



” Autonomous Accessible House - sink or soar?

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Saving energy is an issue that is being discussed more and more often in our homes. It results not only from the growing awareness of the impact of human activity on the natural environment degradation, but also from desire to achieve an energy freedom. The autonomous home responds to our needs and overcomes this problem. It is 100% self-sufficient. It works for itself, supplies its own electricity, water and sewage. For many, it is a gateway to their dreams for a life away from civilization, among the forests, where the ground is not equipped with technical infrastructure. But is it realistic to build a house that does not need energy from outside? What opportunities do we have in Poland, and what are the barriers?

The alternative of building an autonomous house depends on many factors. There are legal and physical obstacles that we have an obligation to check before making a decision. This is a challenge both difficult in our latitude and very capital-intensive. The costs of such independence are even twice as high as compared to construction in standard technology.

Building and residential electricity

Building a house without electricity is not possible. Basically, from a legal point of view, there is no obligation to use electricity from public network, but without it we will not get a building permit. Therefore, before starting the works, we must make the connection and pay for it. Power generators are used in autonomous conditions. A lot of construction equipment is powered in a three-phase manner, which is associated with a larger investment. Specialists discourage from the decision to build the entire house without the connection to external media. In practice, the use of the aggregate is treated as a complementary solution, because it has many disadvantages and is very cumbersome. The machine requires frequent starting of the engine, in many situations it will work unproductively. Additionally, you have to remember to refuel and take into account the emission of high noise. But from a theoretical point of view, construction with the use of an aggregate is feasible.

The installation of photovoltaic panels helps to become independent from the power grid. Off-grid (island) technology is characterized by complete detachment from external power grids. There are two types of power supply. PV panels provide constant power transmission, and unused for current needs is stored in batteries for later use. This ecological is used, for example, in bad weather or after sunset, when the sun's rays do not provide enough of it.

Heating


There are many ways here. We can use electric, gas heating or a heat pump. Electric heating is very convenient, but relatively expensive. It becomes completely unprofitable for large buildings. There is also the problem of the susceptibility of electricity to price fluctuations. The heat pump works very economically. It is an ecological and economical source of heat. It can be powered by photovoltaic panels, but it is not the cheapest. Another method is gas heating, in case of which you will need to equip yourself with a liquefied gas cylinder and a heating device, e.g. a boiler, heat pump or solar collectors used to support heating utility water.

Household sewage treatment plant

A self-sufficient house must have a private waste water treatment plant or a septic tank, from which waste must be regularly removed. The exploitation of the first solution is cheaper, but its main cost is obviously higher. In addition, it is worth getting acquainted with the arrangements of the local spatial development plan. It may eliminate its implementation in a given area. There is also a problem in areas where sewage networks are already available or are to be built. In this case, we will not get a permit to build an independent reservoir.

Where to get water?

It is necessary to dig your own intake. Currently, the most popular solution is a deep well. However, before we decide to buy a plot of land and start drilling, it is necessary to verify whether the soil has the geological and hydrological conditions for obtaining water. With such a problem, it is best to turn to a geologist or more advanced people can use hydrogeological maps. The well must be equipped with filters to ensure that the water taken from the aquifer



is purified. Same as in the case of sewage systems, local plans may exclude the possibility of using such a solution. In a situation where there are water supply networks within the plot, the regulations do not exclude the possibility of drawing one's own water.

Suitable architectural design

In order for a self-sufficient house to function properly, it is necessary to ensure proper execution of the project. It should take into account solutions guaranteeing the maximization of energy efficiency, which include, among others:

- location of most windows to the south of the world,
- use of windows with the highest tightness class,
- use of recuperation, i.e. mechanical ventilation with heat recovery,
- elimination of thermal bridges,
- use of household appliances and electronics with a high energy efficiency class (preferably A +++).

Summary

Autonomy is gaining more and more popularity in Scandinavia and Western Europe. In Poland, the focus is on passive construction, which is characterized by maximum levels of energy efficiency, but is not 100% independent of external utilities. This is due to the incredible difficulty of construction and high costs. With the advancement of technology, we have an increasing selection of innovative devices. Investors are eager to invest in innovative energy solutions, which indicates a desire for complete autonomy.



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