GELIOADSORPTION SYSTEM OF HEAT AND COOL SUPPLY

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Absorption refrigerant heat supply. have some system of heat and cold. They use non-conventional sources of energy, including solar. These settings have no moving parts, require no maintenance and skilled at their work do not use electricity.

The purpose of research - analysis of the circuit design heat- cool-supply based helioadsorption and heat storage systems.

Materials and methods of research. Special widespread sorption refrigeration units of small capacity, including for personal use. The working substance of these plants is a pair of "agent-adsorbent." Couple sulfide sulfur - water is used in refrigeration and heat pumps.

Noteworthy couple 6romid lithium - methanol. To improve the efficiency of the sorptive binding pair used additives or porous beads based on various fillers (basalt fiber, asbestos, perlite) impregnated with a liquid brine. Particularly effective fillers based on expanded perlite. The impregnation under vacuum granules produced 40% lithium bromide solution in methanol.

Since the adsorbent is immovable in the machine, then the same volume of adsorbent sequentially performs the process of adsorption and desorption. It is understood that the adsorption machine is a batch machine. The cycle of the adsorption of the machine consists of two cycles under the "charge" and "discharge". The element in which the adsorbent is called generator adsorbing reactor and provides cyclic heating and cooling.

The results of research. The main problem of optimizing the adsorption machines - providing the specified speed of the processes of adsorption and desorption.

Figure 1 shows a diagram of the adsorption gelio-cooling installation batch. In the daytime by solar energy adsorbent placed in the generator 1 is heated and desorbed. The refrigerant vapor enters the condenser 2 where it is cooled. From the condenser the refrigerant discharged into the receiver 3, which is accumulated during the day. In the daytime, the evaporator 4 is filled with liquid refrigerant. At

temperatures below the critical expansion valve 6 is closed. At temperatures above the critical valve 6 opens and the water from the water line through a cooling duct 5 flows into the generator 1, taking excess heat from the adsorbent and lowering its temperature and pressure. Simultaneously, the water is heated in the daytime and is used by the consumer.

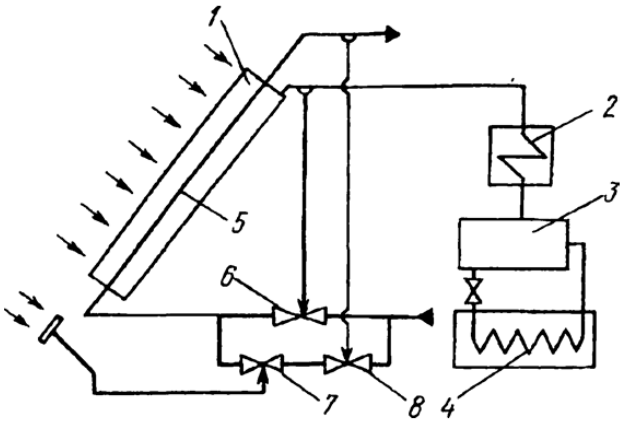

Fig.1. Adsorption helium refrigeration plant

Schematic diagram of the installation of seasonal activities is shown in Fig. 2. The device operates as follows.

Summer mode. Teplotransformator working day. The coolant from gelioheater 1 enters the adsorber through valves 3 K1, K2, storage tank 2, valves K6 and K7. The adsorber is regenerated adsorbent by heating it prior to the manifold. The steam enters the condenser 4, where it is condensed. Obtained with the condensation heat into ground battery 8 through the K10 and K11 cranes. The condensate collects in the receiver 5.

Winter mode. Adsorption thermotransformer working around the clock. 5 the condensate from the receiver through valve K5 is supplied to the evaporator 7, where it is evaporated by the heat coming from the soil accumulator 8 through valves K10, K11. Further vapor from the evaporator 7 receives adsorber 3, wherein the adsorbent absorbed. Thus there is the heat of adsorption, which is used for heating consumer 6. The coolant flows through the taps K6, K7

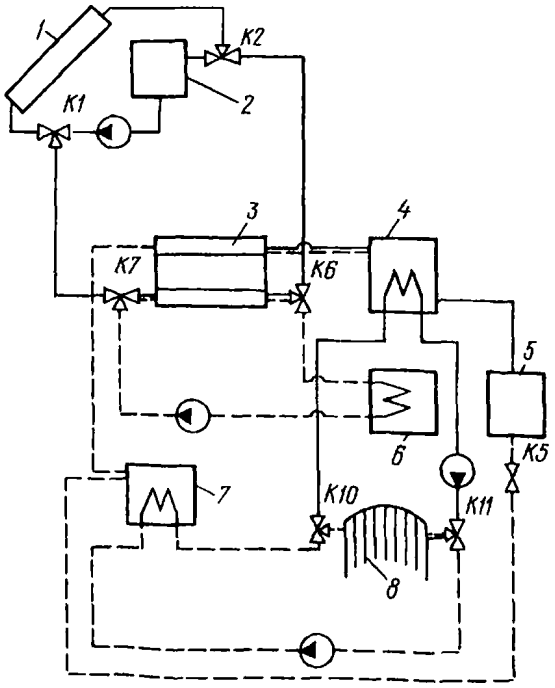

Fig.2. Driving absorption heat pump for seasonal storage:

—— – summer mode; – – – – – winter mode

A distinctive feature of the absorption of transformers is the use of renewable energy sources and thus contributes to the solution of environmental problems. It should be noted also the social factor - it is convenient to use for the individual heat and cold.