

DEVELOPMENT OF METHODS FOR FORMING CONTROL SOLUTIONS BY MEANS OF SOLVING SYSTEMS OF INTEGRAL-DIFFERENTIAL EQUATIONS

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Abstract. The article discusses a complex technical system of variable structure (CTS VS), the features of which are: multicomponent and complexity of the structure, nonlinear interdependence between them quantitatively and qualitatively set parameters; incompleteness of the initial data, the complexity and cost of conducting experiments, the risks of hazardous situations and their negative consequences; the uniqueness of the CTS VS, and, as a consequence, the complexity of transfer of the accumulated experience to similar CTS VS; a variety of influences of internal and external factors on the CTS VS of the PS, their stochastic and non-stochastic nature; changing the structure and parameters during the functioning of the STS PS; the use of such CTS VS to ensure the continuity of the operation of larger systems.

The aim of the work is to develop a methodology for forming a complex of management decisions by solving a system of integral-differential equations.

The novelty lies in the fact that a methodology for the formation of managerial decisions has been developed, characterized in that the search for organizational and technological solutions to improve the reliability of the CTS VS of the object states is carried out by solving systems of integral differential equations that take into account the parameters of the components of the CTS VS, which makes it possible to determine the probabilities of staying in all states and parameters of the transition from failed to healthy states.

Keywords: complex technical system of variable structure, organizational and technological solutions, systems of integral-differential equations, parameters of CTS VS substation, failure and operational states, reliability

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