

Comparison of Multiloop PID Controller Tuning Methods

Truong Nguyen Luan Vu, 이문용*

영남대학교

(mynlee@yu.ac.kr*)

In process industries, the first-order plus dead time (FOPDT) and the second-order plus dead time (SOPDT) process models are quite popular. Recently, a lot of authors are successful in controlling and tuning these processes. However, based on each process, some methods are good performance and robustness but others get poor performance and unrobustness so that many engineering people are sometimes confusing.

We investigate to find out the cause. In addition, we also introduce our method which is based on the analytical design method for multiloop PID controller by Lee et al (2004). The proposed method makes the bandwidths of MIMO system which correspond to a fast rise time at high frequency signals; therefore, these bandwidths can be easily passed through the MIMO control system. The results show that the proposed method is much more active, stable and robust with several processes. The comparison and simulation of the MIMO feedback control systems show clearly the advantage and disadvantage of every design methods. Consider to the calculation of the IAE, ISE and ITAE, we get the great idea to design the best controller parameters for MIMO feedback control systems.