

Extension of Generalized IMC-PID Tuning Method to General Frequency Region

삼쑤조하, 이문용*
영남대학교

(mynlee@ynucc.yeungnam.ac.kr*)

Proportional, Integral, and Derivative (PID) Controllers are still used widely in process industries because of their simplicity, robustness and successful practical application. Because of its wide spread use, a great deal of effort has been directed at finding the best choices of the controller gain, integral and derivative time constants for various process models. Recently, Lee et al. generalized the existing IMC-PID tuning method to cope with any class of process model. However, their method is based on Macraulin series expansion which approximates the ideal controller to the PID controller based on frequencies around zero. In real control situation, since various disturbances are introduced over wide frequency range, we should be not only interested to frequency around zero, but also up to some dominant middle frequency range. The PID controller should be tuned considering whole dominant frequency region. In this study, we extend the generalized IMC-PID tuning method to cope with general frequency region. The results show that the PID controller so obtained gives better performance over the existing method.