UDC 62-533.65

RESEARCH OF ELECTRIC TEMPERATURE CONTROLLER WITH VARIOUS ALGORITHMS FUZZY–CONTROL

P. Klendij, V. Ramsh, M. Rutylo, H. Klendij

Today a great attention is focused focuses on the study of control systems with the using the mathematic device of fuzzy logic (fuzzy logic). Such systems were used to control various objects. This article examines the possibility and feasibility of constructing phase-controller temperature of electric oven of resistance(EPO).

This work is devoted to deepening ininvestigation of Principles and rules of construction and operation phase-controller on temperature in relation to the management of EPO, including the analysis of the characteristics of various temperature controller by various algorithms of fuzzy control, that defined by the type of membership functions and input signals.

The formal definition of fuzzy set does not impose any restrictions on the choice of a particular membership function, that is the function that assigns wrformity to each element, of a real number in the interval [0; 1] for presentation. In practice, it is conveniently touse one of hem wich that can be analytically represented by a simple mathematical function. This simplifies not only the corresponding numerical calculations, but also reduces the computational resources of regulators needed to store separate meanings values of membership functions. Consequently, the choice of kind membership function in fuzzy control system is an important task of designing fuzzy controller.

The main choice the kind of membership functions and input signals for a particular temperature controller ib is reasonable the investigation based on the quality and accuracy.

Quality depends on the dynamic properties of the object, set and perturbationinflueme Asked, law regulation, sensitivity andsettings of regulator. Considered indicators of the quality of transients process urea used in work for a comparative analysis of traditional proportional-integral-differential controller

(PID controller) temperature and fuzzy controllers with different input signals and types of membership functions.

Studies show that the quality and accuracy of temperature control EPO withusing fuzzy controller practically are independent from the type of membership functions and input. This allows us to recommend for practical implementation phase controller with minimal complexity of control algorithm, hiatus the controller, is builtby using triangular membership functions and temperature variations as input signal.