

Geothermal Heat Pump System

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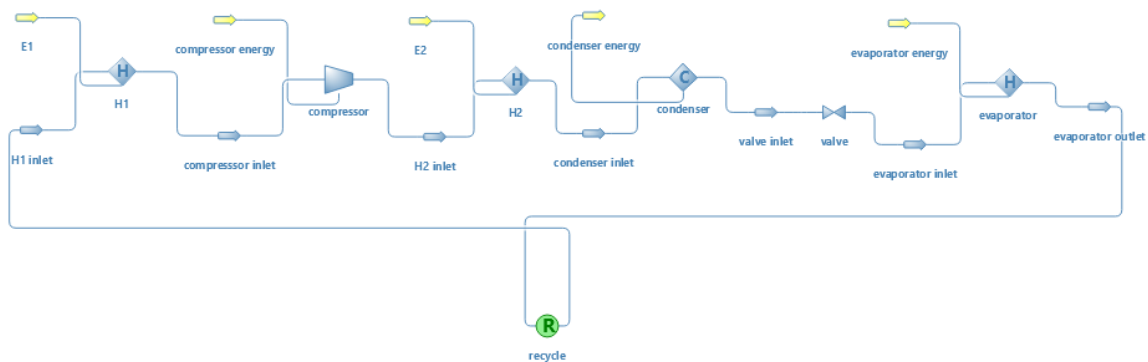
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Background and Description:

This type of system maintains nearly constant temperature below the earth (regardless of the season) to heat and cool buildings. Geothermal heat pump is sometimes combined with solar heating to develop geosolar, a system with much greater efficiency.

A typical system consists of a ground loop system filled with a propane solution as a liquid refrigerant, a heater, and ductwork into the building. During the winter, heat from the ground is absorbed by the propane solution as it circulates through pipes. In the summertime, this process is reversed and excess heat is pumped from the home either into the ground or redirected to heat domestic hot water in order to cool the compartment.

Flowsheet:



Results:

| Master Property Table | | | | | | | | |
|-----------------------|-------------|-------------------|------------------|-----------------|------------------|----------|----------|-------|
| Object | valve inlet | evaporator outlet | evaporator inlet | condenser inlet | compressor inlet | H2 inlet | H1 inlet | |
| Temperature | 295.683 | 230.943 | 295.683 | 687.291 | 597.147 | 684.14 | 230.943 | K |
| Pressure | 901297 | 101317 | 101325 | 901297 | 101317 | 901317 | 101317 | Pa |
| Mass Flow | 1 | 1 | 1 | 1 | 1 | 1 | 1 | kg/s |
| Molar Flow | 22.678 | 22.678 | 22.678 | 22.678 | 22.678 | 22.678 | 22.678 | mol/s |
| Volumetric Flow | 0.0618547 | 0.429772 | 0.550204 | 0.143776 | 1.11125 | 0.143114 | 0.429772 | m3/s |