



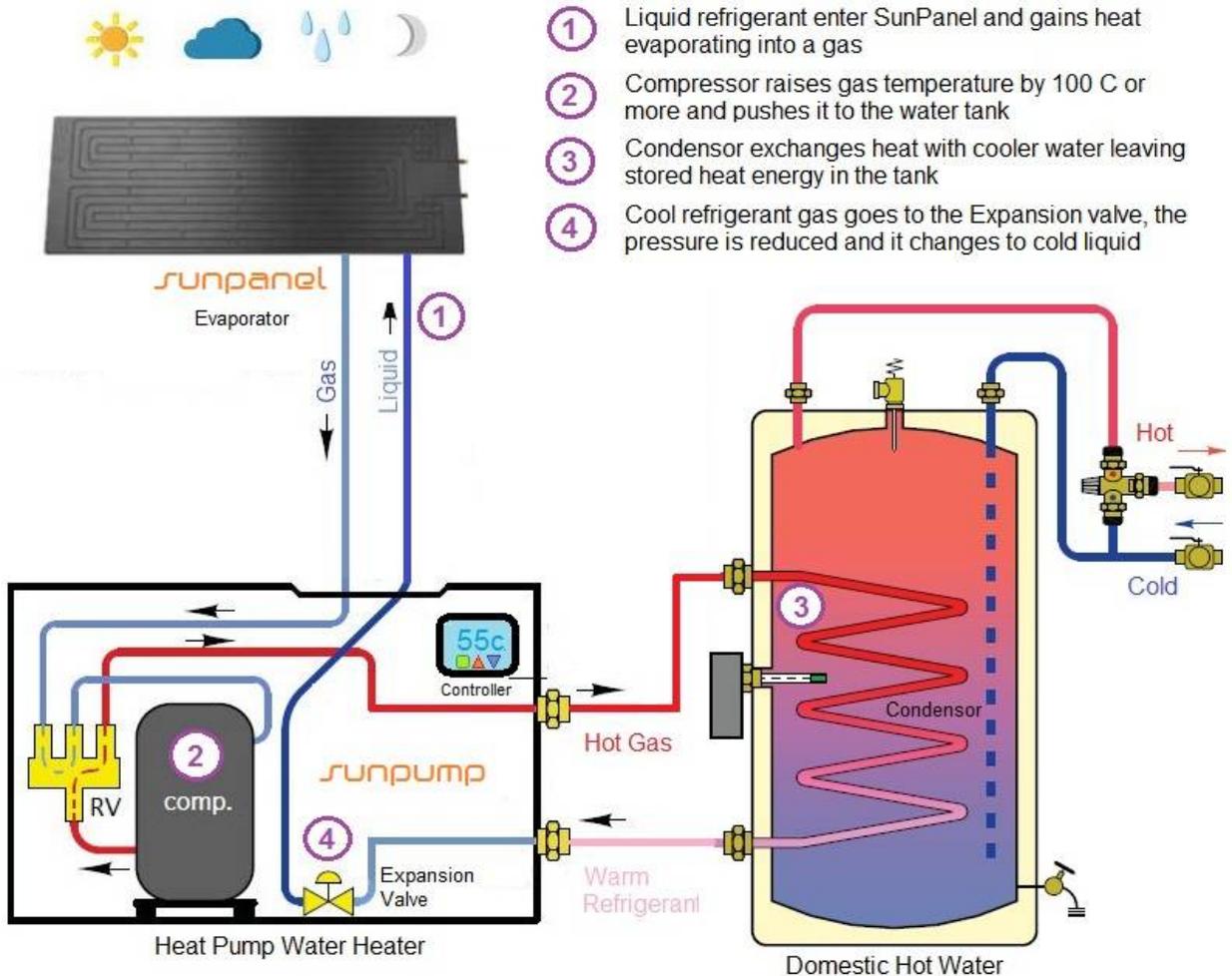
SunPump - How It Works

SunPump Working Concept

SunPump is an innovative renewable heating system, combining the benefits of solar thermal and geo-exchange plus ductless heat pumps, while overcoming their limitations. It is based on the Laws Of Thermodynamics¹ discovered by French physicist Carnot in the 1830's, that govern the transfer of energy between hot and cold components. This is the first major advancement in solar thermal heating in 35 years, since Solar Wall from Canada, and Evacuated Tubes from China made their debut around 1978.

In brief, the SunPanel PV module sends power directly to run a DC Inverter compressor, that uses vapor compression to superheat a hot gas, releasing heat in the storage tank, then circulates refrigerant through the collectors, where the fluid recovers waste heat to return to the start of the cycle. By moving environmental, ambient, and solar heat from outdoors, to the indoor SunPump control center, the system is able to produce 3-5 times the energy required to power the compressor, enough to heat water for up to 100% of a building heat load.

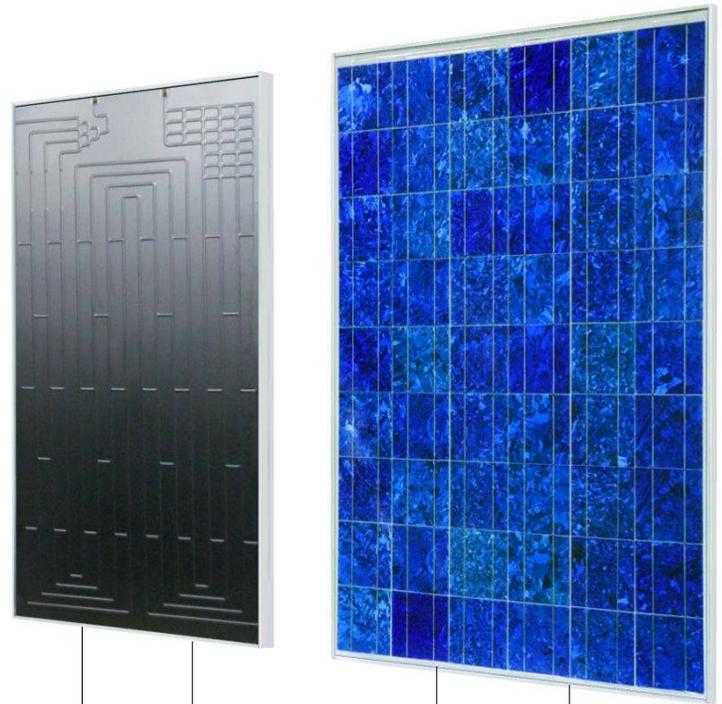
SUNPUMP Refrigeration Cycle



SunPanel PV-Thermal

SunPanels are designed to provide space and domestic hot water heating, in two types. SunPanel Thermal act as a hybrid solar evaporator to benefit a SunPump with added solar energy.

SunPanel PV-Thermal can also produce 250 watts of power as well as thermal gain transfer from heat recovered using circulated refrigerant.



Kompakt & Komponent

SunPump is available as Kompakt with the heat pump integrated on top of a multi-function tank, or as Komponent with the compressor housed in a wall mounted control center enclosure, that can heat an existing tank and adapt in more retrofit installs.

Either way, SunPump works in all weather, day or night, every season. This innovative hybrid has all the benefits of renewable solar heating, without the limitations. SunPump saves energy, space, time, and carbon emissions.