

Advantages of thermoblock (TB) compared to heat pumps (HP) air-water:

- HP requires maintenance by the user on an annual basis, it is necessary to study the technical instructions in detail, and every year strictly follow the maintenance instruction, also every 3-5 years it is necessary for the workers to check the entire system. With TB it is necessary to follow the instructions at the initial installation and there is no need to worry about it furthermore. Replacement of antifreeze and filters in TB is done every two years or two thousand working hours of TB, which can easily be seen on the hour meter. In the HP, there is a significantly higher chance of failing to maintain (evaporator check, entry grid if straw leaves are stuck or plants that meet such conditions start to grow, it is also necessary to check the pressure of central heating over the gauge, as well as to check the concentration of antifreeze), while in TB it is necessary to do all the steps at the beginning (which are simpler as well) and once a year to check the number of working hours on the meter.
- The price of HP ranges from 7,000 to 14,000 euros, sometimes it is necessary to invest more (costs can be up to 20,000 euros). TB with installation is multiple times cheaper.
- HP produces noise during operation, similar to air conditioners. TB is completely silent while working.
- HP must operate non-stop during the winter period, which leads to increased costs and continuous noise. TB can be switched on or off as needed, or by the user wishes.
- HP has reduced efficiency in the winter season, whereas TB have the same efficiency throughout the year.
- If the user is not in a residential facility for several days, during the period when the outside temperature is below zero, HP must work so outer unit would not freeze, also the temperature in the house must not get too low, so it is able to defrost outer unit. TB has no external units (it occupies a small space and can be installed anywhere in the room), so there is no need for precautions such as continuous work, in order to avoid freezing. It can be switched on or off as needed, without concern of freezing.
- HP has less power in delivering heat, so it is necessary to install larger radiators or introduce floor heating in rooms to increase the heat exchange surface. This is not the case with TB, radiators of the appropriate size can be installed (smaller than in HP) and can even deliver a higher amount of heat energy in equivalent working time, and it is also possible to use it for floor In short: HP cannot achieve high temperatures, so it needs a larger surface, while TB can achieve high temperatures, so it has a smaller radiator size. More free space is achieved with TB compared to HP. heating (it is more flexible and saves space compared to HP).
- HP takes considerably more time to heat up space, which can cause too low temperatures in houses for comfortable and enjoyable stay of the user (sometimes even couple hours from the moment of switching HP on). This is not the case with TB, because due to its ability to deliver a higher concentration of heat, sufficient heat is achieved in the radiators, which is transferred via convection (the time depends on the installed system, but in any case there would be less time for TB).

- The boiler in the TB does not have heaters or movable elements, and thus there is no possibility of failure. On the other hand, with the compressor (refers to both types of HP) there is a possibility of failure.

Advantages of thermoblock (TB) compared to heat pumps (HP) ground-water:

- HP requires high initial investment, ranging from around 9,000 (for a power of 10 kW) and usually over 10,000 €, depending on the required power, unlike TB that is multiple times cheaper.

- HP is usually installed horizontally or vertically. In both cases, it is necessary to dig channels and holes, where a large surface for the heat exchange needs to be provided for horizontal installation, which means that a lot of yard / parcel of land is needed, which is not always available, and it is not allowed to build anything above the horizontal HP exchanger pipe, so that area remains unused. With vertical pipes, the cost of excavation is considerably higher (it is necessary to rent a firm that deals with deep drilling), it is necessary to dig holes up to 450 m at a spacing of 45 to 60 m. When installing horizontal or vertical HPs, it is necessary for architects and engineers to harmonize their design solutions, which increases the possibility for a mistake during implementation of the project. On the other hand, it takes several minutes for TB to be installed, with the environment completely clean, no digging, unused space, land exploration, engagement of a large group of people, etc.

- Certain fluids that are used to transfer heat in HP with a closed system are labeled as harmful to the environment and if leakage occurs, the environment may be endangered. On the other hand, TB uses fluids that are not labeled as harmful to the environment.

- An underground heat source can be extinguished or lowered without any indication, with the risk that the built-in HP completely loses or diminishes its function. In TB, this is not the case, only stable and reliable electricity supply is needed.

- It is necessary to provide additional heating systems next to HP in areas with colder climate. On the other hand, it is enough to install TB without any additional heating systems, regardless of the external climate.

- With HP, there is a possibility for installed components beneath the ground surface to be damaged (due to tree roots, land movements and even rodents), which can cause huge repair costs. On the other hand, TB does not have the possibility for this kind of damage, and if it exists, the reparation costs would be negligible in comparison with HP.

- Installation of HP requires a good knowledge of several scientific areas, while the installation and maintenance of TB can be carried out by any local worker with a technical instruction. Moreover, it takes about 20 minutes to set up TB and its connection to the heating pipes, which is considerably simpler than HP.

- When installing HP, prior field research is required, that is, it is not possible to install them at any location. It is necessary that the soil contains sufficient temperature potential in order to create suitable conditions for the installation of the HP. For TB, this is not the case, because it does not depend on the characteristics of the soil.

- There is not enough trained staff that can properly maintain and install HP. If such professional staff is available, it is necessary to allocate more funds for their engagement in relation to the local heating worker.
- HP is non-movable, that is, when it is installed, there is no option to move it somewhere else, unlike TB that is easily transported to any other location.
- In order to install the HP, modifications are necessary for existing buildings. For TB this is not the case, no architectural works on the buildings are necessary.