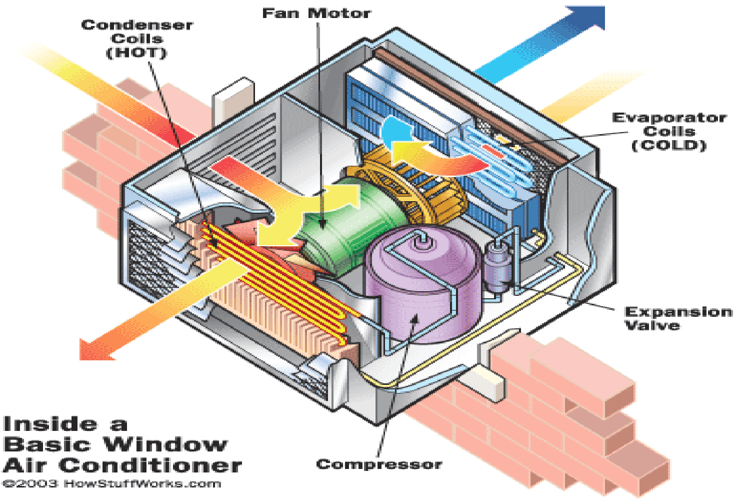
Solar Cooling ***by Sedna Aire***

How does solar air conditioning work?

In a conventional air conditioning system;

The working fluid arrives at the compressor as a cool, low-pressure gas. The compressor is powered by **electricity** to squeeze the fluid. This packs the molecules of the fluid closer together. The closer the molecules are together, the higher its energy and its temperature.



The working fluid leaves the compressor as a hot, high pressure gas and flows into the condenser.

The gases enter the condenser coil and begins cooling and changing back into a liquid at the bottom 1/3 of the coil.

When the working fluid leaves the condenser as a semi liquid, its temperature is much cooler and it has changed from a gas to a liquid under high pressure. The liquid goes into the evaporator through a very tiny, narrow hole. On the other side, the liquid's pressure drops. When it does it begins to evaporate into a gas.

As the liquid changes to gas and evaporates, it extracts heat from the air around it. The heat in the air is needed to separate the molecules of the fluid from a liquid to a gas.

By the time the working fluid leaves the evaporator, it is a cool, low pressure gas. It then returns to the compressor to begin its trip all over again.

A solar air conditioner uses a solar panel (**not electricity**) to super heat the refrigerant (the hotter it is…the higher the energy saved) to deliver a **super heated higher** pressured gas to a condenser and then to the evaporator and then to the Solar Compressor.

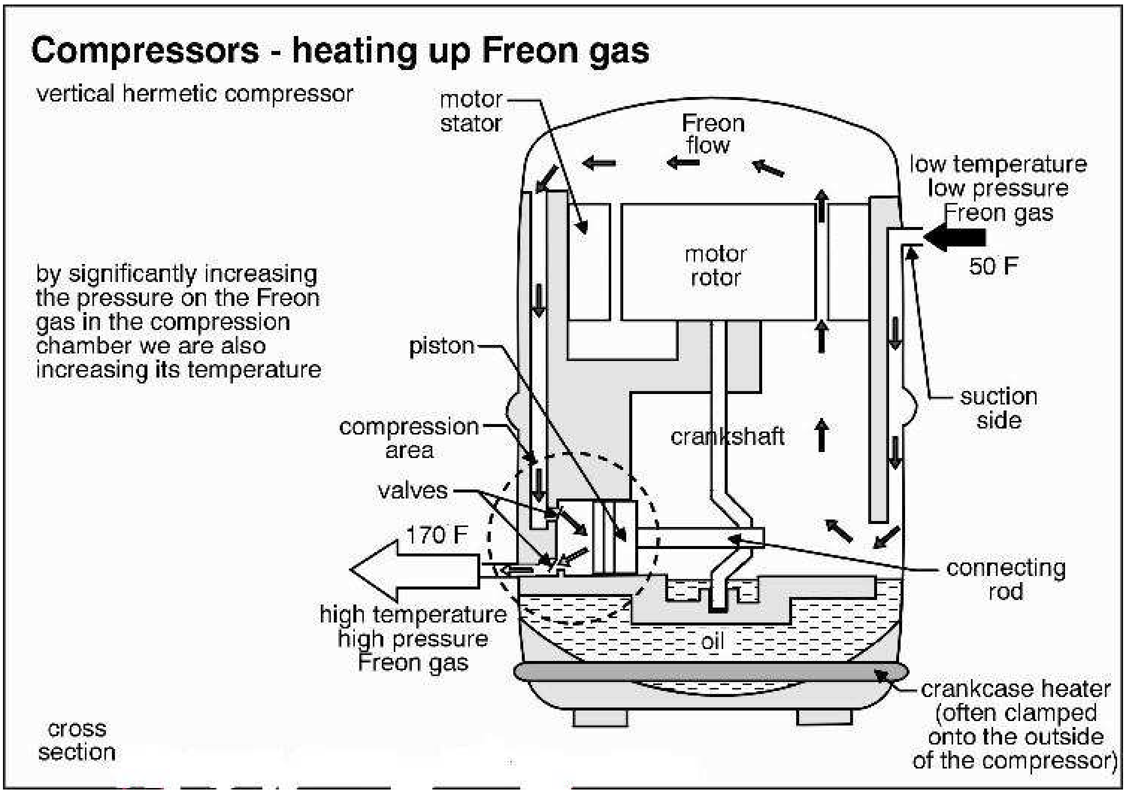
This super heated gas enters the coil and begins cooling and changing back into a liquid at the very **top of the coil.**

