Optimization of Regulator for Multi-Channel Objects with the Developing of the Idea of Smith's Predictor

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Abstract

The problem of control of multi-channel objects in which the influence between many (all) inputs and many (all) outputs, it very important. That is so because such problems are often occur in a lot of real situations. With all that, analytic methods are developed only for linear systems immediately. The using of modeling and numerical optimization allows heve a solution of this task more effectively. Nevertheless, in this case transient processes in the system have often not satisfactory quality because of the big overshooting. The developing of the idea of Smith predictor and by-pass channel for the multi-channel case with the using of the numerical optimization after that as well as the use of accordingly modified cost function allows proposing of the new methodic of control of multi-channel objects containing great delay. The methodic is tested on the example.

Key words

Automation, Regulators, Multi-channel Systems, Numerical Optimization, Modeling

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