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ELECTRIC HEAT BALANCE submersible Units

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In the article the research to determine the thermal balance ELECTRIC submersible unit.

The temperature allowable frequency of inclusions, water flow, submersible pump, the volume of the tower.

When working in the motor power losses occur that cause heating. Rising temperatures above permissible winding significantly reduces the service life of isolation.

In analyzing the heat engine is rated exceeding its temperature above the temperature of the cooling medium. The standards for normal temperature gas cooled tion adopted environment temperature 40 ° C.

Modern motors are usually used insulation materials classes B and F, for which guests 87−8865 establishes allowable temperature of windings respectively 130 and 155 ° C. Allowable temperature in excess machinery is given with some margin, given the uncertainty of measurement and the inability to determine the temperature at the hottest spot winding. According to GOST 74 "−183Rotating electrical machines" permissible excess temperature parts of electrical machines cooling air at 40 ° C and altitudes up to 1000 meters depending on the method of measurement are set according to the table.

Permissible heating temperature bearings electric cars: + 100 ° C for rolling bearings and + 80 ° C for bearings.

Analytical determination of excess temperature windings and other parts of the motor function of time is quite difficult because of the complexity of thermal processes in electrical machines. First analysis of thermal conditions is complicated by the heterogeneity of the machine as a whole (steel, copper, insulation) and its

individual parts. Therefore, to simplify the analysis engine find homogeneous body. This formula describing the heating process, simplified and easier analysis of the temperature condition of the engine.

Allowable frequency of inclusions per hour pump equipment - it is the number of particles in which the average temperature of the engine after a large number of duty cycles will be equal to the maximum limit. Under these conditions, the engine is fully used for heating. The engine used in full if working with a nominal rate of loss of power allocated to the environment, the same as in the nominal mode. Therefore, a study of the heat balance submersible pump, which affects the definition of permissible frequency of its inclusions, and how derivative, improve its operational reliability is a challenging problem.

The purpose of research - to justify the permissible frequency inclusions submersible pump based on a study of the heat balance ELECTRIC submersible unit

Materials and methods research. Based on the research process flowsheet filling tower water tower definition Adjustable volume, feed pump unit is determined by the heat balance ELECTRIC submersible unit.

Results. Volume towers defined in the analysis process flowsheet filling it with water: 1) in the tower volume V0 operates air pressure P0, and the water is absent; 2) water tower located on the lower level HP at which the electric pump is automatically included, the amount of air bag inflation pressure P1 V1; 3) The water tower is on top of the VR is off electric pump, air volume V2, pressure P2.

Conclusions

1. Based on the research process flowsheet filling tower water tower definition Adjustable volume, feed pump unit is determined by the heat balance equation for the series submersible pump works The formula for calculating the allowable number of inclusions per hour at rated engine load.
2. From the research shows that the frequency of inclusions allowed per hour is

greater the higher nominal loss ΔPn (engines with more heat-resistant insulation), the perfect ventilation ($\beta = 1$) and the smaller launchers loss.

List of literature

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Anotatsiya

In the article the research to determine the heat balance ELECTRIC submersible unit.

Temperature, the maximum frequency of inclusions, water flow, submersible pump, volume of the tower.