When the working fluid leaves the condenser, its temperature is colder and it has changed from a gas to a **100%** liquid under high pressure.

By the time the working fluid leaves the evaporator, it is a cool, low pressure gas. It then returns to the solar panel to begin its trip all over again.

In a conventional air conditioning system see below…low temperature, low pressure Freon is delivered to the compressor at 50 F and leaves at 170 F under high pressure.

In a solar air conditioning system the solar panel delivers Freon gas to the solar condenser in excess of 200 F and at a much higher pressure.



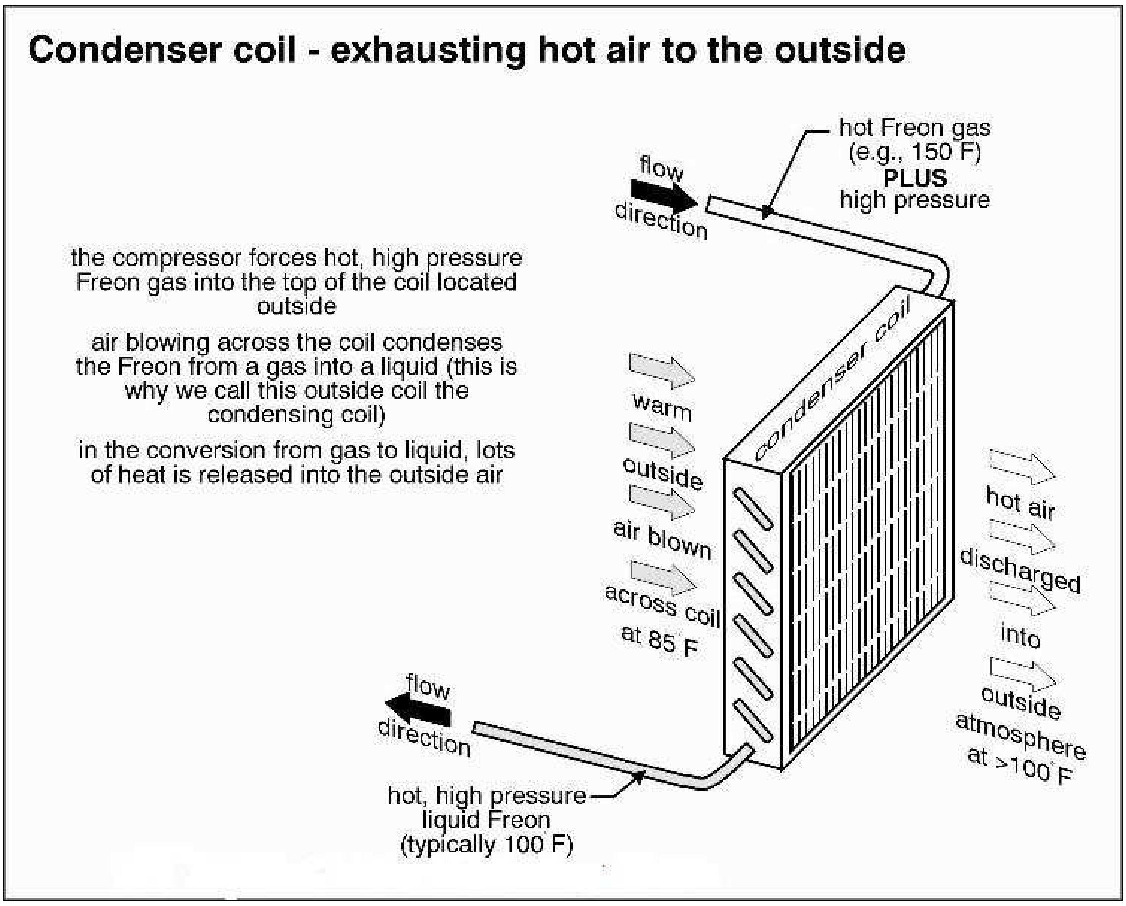
A **regular air conditioning system uses the compressor** to increase the pressure on the gas, heat the gas, than sends it to the condenser where it becomes a liquid again through the use of the condenser coil. The change of state of the refrigerant, starts to take place approximately 2/3rd's of the way down the condenser.

