Study on the Influence of Nonlinear Characteristics of Fuel System on the Control Strategy of Gas Turbine Engine

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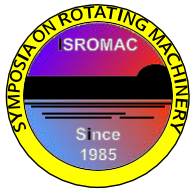

Long Abstract

Abstract

Gas turbine fuel control system actuators and other components have obvious non-linear characteristics. The nonlinear characteristic of fuel system has important influence on fuel control the design of control strategy for gas turbine engine. A gas turbine driven compressor system has been selected as object, whose fuel system model with nonlinear characteristics was established. The nonlinear characteristics of the integrated fuel control system (actuator and valve) are summarized as a nonlinear controller, which mainly concerns the characteristics of the dead zone relay and the characteristics of the dead zone. Gas turbine modeling using MATLAB Simulink module, using the mechanism modeling method, the modular modeling method is adopted. By contrast with or without nonlinear link model of the overall operating parameters, such as turbine pressure, output power and speed to understand nonlinear characteristic part is how to affect the gas turbine fuel control system performance, and debugging nonlinear controller parameters, optimization of gas turbine engine fuel control system. The basic working principle of the gas turbine control system is analyzed, and the nonlinear characteristics of the actual fuel actuator and its influence on the control performance of the gas turbine are investigated.

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References

[1] A. J. Figueredo and P. S. A. Wolf. Assortative pairing and life history strategy - a cross-cultural study. *Human Nature*, 20:317–330, 2009.

[2] A. J. Figueredo and P. S. A. Wolf. Assortative pairing and life history strategy - a cross-cultural study. *Human Nature*, 20:317–330, 2009.