

AIR CONDITIONING

Now we will look at how air conditioning systems work. With air conditioning, the adjustment of humidity is important because we always try to cool warm air inside the room.

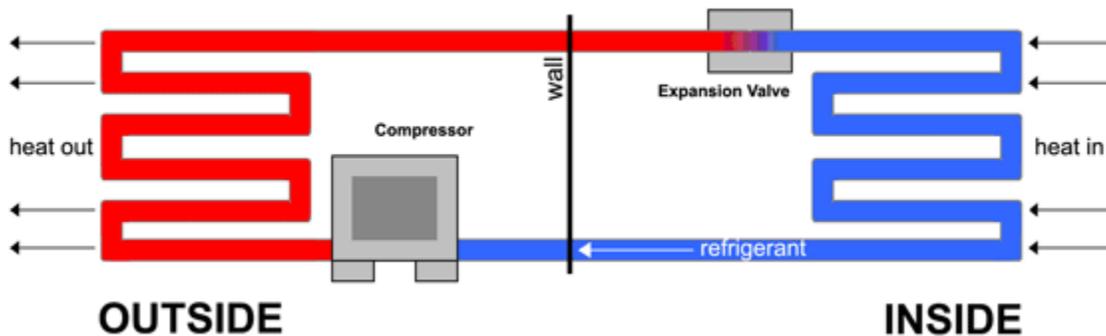
When the temperature of the air decreases, the maximum amount of water the air can hold also decreases. So the relative humidity always increases. This is more conspicuous when the room air is humid or already saturated. When the saturated air is cooled in an air conditioner, it precipitates or condenses. Water can be seen dripping outside from an AC.

Humidity is generally maintained at about 50 percent. Too low or high humidity is very uncomfortable.

Air conditioning (A/C) involves cooling/heating and cleaning of air, plus controlling its moisture level or humidity to provide maximum indoor comfort.

- An air conditioner transfers **heat energy** from the inside of a room, or multiple rooms in a building, to the outside.
- The air conditioner does NOT transfer **air** from the inside of a room, or multiple rooms in a building, to the outside.

More specifically, refrigerant in the system absorbs the excess heat from the inside and is pumped through a closed system of piping to an outside coil. A fan blows outside air over the hot coil, transferring heat from the refrigerant to the outdoor air. Because the heat is removed from the indoor air, the indoor area is cooled.



Saving Energy

Using any or all of the strategies just discussed will help keep you cool. Even if you use air conditioning, many of these strategies, particularly reflecting heat and shading, will help reduce the energy costs of running an air conditioner.

However, adopting all of these strategies may not be enough. Sometimes you need to supplement natural cooling with mechanical devices. Fans and evaporative coolers can supplement your cooling strategies and cost less to install and run than air conditioners.

Ceiling fans make you feel cooler. Their effect is equivalent to lowering the air temperature by about 4° F (2° C). Evaporative coolers use about one-fourth the energy of conventional air conditioners but are effective only in dry climates.

Source: <https://www.e-education.psu.edu/egee102/node/2103>