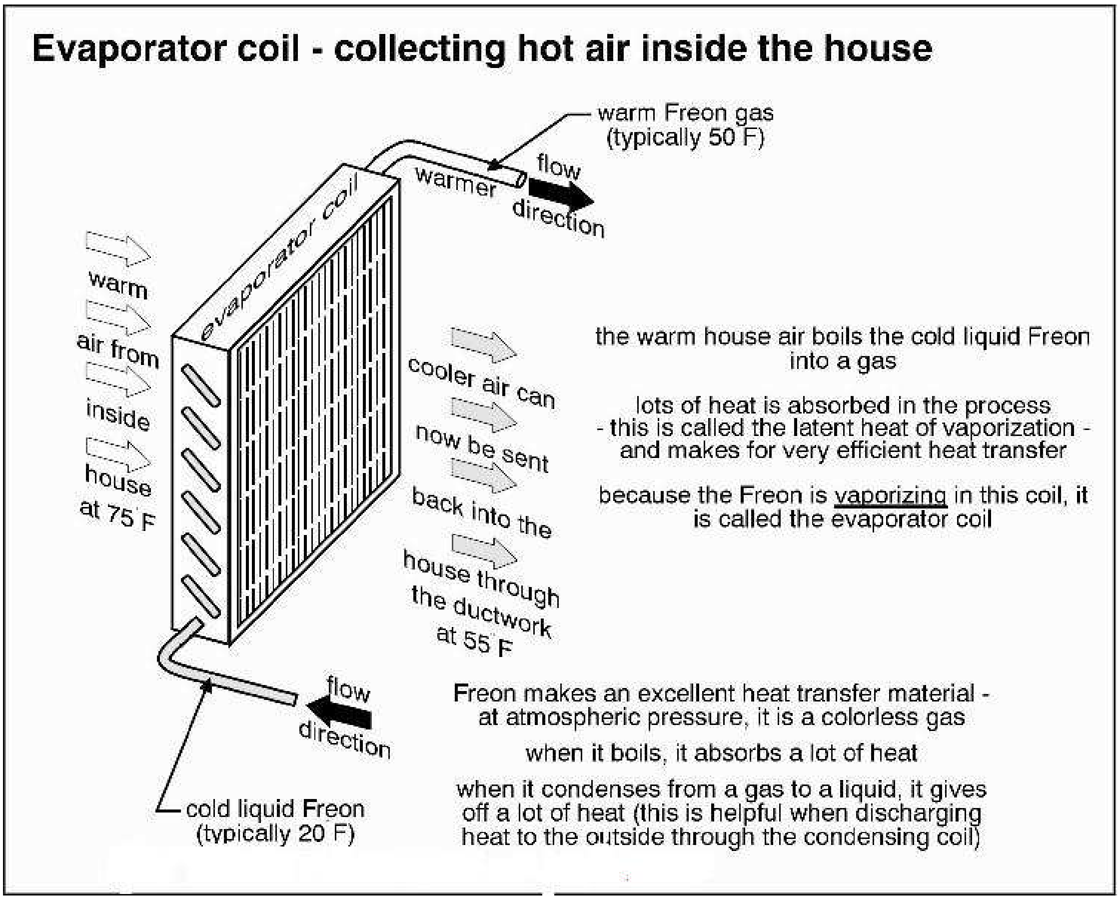
The Sedna Aire Solar Absorption Air Conditioning System uses a different method. It uses the solar heat from the sun to **superheat** the refrigerant and delivers it directly to the condenser…by passing the compressor. The superheated refrigerant enables the refrigerant to begin changing state at the top of the condenser coil as well as utilizing more of the condenser cooling face of the coil (not just the bottom two thirds).

