Mathematical model of control systems of power turbines with controlled steam extraction

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The article presents a developed mathematical model of the control system of the condensing turbine PT-25/30-90/10M (PT-12/15-35/10M) for Kaluga Turbine Plant. This turbine of active type has two adjustable (productive and heat extraction) and three non-regulated volumes for regenerative heating feed water. The turbine is designed to drive a synchronous electric generator of the TVS-30 type with the capacity of 30 MW and the rate speed of 3000 min^{-1}, as well as to supply heat consumers with steam from controlled extraction. The dynamics of the turbine control system is described by a nonlinear system of twelve differential equations. The analysis of the obtained models by computer numerically solved differential equations and comparing the results with the experimental ones confirmed the high degree of adequacy of the mathematical model.

Keywords: *steam turbine, control system, mathematical model, controlled steam extraction.*

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