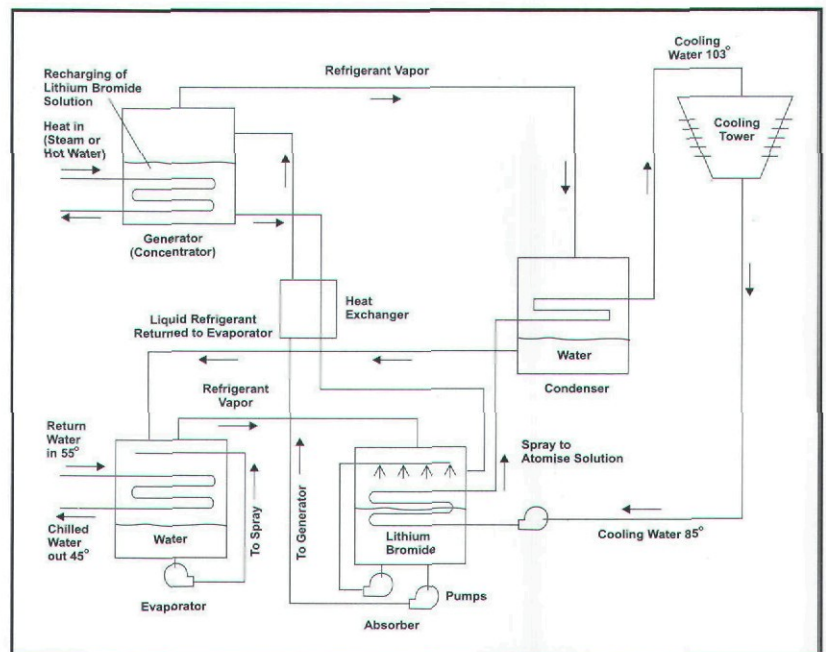


Fig. 34. The complete Absorption Refrigeration cycle



the low pressure evaporator chamber. This maintains the low pressure in the evaporating chamber and causes the water temperature to drop.

The solution formed by the mixed water and lithium bromide has to be heated so that the salt solution can be re-generated. This is done by pumping the solution to a higher pressure section of the system, where heat energy is used to separate the refrigerant (water) from the absorbent salt (lithium bromide). The salt then releases water vapour which is at high temperature having just been heated. The warm vapour is then condensed in a condenser into water, using cool water from the cooling tower, and returned to the evaporator to begin the cycle again.

Machines having steam or hot water as the heat energy source are referred to as 'steam fired' or 'hot water fired' machines. Those which have their own flame source are called 'direct fired machines'.