The conventional air conditioning system is only able to change a portion of the gas into a liquid state so as when the refrigerant enters into the metering device it is a saturated vapor.

The Sedna Aire process allows more of the refrigerant to change state back into a liquid faster as well as allowing the transformation of more liquid into the metering device.

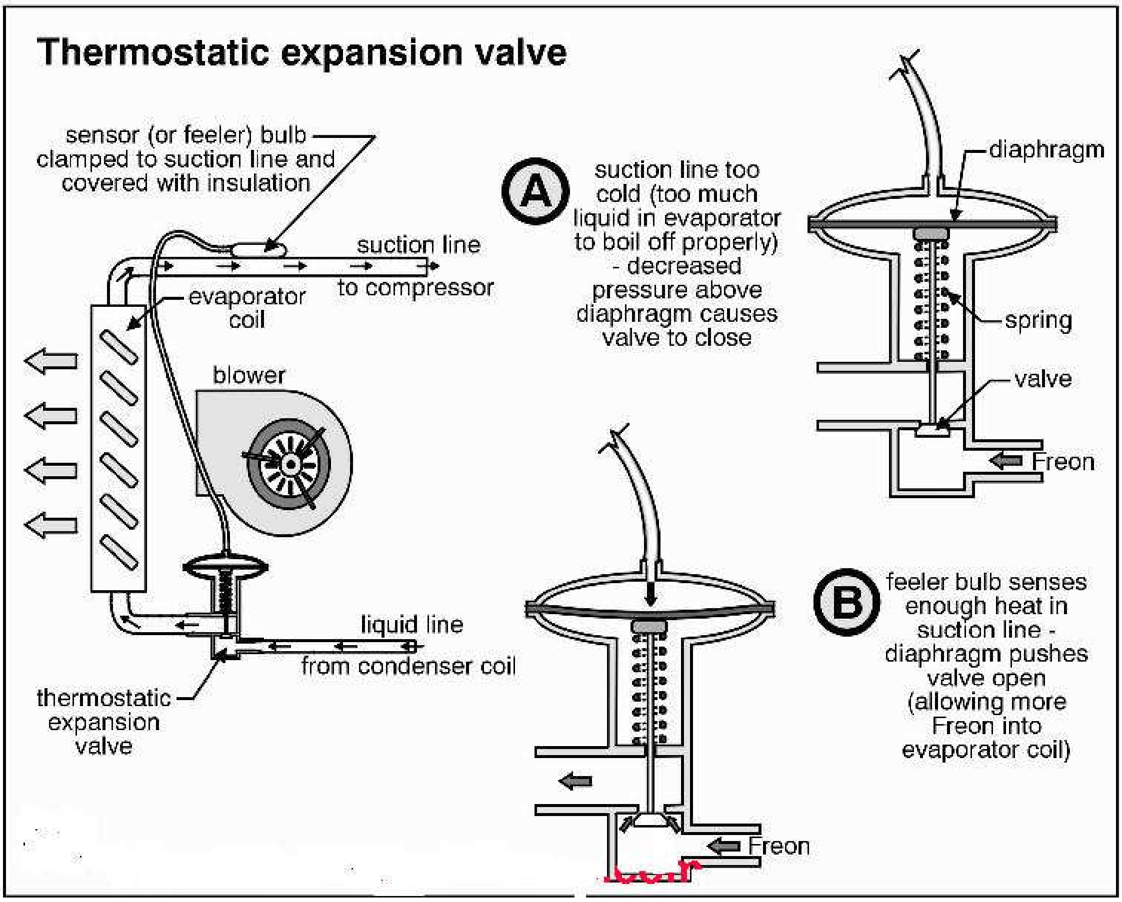
Conventional or regular air Conditioning system below;





