

## **The importance of the thermo pump's application in heating systems**

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*The share of thermal energy plays the main part in the total energy use of our houses: 86% of energy use in private houses goes on heating and getting hot water. It is covered mostly due to gas and oil. As there are no such resources in Moldova, alternative energy sources, in particular the thermo pump, are required.*

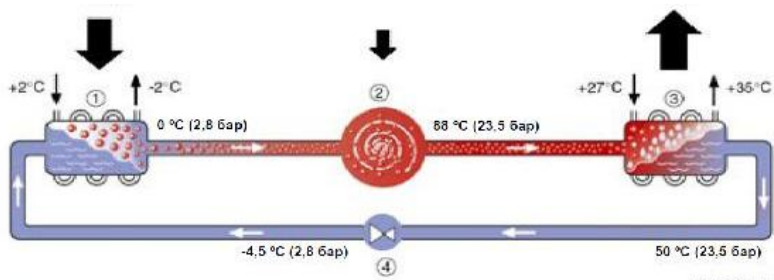
Its main application is:

In the same manner, as water does not flow upwards, heat always flows only from the hot body (the source of heat) to the cold one (the receiver of heat). Thus, it is necessary to “pump” the low potential heat at a higher level.

The principle of the thermo pump is identical to refrigerators' one. But the aim is quite opposite: the heat is selected from inside and given away outside of the refrigerator; while the “pump” selects heat from environment and transfers it to the heating system.

The principle of functioning:

1. Evaporator: there is a liquid coolant at a low pressure in the evaporator. It's temperature is lower than the source's one and the heat is transferred to the coolant, heating and evaporating it.
2. Compressor: the gaseous coolant is compressed in the compressor up to a high pressure and thus coolant's temperature rises so much, that it becomes greater than the one necessary for heating.
3. Condenser: very hot coolant at a high pressure gives away it's heat to the heating system in the condenser. Thus the coolant is greatly cooled and it becomes liquid again.
4. Valve: after that the coolant passes through a valve and comes back to the evaporator. The decompressing to the initial pressure takes place in the valve. So the cycle is completed.



We can mention some advantages, that show us the perspectives of this kind of energy sources. Here are some of them:

1. Low potential sources of heat are ecologically pure.
2. Sources of low potential heat can be found everywhere.
3. It is possible to use a thermo pump together with a solar collector.
4. It is possible to obtain different temperatures by using different coolants or by using more than one thermo pump, connected in series.
5. The thermo pump can be easily transferred into a cooling system for the warm seasons and back into a heating system for cold ones.

Thus we may obtain heat from environment by means of a thermo pump. Thermo pumps can be used not only in southern countries but in countries like our republic as well. Thermo pumps may be used in both autonomous and central heating systems.

### **Bibliography:**

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