Paper Number: 3525

Ecological Aspects of the Usage of Geothermal Wells

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Among the renewable energy sources is instantiated heat of earth interior by stability parameters. Geothermal energy resources are extracted and used directly in the form of heat, because their usage is not associated with environmental pollution. But at the same time it must be borne in mind, that ever-increasing anthropogenic level impact on the geosphere causes a considerable increase of situations, when anthropogenic factor in the system "man-geological environment" becomes dominant. Upon that, as a rule, geologic environment is getting worse, connections are broken, which provide ecological balance in natural and natural-anthropogenic systems [4].

Geothermal energy can be divided in two types of applications: hydrothermal and petrothermal. In the case of usage the wells to a depth of 400 m it is a thermal energy. Over the last years has gained extensive development the usage of low-grade geothermal resources through the usage of heat pumps. The heat of the upper layers of the Earth can be used almost anywhere. To collect of heat are bored thermal wells, in which are installed heat exchangers. The main types of heat exchangers are coaxial structures and U-shaped one-loop and two-loop. As an intermediate coolant is usual used water (sometimes with antifreeze additives) which is pumped through the heat exchanger pipe system [3].

In Southern Regions in summer is necessary air conditioning, resulting in widespread can have both heating and cooling thermal system. Developed in the Ukrainian State Geological Research Institute research methodology of changes thermal-physical properties of the coolant vertical thermal heat exchanger, in the process of extracting heat from the upper layers of the earth and constructed an experimental geothermal installation enabled in automatic mode to take readings from the devices, installed in the ground and the underground part of the complex. And also to create an archive of the data received for further interpretation and processing by computer programs. Research of geothermal field were conducted both before heat extraction and in the process heat extraction from thermal wells.

In process of research work have been installed influence pattern of selection low-potential renewable energy by geothermal systems enclosed-type in regenerative processes in the upper layers of the Earth [1].

Adverse environmental impacts of geothermal energy on the environment consist in ability of increase seismic activity, flow of gases (methane, hydrogen, nitrogen, ammonia, hydrogen sulfide) heat emissions into the atmosphere or into surface waters, also emission of large salt brine by pipeline rupture [2]. By using geothermal wells with heat exchangers, installed probability of technogenic impact is reduced, but at the same time exist the possible contamination of groundwater and aquifers, salinization, changes in the level of groundwater, land subsidence, or swamping areas.

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