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HYDRAULIC VORTEX HEAT GENERATOR

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Currently, there is a problem of agriculture widespread introduction of energy-efficient technologies that will reduce the material means to create new products and reduce energy costs in the process. A promising direction for this are alternative sources of energy.

One of the alternative forms of renewable energy -vщкеуч which represents technologies swirling flows of continuous media (e.g., liquid and gas) to convert them into heat, work, temperature and pressure gradient.

The traditional heat sources, which are widely used in the art and life are energy converters that use the heat of combustion of various types of fuel (liquid, solid and gaseous). These disadvantages include pollution by combustion products, significant financial costs for transport and storage of energy.

The purpose of research - developing autonomous, compact, cost-effective, flexible in operation and technically secure thermal power plants - "Vortex hydraulic heat source" (VGT).

Materials and methods of research. The installation was created in conjunction with FGNBU VIESH SGAKU VGT - is one of the areas in the task of meeting the needs of the population, industry and agriculture, thermal energy, especially in regions remote from centralized power grids. The device generates heat by altering the physical and mechanical properties of the liquid medium at its current under the combined action of the accelerated and retarded motion. Acceleration of the flow is achieved by creating a vortex in the systems of flow swirling vortex heat while narrowing flow confusor and braking - followed by its expansion in the heat source and the cavitation tunnel razvihreniem flow at the outlet of the cavitation tunnel.

The results of research. The heat supply system based on BHT (Fig. 1) consists of a swirling stream 1, the cavitation tube 2 razvihritelya 3, the heat

transfer device (heat exchanger, battery, heaters, etc.) 4, the hydraulic pump 5 to the motor 6 and the remote control operation of the heat source 7.

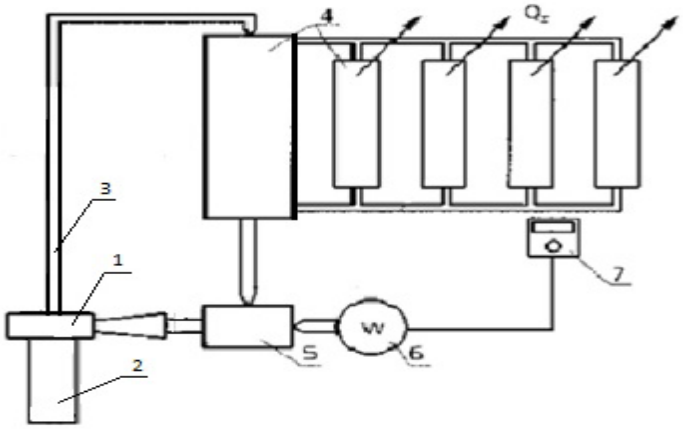

Fig.1. Driving district heating system based on the VGT

The heat source is used a miniature vortex heat (VGT), powered by a hydraulic pump. Electric power is only used for powering the drive pump heating system, the hydraulic pump is supplied with electricity only for heating water. At cooling of the heating system to the desired temperature - the hydraulic pump switches off (automatic control of a predetermined operating temperature in the room). Therefore, the hydraulic pump, for example, 1 kW, actually consumes only - 0.5 kW per hour of work, and a hydraulic pump capacity of 0.6 kW - only 0.3 kW. Test results indicate that the hydraulic pump with capacity of 1.0 kW heating water is heated to a temperature above 60 ° C with the power consumption to 17-19 kW • h, with a hydraulic pump and a capacity of 0.6 kW - about 50 ° C at a rate of power 12-14 kW • h.

The features of the heat source is a hydraulic vortex (Fig. 2):

- Thermal power pilot plant (0,5 ... 5) kW to provide a warm environment;
- The device clean, there is no need for combustion of hydrocarbon fuels (coal, oil, gas);
- No heating elements;
- Electricity is only used to supply the drive hydraulic pump;
- There is no need for water treatment;

- Can heat any liquid (water, oil, gas condensate);

- Provides automatic maintenance of the coolant temperature in a predetermined temperature range;

- Economical in operation and maintenance.

Conclusions The range is wide enough use of VGT and flexible, such as the design presented here can work with hydraulic pumps with capacity up to 5 kW. In addition, the VGT can be set to maintain any temperature in the room - so VGT capacity of 1.0 kW of 12 ° C in the barn area of 160 m², and the same VGT with a hydraulic pump capacity of 2.5 kW of 12 ° C in the barn area up to 550 m².

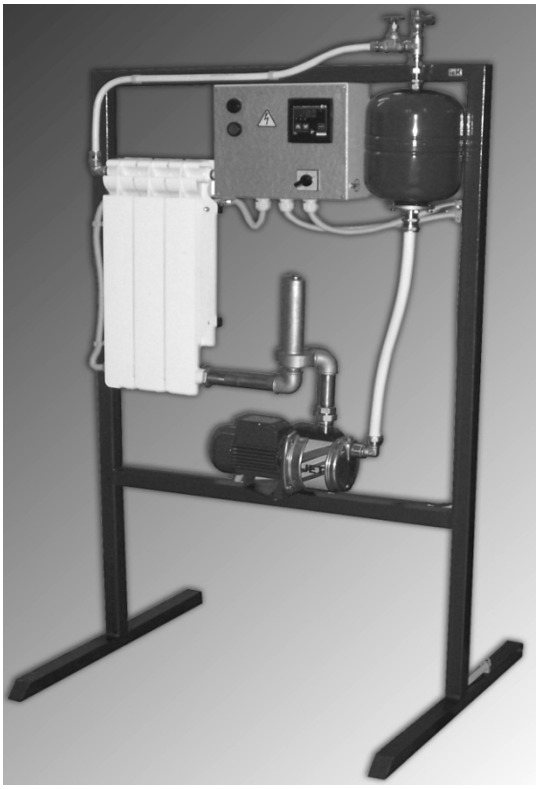

Fig. 2. Vortex hydraulic heat source