

Setting the parameters of points and processes

Set now the parameters of the various [points](#) one by one, checking that you enter the values of the temperatures known, as well as those of the pressures, as Thermoptim does not set them automatically. In order to do that, follow these steps:

For the [propane cycle](#):

- open point 1 (propane in the vapor state), enter a pressure 4 bar and choose "set the saturation temperature", set the quality to 1 and a Tsat approach equal to 5 °C, then click on "Calculate" which sets the temperature to about - 0.4 °C
- then open point 2, enter a pressure of 17 bar, and click on "Calculate"
- open point 3a, enter a pressure 17 bar and choose "set the saturation temperature", set the quality to 1, then click on "Calculate" which sets the temperature to about 49.6 °C
- open point 3, in the same conditions, its quality being set to 0 and Tsat approach to - 5 °C, then click on "Calculate"
- open point 4, enter a pressure of 4 bar, and click on "Calculate"

Set then the [process's parameters](#), for which default options are valid:

- open process "compressor", and enter an isentropic efficiency of 0.85, then click on "Calculate", which sets the temperature of point 2 (65.25 °C)
- open processes "desuperheating", and "condenser", and click on "Calculate". The temperatures of their inlet and outlet points being known, their enthalpies can be calculated
- open process "throttling", which has no particular setting, then click "Calculate", which determines point 4 saturation temperature (-5.45 °C) and a quality of 0.32
- open process "refrigeration effect", can be calculated, points 4 and 1 being known.

For the [brine](#):

- Open point "ground return" and enter a pressure of 1 bar and a temperature of 7 °C, and then click on "Calculate"
- Open point "ground departure" and enter a pressure of 1 bar and a temperature of 0 °C, and then click on "Calculate"
- Open the process "cold source" and click on "Calculate". The temperatures of the upstream and downstream points being known, the heat involved can be calculated. The flow rate of 1 kg / s fits perfectly, there is no need to change it.

For [water heating circuit](#):

- Open point "heating return" and enter a pressure of 2 bar and a temperature of 35 ° C, and then click on "Calculate"
- Open point "heating" and enter a pressure of 2 bar and a provisional temperature of 40 ° C and click on "Calculate"
- Open point "heating departure" and enter a pressure of 2 bar and a temperature of 44 ° C, and then click on "Calculate"

- Open processes "heating 1" and "heating 2" and click on "Calculate". The temperatures of the upstream and downstream points being known, the heat involved are calculated. The flow rate of 1 kg / s fits perfectly, there is no need to change it.

[Types of energy](#) are:

- Compressor: [purchased energy](#)
- Processes "desuperheating" and "condenser": [useful energy](#)
- All other processes: [other energy](#)