Annotation

Currently, AC drives have found their application in various industries. A large number of electric drives are built on the basis of asynchronous machines, due to their high values in terms of reliability and price. As the drive mechanisms of centrifugal action are usually used asynchronous motors with squirrel-cage winding, their power can be in the range of several kilowatts to megawatts.

The systems of the electric drive of centrifugal mechanisms regulated to the speed make it possible to get rid of energy-consuming control valves, reduce dynamic loads on the mechanical system of the electric drive and reduce the influence of starting currents on other consumers connected to the network.

In this thesis work investigates two methods of control of asynchronous electric drive with centrifugal load - electric drive to scheme «frequency converter – asynchronous motor» (FC-AM) and electric drive for the scheme «thyristor voltage controller – asynchronous motor» (TVC-AM).

Comparative analysis of these options, which showed the advantages of the system FC- AM consuming less electricity in the regulation in the predetermined range.

For research, an experimental stand was used, for which conducted:

a) calculation of power and the choice of the electric motor for the drive of the centrifugal pump of the stand;

b) determination of parameters of the equivalent circuit of the asynchronous engine in SI units on handbook technical data;

c) calculation of natural and artificial mechanical and electromechanical characteristics of the asynchronous motor.

During the research, two simulation models were developed in the software package Matlab/Simulink:

a) simulation model «Electric drive according to the scheme of FC-AM»;

b) simulation model «Electric drive according to the scheme of TVC-AM».

The obtained simulation models can be used for computer simulation of various technological modes of centrifugal mechanisms.