This is were the cooling takes place… all the rooms warm air heat is drawn into and passed through the evaporation coil…the evaporating of the liquid with a very low boiling point has done the job of removing this heat and the cooler air is sent back into the room.

In our Miami Distribution Center our display unit a 12,000 Btu (split model) is cooling a 15’x20’ (300 sq feet) room…with a 90° ambient outside temperature…it is drawing 2.71 total running amps (the inside air temperature drawn in is 75°F and the out flow air temperature is 46°F)…a 29°F difference!



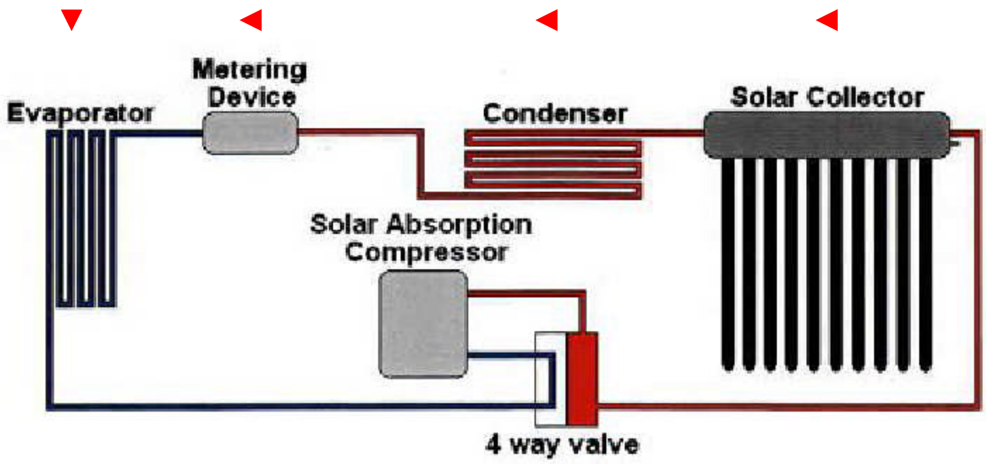
The Sedna Aire Solar Absorption Air Conditioning system cools by evaporating liquid R407c (environment friendly) The Solar Absorption medium inside the Solar panel acts as a storage tank to maintain the required temperatures needed for the cooling process.

With the Solar Absorption tank, the cooling process is maintained for approximately 96 hours without the need of the Sun's **light** or **heat**. The heated medium also acts as an absorbent to the refrigerant through the solar panel process. With this process, Sedna Aire maintains its energy required for the cooling of the controlled space.

In the simplest terms…the Sedna Aire solar air conditioner at 85° F or above outside air temperature has (in lose terms) zeroed out the need and use of a compressor and below 85° F outside temperature reduced its running time to almost nothing….a conventional 12,000 Btu compressor uses approximately 6 plus amps (1320 watts) of electricity to maintain a room temperature of 70° F and a Sedna Aire solar unit will use 3 total running amps (660 watts). A conventional unit will blow approximately 55° F of return cold air back into the cooling space and a Sedna Aire unit 46° F…your desired ambient room temperature is achieved faster and maintained more efficiently.

A conventional system uses the compressor (powered by electricity) to heat and pressurize the gas and than sends it on to the condenser.

A Sedna Aire solar system uses a solar panel to super heat and pressurize the Freon gas and than sends it straight to the condenser (the solar compressor is only used as a pump).



Solar Absorption Diagram

Final note: The hotter it is outside the more efficient a solar air conditioner runs…a conventional air conditioner just has to work **harder** and **longer**!