

عنوان مقاله:

Decentralized PID control for nonlinear multivariable systems using decoupler

محل انتشار:

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خلاصه مقاله:

Interactions between input and output variables are a prevalent challenge in the design of multi-loop controllers for multivariable processes, and they can be a major stumbling block to obtaining good overall performance of a multi loop control system. The deconstructed dynamic interaction analysis is proposed to solve this limitation by decomposing the multi loop control system into a series of n independent SISO systems, each with its own PID controller. The multivariable decoupler and multi loop PID controller is applied to Two Tank Conical Interacting System (TTCIS). This TTCIS is chosen as benchmark problem used by many researchers. Firstly, the Mathematical modelling of TTCIS is derived using First principal model. The non-linear system is linearized using Jacobian matrix and decomposed into multiple SISO systems. The controller design for the process is then obtained, and an RGA matrix is constructed to minimise the interaction effects. To demonstrate the efficiency of the suggested strategy, simulation results using TTCIS are provided.

کلمات کلیدی:

Multi-loop PID controller, Decoupling, Linearization, Two Tank Conical Interacting System :

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