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HOT WATER SUPPLY SYSTEMS OF OPEN AND CLOSED TYPES

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Every winter the deterioration of heating systems, the low quality of work done by public utility services, exorbitant bills for the phantom heat turn our lives into a dull misery. The transition to an autonomous home heating – means the freedom to choose the optimal temperature mode, hot water all year round.

Hot water systems of open and closed types are used in the construction of household and residential buildings. These methods differ in the peculiarities of the laying and the operating principle. Each has its own advantages and disadvantages.

Open and closed systems operate on different principles. Hot water in a central closed system involves heating the target liquid through a heat exchanger. Water does not interact with the coolant directly, but passes through a special heater.

Hot water supply in a central open system involves mixing of the cold water with the source coolant. The final product is delivered to the consumer through a common water system.

The open type of water supply is optimal for low-rise buildings. It is used in cottages, farm buildings, small industrial workshops. An obligatory condition is a long and intensive distribution of hot water.[1]

The advantages of the open type systems include:

- low costs for laying main pipelines;
- simple maintenance and installation;
- rapid expansion and modernization.

Among the disadvantages are high heat losses and long waiting period before the needed temperature is reached.

In a closed system, the water is in continuous circulation, heated from the heating network. This maintains its temperature at 70 degrees. The liquid is suitable for direct water extraction and filling the heating circuit.

In contrast to open schemes, closed schemes are more difficult to implement. At the same time they ensure high quality of the final product and minimum heat loss.

Closed systems are used in most new buildings, installed in homes after renovation.

Undoubtedly, hot water refers to the necessary pleasures of civilization to no less extent than, for example, heating or electricity. Taking a bath, washing dishes – water is needed everywhere. The hot water system can be organized in two ways: centrally or independently. We often think about why hot water flows from the faucet only during periods of “shutoffs”. The supply of hot water can be organized by two main schemes: centralized and autonomous.

The centralized system of hot water supply implies a developed system of utilities in the cottage community or in its immediate vicinity. The situation here is completely similar to that with the central heating systems, and heating and hot water supply are so closely linked that one can say with a high degree of certainty: if there is the first, then there is the second [2].

The autonomous system of hot water supply is fully organized on the basis of different types of water heaters. There are two varieties of such a scheme of the hot water system: with a centralized and autonomous supply of cold water. At first glance, there are no fundamental differences: is it all the same how the water enters the water heater, from a water pipe or from a well? However, this is not the case. On the way of cold-water supply to the house depends on the choice of the type of heating device – storage boiler or flow-through unit.

The only advantage of an autonomous hot water system is the absence of hot water out of the owners' control.

Disadvantages of an autonomous hot water system: costs, water heaters consume fuel, whether gas or electricity. Maintenance and repairs. The need to monitor the operation of all devices included in the scheme of the hot water system - water heaters, booster circulating pumps, etc.

Hot water supply in the modern world is an integral part of comfort. Proper organization of the water supply system will not only provide comfort, but also save money on installation and operation.

Arranging the water supply system, it should be borne in mind that there are two completely opposite ways of connecting. This open (open, dead-end) and closed (closed, circular) scheme of wiring pipelines and equipment. In this case, the second option is much more popular than the first. This is due to the ability to regulate and fully control the state of water and its temperature.

The open scheme, on the other hand, has been used less and less frequently in recent years. The reason is its complete organizational lag from the advanced technology and the needs of users. Although, admittedly, in terms of the cost of direct installation, the open system is much cheaper.

When choosing an open scheme, a detailed technically and economically justified project should be followed. In addition, the arrangement of such systems has high requirements for the technical characteristics of the coolant, which will be used as hot water. The open hot water system is best suited for small network lengths or when there is a constant flow of hot water.[3]

To optimize the use of the open system, some sections of the lines are blocked by stopcocks, which facilitates preventive and repair work and allows you to drain a small section of the pipeline, instead of draining the entire volume. For added protection, open hot water systems are equipped with float sensors and relays for measuring pressure in the pipes.

A home's hot water system determines the utility bill.

The design of an open hot water system is fairly simple and consists only of supply pipes. In open systems of hot water supply water is taken directly from the heating network. Closed system of hot water supply has the following principle of operation: water from the water supply line enters the water heaters, where it is heated. In addition, in open systems for hot water needs comes chemically treated water that has been deaerated, so the corrosion of internal surfaces of pipes is minimal, but the quality of water is lower than in closed systems, because passing through the heating system water acquires a foreign smell and color. Since the open system takes already hot water from the common heating system, and with a closed system – heated through a specially designed water heater, there is a difference in payment, because the tariffs for hot and cold water are different.

Currently, there are no houses with centralized hot water supply, each house has a gas boiler, boiler or double-circuit boiler.

What kind of hot water device is in your apartment or house?

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